

**TESTIMONY OF
TREVOR WOODS
EXECUTIVE DIRECTOR, NORTHERN PLAINS UAS TEST SITE
BEFORE THE
SENATE APPROPRIATIONS COMMITTEE – GOVERNMENT OPERATIONS DIVISION
March 10, 2023**

HOUSE BILL NO. 1018

Mr. Chairman and Members of the Committee:

I am Trevor Woods, Executive Director of the Northern Plains Unmanned Aircraft Systems Test Site (NPUASTS). I have been part of the UAS community since 2010 and helped to establish the Test Site on behalf of the State when it was officially designated in December 2013. I have been the Executive Director since October 2021. I am testifying today in support of the Governor's funding request for the NPUASTS, which includes funding in the Commerce operating budget, and for Vantis, the State's beyond visual line of sight (BVLOS) unmanned aircraft system (UAS) program. The North Dakota UAS Program (i.e., NPUASTS) was established 10 years ago by the State Legislature, received federal designation by the Federal Aviation Administration (FAA), and is overseen by the Authority Board. We thank you for your continued support.

The Northern Plains UAS Test Site is recognized as a leader in the UAS industry. In moving forward, we will continue and expand this leadership throughout the State of North Dakota and beyond. The 2023-2025 North Dakota budget request is for \$6 Million for Test Site baseline operations, currently at \$3 Million as part of the Commerce general operating budget, \$30 Million in new funding for Vantis, and authorization to spend \$8 Million in external federal funding (NASA-AFRC-UAS) that will drive our vision to the next level. This funding supports the NPUASTS effort to:

- Provide for the development and building of capabilities in order to bring UAS programs and industry to the State.
- Guide regulatory and policy development needed to build and evolve a framework for industry to thrive in North Dakota.
- Enable the development of Government-to-Government agreements to enhance capabilities through a collaborative approach.
- Advance the state of the art in capabilities, procedures, and technology to support Advanced Air Mobility (AAM) and electric vertical take-off and landing (eVTOL) operations.
- Support Industry expansion across the State to address use case demand.
- Leverage opportunities with adjacent States to grow system capabilities into a regional capability for the betterment of North Dakota citizens.

2021-2023 KEY METRICS

- Northern Plains UAS Test Site
 - The 2021-2023 NPUASTS state appropriations was \$3 Million.
 - The NPUASTS was granted 23 new projects totaling \$6 Million of external funds being generated and supported 16 subcontractors; 10 of which are North Dakota based companies.
 - Approximately 46 jobs consisting of private industry and a mix of government jobs were supported.
 - The NPUASTS coordinated oversight of 32 regulatory approvals – 8 of which were directly approved to partners/clients. There are 10 additional pending regulatory approvals.

- Vantis Statewide BVLOS System
 - Competitive down select to Thales USA as long-term systems integrator.
 - System and flight testing and validation to support FAA regulatory approval.
 - Began on-boarding UAS companies to operate in North Dakota.
 - Expanding Mission and Network Operations Center capabilities.
 - Upgraded "key sites" and expansion to eastern North Dakota.
 - Vantis being recognized by other states and countries.
 - Partnership under development with Thales USA.
 - Initial FAA approval to allow a private sector partner to fly a drone BVLOS using Vantis.

MOVING FORWARD (July 2023 through June 2025)

Northern Plains UAS Test Site

- Entering calendar year 2023, the NPUASTS is already scheduled for more activities than there are current resources.
 - Time lag between proposal opportunities to funded initiatives can exceed 6+ months. The NPUASTS uses State funds to attract external funding opportunities for the organization, partners, and subcontractors.
 - The NPUASTS is making efforts to increase resources to support the growth of funding opportunities.

- Entering the new biennium with 13 projects already on contract and 9 more in the queue. Almost matching the number of projects of 2021-2023 as the organization starts 2023-2025. Additional State funding helps to:
 - Ensure local resources are available to execute to high levels of performance.
 - Provides ability to respond to funding opportunities like the FAA Broad Agency Announcement program to ensure more projects are continuing to come to the State.
 - Supports building foundational aspects of the NPUASTS, including policy development, regulatory advancement, marketing, and other activities that benefit all programs.
 - Supports acquiring assets and building capabilities to further enhance NPUASTS offerings.

- Department of Defense UAS Traffic Management program was authorized and is now being funded annually. This program is in addition to the work already mentioned previously.
 - Significant portion of the funding (~\$1.5 to \$3 Million) is expected to be contracted to the NPUASTS and other North Dakota UAS entities (e.g., Grand Sky).
 - Funding will occur annually and can increase.
 - Infrastructure is required – space for employees, contractors, bench testing, and engineering activities.

- Employees and contractors need to be hired now as work needs to execute immediately on award.
- Continue to support initial capability development to industry.
 - FAA programs – UAS Test Site and FAA Beyond require resources to staff, execute, and report out to advance regulatory frameworks.
 - Local industry – “Potluck” projects where teams come together to solve immediate, high-return problems.
- Key subcontracts
 - FAA’s Federally Funded Research and Development Center (FFRDC) providing specialized support for Advanced Aviation, Autonomy, and other high interest areas for the State.
 - Federal government relations are key for advising and steering the future of the industry – requires input to legislative language, supporting documentation, and funding requests that enable industry developments.
 - Local logistics support and agreements enabling access to controlled ranges and other resources of the North Dakota National Guard.
 - Marketing and communications

Vantis

The NPUASTS is also responsible for the administration of the Vantis program. The Vantis mission is to develop and implement a commercially operational UAS BVLOS flight system throughout North Dakota and other states. Vantis funding supports program management oversight, sustains the Mission and Network Operations Center (MNOC), supports operations and maintenance of Vantis infrastructure, design and deployment of new operational sites and services, and on-boarding of commercial/public UAS operators with appropriate Federal Aviation Administration (FAA)/government approvals. The following outlines the Vantis program plans for moving forward.

- Continued program management by State and Thales to drive Vantis program.
 - Continued contractual oversight with development and evolution of public private partnership (PPP)
 - Management and coordination of State assets (e.g., North Dakota Information Technology Department (NDITD) STAGEnet, North Dakota Department of Transportation (NDDOT) towers, MNOC).
 - Development of resources for legal, intellectual property, and commercialization
- Operational components of the system
 - Regulatory, safety, and security oversight of the system
 - Test Site operational and safety processes and staff for testing and validation
 - Operations and maintenance (O&M) staffing and other direct costs (ODC) for MNOC and system to include development of Vantis Standard Operational Procedures
- Continued engagement of Federal and State regulatory officials for approvability and commercialization
 - FAA/Federal Government collaboration in establishing standards, policies, and operational approvals.
 - Integration of FAA/DoD radar data into MNOC
- Infrastructure expansion
 - Site preparation including Tribal notification, site selection, installation engineering drawings and set to work. Support installation, permitting, access, Federal

- Communications Commission (FCC) licenses with focus on reuse of NDDOT towers and local airport sites.
 - NDITD connectivity – continued growth, connections, and management into STAGEnet as system expands.
 - Expand western and eastern regional installations toward central North Dakota (e.g., Bismarck, Minot) driven by use cases ~4 additional radar sites plus 14 communications locations to connect drones to Vantis.
 - Systems engineering to connect FAA/DoD and third-party radars to Vantis and other technology advancements.
- Community engagement
 - Supporting of local/regional conferences, meetings, STEM, etc., through State and local economic development corporations, chambers of commerce, and ND Dept of Commerce
 - Public agencies and commercial companies support for leveraging Vantis investment.
 - Federal and Tribal nations use case expansion (e.g., leverage UND & Federal DoT grants)
- Development of opportunities in and out of state
 - Building North Dakota UAS ecosystem and bringing companies to North Dakota
 - State government-to-government services from NPUASTS and Vantis to other states/customers
 - Support expansion to other states – contracts back to North Dakota for regulatory support, research & development (R&D) of local systems, and MNOC services

BENEFITS TO THE STATE

- The state's revenue return from NPUASTS/Vantis can include: 1) revenue share on Vantis services, 2) royalties on software intellectual property, 3) additional commercial and governmental contracts/agreements (e.g., DOD), and 4) tax revenues with creation of new jobs. Over the next 10 years these revenues are estimated to grow from millions to tens of millions annually.
- Creation of a diversified, high tech work force and industry within the State.
- Developing public-private partnerships will enable royalties, funding options, and cost-share, while distributing program risk.
- Vantis sites installed in McKenzie, Williams, Cass, and Grand Forks counties with local leaders and economic development corporations well engaged to bring services to local communities.
- Mission and Network Operations Center (MNOC) operational at Grand Sky as a State asset and can be leveraged for system expansion to other states.
- Multiple new UAS companies establishing presence in North Dakota (e.g., Thales, uAvionix, Airspace Link, Capital Science, Phoenix Air Unmanned, Asylon).
- Evolution of Grand Sky Ground Based Sense and Avoid System (GBSAA) with Thales upgrading based on Vantis architecture. This leads to a long-term seamless continuity between Grand Sky and rest of Vantis.

- Multiple states connecting with NPUASTS and Thales to support their in-state developments.
- Interests internationally with 10+ countries received Vantis demonstrations brought forth by FAA.

JOBS AND TAX REVENUE

There are currently ~1000-1200 jobs and 40-50 companies related to UAS in North Dakota that were largely created over the past 10 years. This North Dakota “UAS ecosystem” can create thousands of more jobs over the next 10 years. To quote AUVSI (world’s largest non-profit organization dedicated to the advancement of uncrewed systems and robotics):

“Through strong investment into this emerging technology, North Dakota is creating space for a new industry that will create new jobs and bring in outside commercial investment. North Dakota remains one of the fastest growing states, and by welcoming the UAS industry they are diversifying their economy away from their traditional top sectors to ensure long-term economic stability.”

Below are employment and tax economic impact estimates to the State of North Dakota.

- Direct employment from Test Site and Vantis (State and subcontractors) is estimated at 177 by 2033 to support the Test Site Integration mission, Vantis Mission and Network Operations Center, in-field maintenance and technical support, and additional jobs to support new development and capabilities.
 - Estimated tax revenue from direct jobs supporting Vantis over the next 10 years is ~\$8.5M with sustained yearly tax revenue of \$1.1M per year after that
- The North Dakota UAS ecosystem to include NPUASTS and Vantis is projected to create ~3,000 additional UAS industry direct jobs by 2033 that support UAS operations, data collection/analysis, logistics, manufacturing and engineering.
 - Estimated tax revenue from ~3000 UAS industry direct jobs over the next 10 years is ~\$139M with sustained yearly tax revenue of \$32M per year after that.

NORTH DAKOTA CENTURY CODE

To continue to move NPUASTS/Vantis forward in an effective and efficient way, a need has been identified for revisions to the North Dakota Century Code (54-60-28, 54-60-29, 54-60-29.1) to:

1. Allow the Northern Plains UAS Test Site (NPUASTS) to operate and act in a more efficient manner that aligns closer to Industry. There will still be governance, oversight, and audit capabilities. Today, Commerce must sign off on every decision as the legally responsible entity but with the proposed changes to the NDCC, a more efficient contracting mechanism can be employed that creates efficiency for the State and for Industry. Given the maturity of this industry, the ability to maintain a government component is critical.
2. Authorize ability to enter into contracts or agreements with federal, state, private, and nonprofit organizations to carryout partnerships, joint ventures, or other appropriate legal business relationships with industry. This ability to enter into Public-Private Partnerships will diversify funding opportunities and increase revenue stream potential to sustain growth in the marketplace. Industry needs the public sector to lead inherently governmental conversations at Federal and State levels, and North Dakota needs industry ability to invest and capitalize.
3. Authorize ability to explore and develop in adjacent and related opportunities of autonomy and uncrewed systems. Industry and other states are already exploring Advanced Air Mobility and eVTOL opportunities. This builds on the foundation already in existence with uncrewed aircraft systems.

The language of NDCC 54-60-28, 54-60-29, and 54-60-29.1 was amended in the House to reflect the identified goals.

Thank you for your time and consideration.



Trevor Woods,
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Northern Plains UAS Test Site