**U.S. Senator Martin Heinrich**
**Highlights FY21 National Defense Authorization Act**

# New Mexico Space Missions

## Small Satellite Manufacturing and Innovation Center

Provides $6M to support follow-on funding for a Small Satellite Manufacturing and Innovation Center in Albuquerque that would be accessible by government agencies and cleared industry partners. New Mexico is home to leading small satellite innovators and critical space acquisition agencies for the federal government. The center will establish a manufacturing environment that encourages maximum collaboration between industry, academia, and the government and will include a shared satellite prototyping and software laboratory that enables access to capital equipment, industry, academia, and government with classified meeting capabilities. Senator Heinrich and Senator Tom Udall secured funding in last year's defense spending bill to begin preliminary design work for the Center.

## Supporting Small Satellite Industry

Senator Heinrich supported a substantial increase of $130 million aimed at supporting the small satellite industrial base throughout New Mexico and the country. The targeted increase over the funding level requested by the Trump administration is aimed at taking advantage of the revolution in commercial space innovation by seamlessly integrating small satellite capabilities with existing and future government space systems. This blending of government and commercial capabilities is referred to as "hybrid space architecture" and will enable new capabilities to be added quickly, affordably, and in large numbers to improve U.S. resiliency in space.

## Space Situational Awareness

Senator Heinrich secured up to $3.5 million for the purchase of a new interferometric array at the Magdalena Ridge Observatory in Socorro County, New Mexico. As the number of spacecraft rapidly increases over the coming decade, it is vital that our nation develops the technology and the workforce needed to increase space situational awareness. Funding for this array will increase U.S. knowledge of the location, trajectory, and condition of spacecraft in orbit in order to help protect friendly space assets and monitor adversary assets.

## Small Satellite Mission Operations Facility

Senator Heinrich secured $3 million for the establishment of a Small Satellite Mission Operations Facility in Albuquerque. The number of national security and commercial small satellites in orbit has dramatically increased over the past several years, and that number is expected to grow exponentially in the coming decades. Currently, each small satellite program must invest in a mission operations capability charged with controlling the satellite and ensuring deconfliction in space. This amendment provides funding to provide small companies in New Mexico and their government customers with a cost-effective way to operate their satellite platforms at all classification levels.

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## Maintain the Independence of the Space Rapid Capabilities Office

Senator Heinrich included a provision that recognized the independent nature of the Space Rapid Capabilities Office (Space RCO, located at Kirtland Air Force Base) as the Space Force continues to lay out its structure and organization in the near-and-medium-term. Senator Heinrich led an effort in the Fiscal Year 2018 National Defense Authorization Act to establish the Space RCO as an independent organization with unique acquisition authorities and a direct reporting chain to the Secretary of the Air Force. These characteristics have enabled the Space RCO to push the bounds of performance rapidly develop and field space capabilities at the best cost to the taxpayer.

## Establishment of the Space Training and Readiness Command

Senator Heinrich led a provision that encourages the Space Force to establish a Space Training and Readiness command. New Mexico, already a leader commercial and defense-oriented space innovation, stands to benefit from the establishment of the Space Force. As the new service continues to organize, this provision calls for the stand up of a Space Training and Readiness Command – similar to the Army's Training and Doctrine Command – that would focus on space training and education, space warfighting concepts, and overall readiness. The provision further calls for the command to be placed in an area of the country resembling Albuquerque – one with proximity to leading space acquisition and management directorates and leading space industry partners.

## Satellite Power Sourcing

Senator Heinrich included a provision in the NDAA that directs the Secretary of Defense to outline the vulnerabilities and risks associated with foreign sources of satellite solar power technology and provide a set of recommended investments, policy changes, or other steps deemed appropriate to support this segment of the national security space industrial base. The provision responds to concerns that U.S. adversaries may be subsidizing satellite power sourcing technology as part of an effort to ensure their components are installed on U.S. national security satellites. Such critical components have the potential to disrupt national security satellites while in orbit. New Mexico is home to several companies leading the way in this important satellite technology.

## Addressing Satellite Cyber Vulnerability

Senator Heinrich secured a provision that would require the Air Force to provide a briefing on the cyber vulnerabilities of the Air Force's Satellite Control Network which commands and controls a large array of national security space satellites. The network which was first deployed in the 1970s, well before there was a full understanding of the current cyber threats and necessary cyber security protections.

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# New Mexico Test Range Infrastructure

## Directed Energy Test Range Infrastructure

Senator Heinrich secured $15 million for White Sands Missile Range in order to improve infrastructure needed to accommodate the increase in demand for directed energy testing workloads. A lack of funding for increased directed energy testing is a serious issue, given that the workload and number of directed energy demonstrations and exercises have increased significantly since 1975. The projected directed energy workload for the coming years is growing, and has expanded to include high-powered microwave testing. Yet, for the ranges to meet this demand has remained flat. Senator Heinrich secured the funds necessary to meet the growing demand and support the appropriate test workloads.

## Establishment of Additional Joint Electronic Warfare Training Ranges

Senator Heinrich secured a requirement for the Secretary of Defense to develop a plan to establish one or more Joint Electronic Warfare (EW) Training Ranges. The military services use EW ranges to rapidly test and field new weapons systems and better understand how they would perform in a combat environment. Increased demand and spectrum encroachment at current EW training ranges have rendered these facilities inadequate to meet the needs of the department's EW test and training workload over the next several years.

The Air Force currently conducts EW training and testing at the Playas Training and Research Center in Playas, New Mexico. The Playas range stands to benefit from new designations of EW training ranges which could bring additional resources to Southwest New Mexico.

## Inland Spaceport Utilization and Improvements

The Senate authorized an amendment offered by Senator Heinrich that encourages the military services, in coordination with the Department of Defense's Test Resources Management Center, to invest in the testing infrastructure that will be necessary to ensure inland spaceports like Spaceport America have the capability and capacity to test the military services' next generation technologies. Inland spaceports have several important benefits for military testing including their remote location for sensitive national security missions.

# New Mexico Air National Guard

## Increase Air Force Utilization of 150th Special Operations Wing

The Senate authorized language that requires the Secretary of the Air Force, in consultation with the Chief of the National Guard Bureau, to report back to the committee with a plan to better utilize Air National Guard assets like the 150th Special Operations Wing stationed at Kirtland Air Force Base.

New Mexico is one of three states – New Mexico, Virginia, and Washington – that have an operational flying mission, but due to the classic associate construct they lack ownership of aircraft. The Air National Guard enterprise is based on established Capstone Principles that notionally set the foundational framework for mission allocation in the 54 states and territories. One of those Capstone Principles is to allocate at least one unit-equipped wing and flying squadron to each state.

The New Mexico congressional delegation is dedicated to working with the Air Force and the National Guard Bureau to ensure a unit-equipped flying squadron for the New Mexico Air National Guard (NMANG). New Mexico's outstanding flying weather, airspace and ranges around Kirtland Air Force Base (KAFB) offer excellent training capabilities. KAFB's location in central New Mexico allows for important co-training opportunities with Cannon and Holloman Air Force Bases, White Sands Missile Range, and Fort Bliss, Texas. Having hosted aircraft for decades, appropriate infrastructure such as runways and hangars are already in place that can save taxpayer dollars and accommodate additional aircraft.

## New Mexico's National Laboratories and WIPP

### Los Alamos National Laboratory (LANL) Environmental Cleanup

Senator Heinrich secured an increase of $100 million above the president's request for soil and water remediation and removal of legacy radioactive waste at LANL. The president's FY21 budget had proposed cutting funding for LANL cleanup from $220 million this year to only $120 million for fiscal year 2021. Restoring full funding will assure there are no delays in completing important cleanup milestones, including ongoing remediation of the hexavalent chromium and RDX plumes in groundwater in Los Alamos.

### NNSA Laboratory Directed Research and Development (LDRD)

At Senator Heinrich's request, a legislative provision was included in the bill to permanently remove the overhead burden on NNSA labs for LDRD that currently double-taxes Sandia National Laboratories and Los Alamos National Laboratory. LDRD is a strategic research and development program that is critical to maintaining the scientific vitality of the national laboratories. In last year's NDAA Congress suspended the overhead burden on the labs' LDRD through the end of fiscal year 2020. Senator Heinrich's amendment this year permanently eliminates it for all NNSA nuclear laboratories and facilities.

### Funding for New Mexico's National Security Laboratories

Senator Heinrich supported full funding authorization for the NNSA's nuclear weapons and security programs. For fiscal year 2021, the bill authorizes $2.6 billion for Sandia National Laboratories, an increase of $330 million over fiscal year 2020. For Los Alamos National Laboratory, the bill authorizes FY21 funding of $3.22 billion, up from $2.3 billion in fiscal year 2020. Within NNSA's funding, Senator Heinrich supported full

funding of $2.7 billion for modernization of the stockpile, including Life Extension Programs as executed by Sandia and Los Alamos National Laboratories. The increase of $550 million over FY20 for modernization will maintain the existing weapons stockpile and assure its safety and security.

## Los Alamos National Laboratory's Plutonium Mission

Senator Heinrich again supported full funding to secure Los Alamos National Laboratory's (LANL) role as the nation's Center of Excellence for Plutonium Research. The bill authorizes $1.1 billion for LANL's ongoing plutonium operations and pit production programs. The funding supports personnel, equipment and other activities at LANL to meet pit production requirements by 2026; highlights include, $611 million for plutonium operations, $226 million to support pit production, $30 million to construct new fire-control panels in PF-4, $27 million for fire protection and equipment, power and communications improvements in PF-4, $37 million for a new transuranic liquid waste handling and $169 million for upgrades related to replacing the outdated Chemistry and Metallurgy Research (CMR) building at LANL.

## Emergency Operations Center for Sandia National Laboratories

Senator Heinrich supported second-year funding of $36 million for a new emergency operations center at Sandia National Laboratories (SNL). The construction project will provide a new 24,000-31,000 square foot facility to improve the labs' ability to respond to emergencies and provide emergency assistance so that appropriate response measures and notifications are taken to protect workers, the public, the environment, and national security. Emergency Response Operations at SNL are currently housed in the basement of a substandard facility built in 1949. Construction is expected to begin next year and take two years. The full cost of the project is $40 million.

## Waste Isolation Pilot Plant (WIPP)

The bill authorizes full funding of $390 million to operate the Waste Isolation Pilot Plant (WIPP) to support disposal operations, regulatory and environmental compliance actions, the Central Characterization Project, transuranic waste transportation capabilities, and continued progress on repairing or replacing infrastructure, modernizing underground equipment to zero-emission battery-electric vehicles or very low emission Tier IV Final diesel powered equipment. The authorization includes $22 million for critical infrastructure repair and replacement projects and line-item funding for two capital asset projects: $50 million for a new utility shaft and $10 million for a new project to expand underground hoisting capability.

## Preserving DOE's Budget Planning Authority

During floor consideration, the full Senate adopted a bipartisan amendment that removed provisions from the bill that would have stripped the Secretary of Energy of the ability to manage preparation of DOE's annual budget request for nuclear security programs, including New Mexico's two national labs. Such sweeping changes could

impact civilian control of our nation's nuclear weapons programs and limit Congressional oversight. The proposed transfer of DOE's annual budget planning to DoD could also imperil future funding for other critical DOE responsibilities such as WIPP operations and ensuring cleanup of the nation's nuclear weapons complex.

## NNSA Employee Recruitment and Retention

The bill includes a provision to make permanent NNSA's personnel management system that has been used successfully on a trial basis for over 10 years. The temporary personnel system has enhanced the recruitment and retention of federal employees of the Department of Energy's NNSA. NNSA needs to attract highly technical employees to manage critical national security programs, including about 800 based in New Mexico. Key advantages of NNSA's personnel system include helping attract and retain top talent by offering competitive salaries, reducing attrition rates, and properly rewarding high-performing employees.

## Independent Cost Estimating and Reviews for all New Nuclear Weapons Systems

During committee consideration, Senator Heinrich secured approval of an amendment that will require NNSA to submit to Congress an independent cost estimate at each phase of development for any future nuclear weapons system. Independent cost reviews at each stage, from feasibility through initial production, provide additional transparency, improve efficiency, and reduce costs. The required cost estimates will be prepared by an organization independent from NNSA's program managers and the national security laboratories.

## Defense Nuclear Facilities Safety Board

Senator Heinrich supported the full funding request of $28.8 million for the independent Defense Nuclear Facilities Safety Board (DNFSB) to support 114 staff members, including two resident inspectors based in New Mexico. Congress created the DNFSB in 1988 to provide oversight of public health and safety at the defense nuclear facilities managed by the Department of Energy, including Los Alamos and Sandia National Laboratories and WIPP. The bill also clarifies the board's statutory responsibility for oversight, including full access to all DOE defense nuclear facilities, and directs DOE to work with the board to improve the interface between the agencies.

Non-Department of Energy Items of Interest to New Mexico

## Extending Limits on Import of Enriched Uranium Fuel from Russia

Senator Heinrich led a successful bipartisan amendment that expressed the sense of the Senate that the administration should promptly complete negotiations of a 15-year extension of the current 20 percent cap on Russia's share of the U.S. domestic market for uranium fuel for commercial nuclear power plants. Extending the 20 percent cap

until 2035 will help ensure Urenco USA's commercial enrichment plant in Eunice, New Mexico, can continue to compete for the utility market without unfair competition from Russia's government-supported defense complex. The current 20 percent cap was negotiated in 2008 and expires on December 31, 2020; however, the Russian government has continued to dump below-market uranium on the world market to expand its market share. Without a new agreement, Russia's share of the US commercial market could swell to as much as 40 percent next year. Urenco USA's plant in Eunice is the nation's only operating uranium enrichment plant serving the commercial nuclear power industry.

### DoD Energy Siting Clearinghouse for Wind and Solar Power

Senator Heinrich offered an amendment adopted in committee that clarifies the notification requirements for DoD's Siting Clearinghouse, which must review and approve plans for all wind energy projects to prevent impairment of military operations. The Heinrich amendment ensures that if DoD's Siting Clearinghouse determines that a proposed energy project will not have an adverse impact on military readiness, the Clearinghouse will promptly notify the project developer and the governor of the state in writing. The amendment will help improve coordination among the different federal and state-government entities that oversee siting of energy projects. Reducing or eliminating any potential impact of energy projects on military radar, training or operations will help protect the missions of New Mexico's Air Force Bases and the White Sands Missile Range.

### DoD Long-Term Energy Storage Demonstration Project

During committee consideration, Senator Heinrich cosponsored a successful amendment offered by Senator King that would authorize $15 million for demonstration of long-duration, on-site battery storage for military facilities. The goal of the program is to demonstrate promising long-duration energy storage technologies at different sizes and scales to promote energy reliability and resilience and to help new, innovative long-duration energy storage technologies become commercially viable.

## Artificial Intelligence

The Senate authorized three amendments led by Senator Heinrich and one cosponsored by the Senator aimed at advancing the Department of Defense's Artificial Intelligence Capabilities. The provisions were recommended by the National Security Commission on Artificial Intelligence, a panel of leading AI experts from industry and government agencies. Specifically, the provisions would:

- Encourage that the director of the Joint Artificial Intelligence Center report directly to the Secretary of Defense in order to skip several layers of bureaucracy that stifles innovation. The JAIC is an internal DoD organization responsible for the adoption and incorporation of AI capabilities across the Department. The provision further requires DoD to report to Congress on future plans for the organizational structure of the Center

- Encourage the Secretary of Defense to ensure that the JAIC is led by a three-star equivalent serving in the armed forces and ensure that the individual has operational experience in AI, machine learning, or relevant career field
- Add an additional examination to the Armed Services Vocational Aptitude Battery (ASVAB) test to better recognize recruits with exceptional computational skills relevant to military applications. Every potential recruit must take the ASVAB test before being accepted into the Armed Services, this provision will help ensure that these valuable skills are part of recruiting the best and brightest minds in AI from around the country
- Senator Heinrich cosponsored a successful amendment led by Sen. Marsha Blackburn (TN) that would require the Secretary of Defense to provide guidance on the use of existing direct hiring processes for artificial intelligence professionals and other data science and software development personnel. Existing direct hiring authorities enable the Department of Defense to onboard talented, in-demand AI professionals quickly.

### AI for Imaging and Analysis

Senator Heinrich secured a provision that would require the JAIC to provide a briefing that identifies military occupational specialties and capabilities across the military services and defense agencies that can better leverage AI to maximize effectiveness, mission goals, and cost savings to the federal government. The use of AI and machine learning technology to analyze image, video, and audio files has the potential to revolutionize the way militaries track threats and monitor developments around the world. Both technologies have the ability to learn and improve over time while freeing up human eyes for more complex tasks.

## New Mexico Innovation

### 3-D Printed Electronics Army Innovation Hub for Next Generation Additive Manufacturing

Senator Heinrich secured an additional $2 million for additive manufacturing (AM), which is already making innovative technological leaps that could yield major advances in more lethal and longer-ranged fires. New Mexico Tech and University of Texas at El Paso are leading entities in 3-D printing. This technology can combine existing and new materials into 3-D printed circuit architectures, producing smarter, lighter, and denser constructs to enable projectiles to double current ranges while achieving higher precision.

### Long-Endurance Aircraft

Senator Heinrich supported an increase of $33.5 million over the amount requested by the President to support a solar-powered long-range Intelligence, Surveillance, and Reconnaissance (ISR) platform capable of near continuous flight operations. The capability was one of the major requests of U.S. Southern Command. Additional funding will upgrade the existing aircraft's solar panels, fuel cells, structures, sensors, batteries,

and mission planning to address the military's ever-growing requirements for persistent ISR. New Mexico is home to some of the world's most innovative solar power innovators who are interested in collaboration with this long-range platform.

### Air Force Shelter Upgrades

Senator Heinrich led an amendment to secure up to $4.7 million for the Air Force to upgrade the energy efficiency of their small shelter systems. Funding will be used to support the purchase of insulation systems and solar shades to increase the energy efficiency of the Air Force's existing inventory of small shelters. Increasing the energy efficiency and reducing the fuel requirements of these small shelters decreases the Air Force's footprint when deployed during training and combat environments.

### Next-Generation Display Technology

Senator Heinrich secured $3 million to fund the research and development of high efficiency and ruggedized computer display technology in improving "soldier lethality." The technology is aimed at improving servicemembers' mobility by reducing the weight burden with carrying extra batteries and displays.

### Counter-UAS Technology

Senator Heinrich secured a provision requiring the Secretary of the Army to provide a briefing on the advances in imaging sensors, stabilization components, microelectronics, and lasers that make it easier to track and target unmanned unmanned aircraft systems (UAS) operated by our nation's adversaries. New Mexico is home to companies that specialize in the research and development of compatible stabilized gimbal systems that are capable of providing target detection, identification, and designation.

### Counter-Drone Center of Excellence

Senator Heinrich included a provision in the NDAA that encourages the Department of Defense to establish a counter-drone center of excellence. Currently, the nation faces a shortage of engineering graduates with the skills, clearances and education necessary to work on counter-UAS technology. Each military service is pursuing counter UAS research, development, test, and engineering activities that are independent of each other creating a need for a core team to bring all the efforts and partners (academic, industrial and government) together. The center would provide a centralized planning hub to better utilize scarce human and financial resources.

### Classified Workforce

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Senator Heinrich led an amendment that would require the Secretary of Defense to provide a briefing on how it can partner with Hispanic-serving, land-grant institutions to create a talent development program that provides experiential learning through internship programs and co-op programs with the military services and the Department of defense. The briefing will include information on how such programs can include pathways for security clearances that would serve both DoD and the students upon their entry into the workforce.

## New Mexico Military Construction Projects

### Support for the 512th Mission Operations Squadron

Senator Heinrich secured a provision that expresses support for funding in the next fiscal year (Fiscal Year 22) for a planned Squadron Operations Facility for the 512th Rescue Squadron at Kirtland Air Force Base. The 512th trains aircrew conducting search and rescue missions and is transitioning from the legacy UH-1N Huey helicopter to the MH-139 Grey Wolfe to improve mission performance. Construction of the Mission Operations Squadron is an integral part of ensuring Kirtland hosts a MH-139 Formal Training Unit, a development that would bring increased mission and resources to Kirtland.

### Holloman Air Force Base MQ-9 Training Facility

Senator Heinrich introduced a provision in the NDAA that encourages the Air Force to move forward with the construction of a new, $85 million military construction project that would host a Formal Training Unit (FTU) for MQ-9 unmanned aerial vehicle (UAV) operators. Last year, the Trump Administration transferred over $3 billion in military construction funding, including all funding for the Holloman MQ-9 facility, to finance the costly and ineffective wall along the Southwest border. The current Holloman FTU trains 100 percent of our nation's MQ operators and is structurally unsound for continued operations.

## Environment and Energy Resiliency

### Increased funding for Energy Resilience and Conservation Investment Program

Senator Heinrich supported $155 million in additional projects for the Department of Defense's Energy Resilience and Conservation Investment Program (ERCIP). The Department of Defense is the largest energy consuming organization in the world and the ERCIP was designed to fund projects that improve energy resilience, contribute to mission assurance, save energy, and reduce DoD's energy costs. ERCIP accomplishes these goals through construction of new, high-efficiency energy systems and technologies or through modernizing existing energy systems.

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Senator Heinrich also supported an effort to increase funding for the Readiness and Environmental Protection Initiative by $25 million. The REPI program is a key governmental tool that helps remove or avoid land-use conflicts near installations.