

**TESTIMONY OF  
ROBERT J BECKLUND  
EXECUTIVE DIRECTOR, NORTHERN PLAINS UAS TEST SITE  
BEFORE THE  
ECONOMIC IMPACT COMMITTEE  
SEPTEMBER 17, 2015**

Madam Chairman and Members of the Committee:

I am Robert Becklund, Executive Director of the Northern Plains Unmanned Aircraft Systems Test Site (NP UAS TS) and here to report on the status of the Unmanned Aircraft Systems Program, established by the Federal Aviation Administration (FAA) under the North Dakota Department of Commerce, to administer an unmanned aircraft systems test site in cooperation with the University of North Dakota, North Dakota State University, the Aeronautics Commission, the Adjutant General and private parties appointed by the Governor.

**Background**

The FAA governs all airspace access in the United States. On February 14, 2012, the 2012 FAA Modernization and Reform Act (FMRA) was signed into law requiring the FAA to choose six UAS National Test Sites (NTS). These NTS's are intended to provide controlled environments where limited integration of UAS into the National Airspace System (NAS) may occur and offer airspace and support services for industry to research, develop, test and certify their Unmanned Aircraft Systems (UAS) and related technologies. Additionally, the UAS national test sites were envisioned to allow for the development of operational standards to form a blueprint for the eventual full and safe integration of UAS into the NAS. Congress also called for the full and safe integration of UAS into the NAS by September 30, 2015, including provisions for the commercial use of UAS in the NAS. However, the FAA will not meet that deadline only recently releasing for public comment a proposed rule relating to small UAS. Additionally, the FAA is not providing funding to any of the six test sites to help them meet their goals. Despite these facts, North Dakota's designation as one of the national test sites will certainly help the FAA make progress towards their mandates by providing industry with premier locations and capabilities to test and certify their aircraft - simultaneously creating opportunities to build the UAS industry in North Dakota.

According to the March 2013, Association of Unmanned Vehicle Systems International (AUVSI), *The Economic Impact of Unmanned Aircraft Systems Integration in the United States* report, the UAS global market is currently \$11.3 billion. Over the next 10 years, the UAS global market will total \$140 billion. The economic impact of US airspace integration will total over \$13.6 billion in the first three years and will grow substantially for the foreseeable future, cumulating to more than \$82.1 billion between 2015 and 2025. Most notably as it relates to the need for continued support for our state's initiatives in UAS, the report also says: "While we project more than 100,000 new jobs by 2025, states that create favorable regulatory and business environments for the industry and the technology will likely siphon jobs away from states that do not."

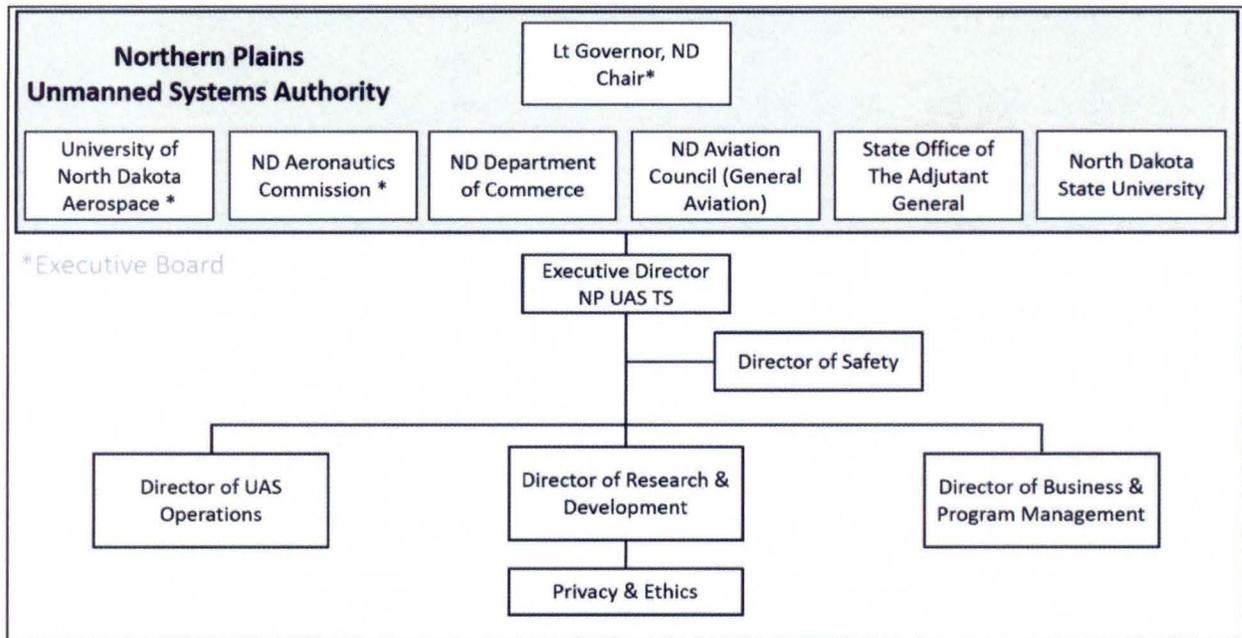
Significant influencing factors in North Dakota's successful selection as one of the UAS National Test Sites includes our experience in the aerospace/UAS industry, statewide engagement, and financial support. UAS hold tremendous potential to serve the benefit of mankind in countless ways, create lasting jobs, diversify our economy and further advance North Dakota as a leader in technology and innovation.

The resources committed by North Dakota have been used successfully to receive FAA designation as a NTS, establish and fund initial operations of the NP UAS TS – all in collaboration with broader state efforts to develop the commercial UAS industry and promote economic development in North Dakota. The NP UAS TS has a pragmatic fiscal philosophy and is continually considering all options to minimize costs and utilize existing North Dakota resources where applicable. For example, we are leveraging existing capabilities of our team members such as the UAS expertise at the University of North Dakota (UND) and the research, agricultural and engineering expertise at North Dakota State University (NDSU). Because we are receiving no funding from the FAA for the test site program, North Dakota's prospects to build a UAS industry in the state would be dramatically diminished without state support.

### **Northern Plains UAS Test Site**

The NP UAS TS was established on December 30, 2013, upon award of the designation by the FAA following a nation-wide competition. North Dakota, under the umbrella of the Department of Commerce, was one of only six states selected for such designation from a pool of twenty-five states that submitted applications. The other recipients of the UAS Test Site designation include the University of Alaska, Virginia Polytechnic Institute and State University (Virginia Tech), Texas A&M University–Corpus Christi, the State of Nevada, and New York's Griffiss International Airport. Our contracts with the FAA currently run through February 2017 and we are seeking extension in order to capitalize on existing contracts with periods of performance that extend beyond this date. We are very proud of our selection and have spent this past 21 months meeting FAA requirements to become operational while simultaneously working to increase the earned trust level we enjoy with both industry and the FAA. Our goal is to be recognized as the premier UAS Test Site in the nation by building a foundation for the growing UAS industry and attracting a variety of companies to conduct their UAS research and locate their businesses in North Dakota.

The NP UAS TS is comprised of formal team members including the University of North Dakota Aerospace; North Dakota State University; the North Dakota Department of Commerce, the North Dakota Aeronautics Commission; and the Office of the Adjutant General. The Northern Plains Unmanned Systems Authority, created by an executive order of the Governor on May 28, 2013, oversees the NP UAS TS. The Authority is chaired by the Lieutenant Governor and is comprised of representation by the principle leadership of each team member as well as a representative from the North Dakota Aviation Council.



### Status of the NP UAS TS

It has been a very dynamic and busy time since our selection – a period highlighted by numerous achievements and accomplishments worthy of mention. Due to the solid foundation of our team, on April 21, 2014, we were the first UAS Test Site designated operational by the FAA. Additionally, and in less than six months from initial FAA announcement, on May 5, 2014, we were the first of the UAS Test Sites to begin operational test flights under the provisions of the FAA’s UAS Test Site program. More “firsts” include our award of the nation’s first Test Site Broad Area Certificate of Waiver or Authorization (COA) allowing UAS operations anywhere in the state of North Dakota; the first to receive authorization for night operations and the first allowed to utilize daisy-chained visual observers.

Locally, we have created five full-time positions in Grand Forks and are now fully staffed as planned. Our full-time personnel, all acquired through competitive processes, include myself as Executive Director; the Director of Safety; the Director of Business and Program Management; a Mission Coordinator to support field operations primarily for NDSU and an Administrative Assistant. Additionally, we are utilizing a combination of leveraged personnel from within our team member’s organizations, primarily UND and NDSU. Costs associated with all positions will be offset, and conceivably ultimately entirely covered, by external contracts as operations expand.

We are naturally dependent upon the FAA to create unique advantages for the test sites to provide to industry, so the NP UAS TS is working very closely with the FAA by taking a proactive position on organizing and operating a test site that both fulfills the expectations of the FAA and will ultimately generate economic results for North Dakota. As an example, the FAA has authorized the NP UAS TS to issue Special Airworthiness Certificates in the Experimental Category to aircraft that meet FAA requirements for such certification. Presently, the only other way for an applicant to obtain an Experimental Certification for their aircraft is directly from the

FAA. However, a primary issue preventing industry from seeking these certifications is that the FAA has yet to define a clear path for experimentally certified aircraft to receive a follow-on certification that permits commercial operations.

Despite the incredible technological, procedural, policy and funding challenges faced by the FAA for the safe integration of UAS, we are committed as a team to assist them in achieving success while not compromising the safety of our citizens or the existing commercial and civil aviation activities in North Dakota. We also remain committed to promoting and pursuing all opportunities to attract and develop a vibrant private sector UAS industry base in North Dakota. An example of efforts to do so include the recent FAA authorization we earned that allows us to operate across the entire state of North Dakota. The NP UAS TS airspace authorization is unique in the nation and unprecedented for a non-federal entity and is intended to enable industry more efficient and streamlined access to airspace that they cannot get anywhere else. Additionally, we have been awarded authorization to operate anywhere in the United States below 400' Above Ground Level (AGL) with some limitations.

The NP UAS TS has received an incredible amount of world-wide attention and interest due to our growing reputation as a leader in "all things UAS". Specific examples include over 350 news articles, and scores of radio, television, and social media stories specifically about North Dakota's UAS efforts published since our selection as a UAS Test Site. We have had detailed discussion with over 100 companies resulting in over 30 executed Non-Disclosure Agreements (NDA) with those seriously interested in learning more about opportunities to use the NP UAS TS for their research and certification needs. As we work with these companies, we maintain direct engagement with Department of Commerce staff to make sure all opportunities are pursued to attract business operations including advanced manufacturing, high-tech business, agriculture, energy, transportation, etc., resulting in multiple contracts for services.

We have been aggressively and proactively ensuring that any perceptions or actual issues regarding privacy and ethics of unmanned aircraft are taken into consideration. We are utilizing UND's UAS Research Compliance Committee as the means to do so. This committee is unique in the country and has been incredibly effective for providing an open forum for public awareness and discussion about any aspect of research taking place at the NP UAS TS. Additionally, the forum offers a feedback opportunity for any concerns ultimately culminating in an approval prior to any research flights. We have had no complaints from either the private sector or the public related to privacy or ethics of UAS flown at the NP UAS TS.

None of these mission successes and the many accomplishments of the NP UAS TS would be possible without the continuing support of our Governor, Legislature, and each of our team members.

### **Budget**

The 63<sup>rd</sup> Legislative Assembly appropriated a total of \$5,000,000 to support North Dakota's UAS program during the 2013-2015 biennium: \$1,000,000 was appropriated to fund the state's efforts to obtain NTS designation by the FAA, and \$4,000,000 to operate the test site, contingent upon receiving the designation by the FAA. Efforts were successful and, as previously mentioned, we achieved designation as one of the six test sites on December 30, 2013. Once North Dakota formally received the designation, expenses were no longer funded from the \$1,000,000 funding pool. All expenses were subsequently funded from the \$4,000,000 funding pool. Total funds

expended from the \$1,000,000 funding pool were \$482,619.07 and the balance of those funds was allowed to be carried-over into the current biennium to support funding operations of the NP UAS TS. Due to a number of factors, particularly that test site operations started six months later than anticipated due to the unexpected length of the selection process, we had \$1,342,762 of unexpended funds remaining from the \$4,000,000 funding pool that we were also allowed to carry over into the 2015-2017 biennium to support funding operations of the NP UAS TS.

The operating budget for the NP UAS TS through the 2015-2017 biennium is estimated at \$4,240,000. The Governor's budget recommendation of \$2,718,620 along with carry-over of unexpended 2013-2015 biennium funds will provide the necessary funds to operate the NP UAS TS through the current biennium. Although we just starting to earn revenue from both private and public sector clients, our budget does not rely on external revenue at this time. This is prudent as the nations' commercial UAS market is still in its infancy and we need to ensure that North Dakota continues to play a key role in its development. Earned revenue from NP UAS TS clients will be deposited in the Unmanned Aircraft Systems Program Fund to defray future expenses of the operations of the NP UAS TS.

### **Economic Impact**

North Dakota's previous investments in UAS have allowed us to be positioned as a key player and in a position of influence in the UAS sector. We are just beginning to see a return on investment and anticipating that these next few years will be key to our national efforts in UAS. As a result of receiving state funding to continue supporting baseline operations of the NP UAS TS, we have been able to expand our already strong position in the nation and not only enable, but also capitalize on, the blossoming commercial opportunities of UAS. The NP UAS TS is already having a positive economic impact to North Dakota both directly and indirectly.

Direct economic impacts include contracts to support multiple agencies, companies, events and personnel including:

- Assisting numerous local start-up businesses related to UAS such as Northrop-Grumman Corporation, BBI International, SkySkopes, Altavian, SmartC2 and Botlink.
- A 5-year Indefinite Delivery Indefinite Quantity (IDIQ) contract with NASA valued at \$5M. Each of the UAS test sites will be able to compete for work under this contract. The NP UAS Test site has already responded to two Requests for Proposal (RFP) under this contract – one already awarded for approximately \$200K and the other we are anticipating being awarded shortly with a value of approximately \$300K.
- A 5-year IDIQ contract with the FAA's Technical Center also valued at \$5M. Similarly, each of the UAS test sites will be able to compete for work under this contract. No RFP has yet been issued by the FAA against this contract.
- A partnership with the Alliance for System Safety of UAS through Research Excellence (ASSURE) Coalition under the FAA's recently awarded UAS Center of Excellence program. This is an FAA-funded program expected to utilize the UAS Test Sites. No RFP has yet been issued by ASSURE under this contract.
- Approximately 50 individuals from 20 companies have travelled to North Dakota to meet specifically with the NP UAS TS to learn about opportunities we can offer them.

- In place contracts supporting multiple private sector companies and public entities either directly or through our research universities (NDSU and UND). Total value of these contracts for NP UAS TS services is approximately \$615K with another one anticipated to be awarded shortly with an expected value of \$300K. It is important to note that these services are part of broader contracts for UAS research with either UND or NDSU with a total value of approximately \$3M.
- The 9<sup>th</sup> Annual UAS Summit will bring approximately 500 people to the Grand Forks area for a 3-day meeting related to UAS with a large focus on the NP UAS TS. In association with this year's summit, the NP UAS TS will host a public meeting with the FAA to discuss innovation and opportunities at the Test Site.
- Our current appropriation requires us to set aside \$1.2M as a match to incentivize industries to utilize the Test Site. Our program is designed to allow a maximum of \$100K in matching effort to 12 individual companies with hopes that they will ultimately provide a direct economic impact to North Dakota by expanding or growing their businesses here.

Indirect economic impacts include:

- The bounty of extremely positive press stories previously mentioned with an incalculable value in advertising alone.
- NDSU and UND are both engaged in multiple funded research projects related to UAS due in part to their connections to the NP UAS TS. Some of these projects will expand into direct contracts with the NP UAS TS to support future flying requirements.
- Private donors have committed \$25M to construct a UAS building in Grand Forks at the University of North Dakota Aerospace based upon our region's reputation gained through demonstrated performance. This reputation continues to grow and, as it does, more and more people are taking a look at the opportunities related to UAS here in North Dakota.

Our efforts are not without challenges. It has been a very dynamic period since selection as an FAA UAS Test Site. Notably, the FAA has been responding to pressures from Congress as well as industry to do whatever they can to expedite opportunities for commercial operations. The FAA has been constantly reorganizing and just recently announced the hiring of two new senior executives that will lead their efforts in UAS integration beginning the end of this month. To date, the FAA's responses to these pressures have created opportunities for industry to operate UAS without utilization of the UAS Test Site program. All UAS operators must receive a COA that serves to waive certain regulations, restrict operations to specific pre-defined boundaries within the NAS and to define any specific operational limitations. Commercial flight of UAS is currently authorized only through an airworthiness exemption under Section 333 of the FMRA. Exemptions and any associated limitations under Section 333 have typically been very restrictive for commercial UAS operations in the U.S. But, in just the last 12 months, the FAA has issued over 1500, and counting, airworthiness exemptions to unmanned aircraft allowing operations for civil commercial or research purposes.

Additionally, the FAA has entered into Cooperative Research and Development Agreements (CRADA) directly with multiple private industry firms to conduct research related to UAS integration and operations in our national airspace system. These currently approved UAS

operations have, as you'd expect, many restrictions for their operators. These limitations provide opportunity for the UAS Test Sites and industry partners to conduct research beyond the limitations such as aircraft that need to fly higher, faster, carry heavier payloads, or operate in a Beyond Visual Line of Sight (BVLOS) environment.

Another challenge we face is authority to operate on certain bands in the Radio Frequency (RF) Spectrum. UAS require electronic links for both Control and Non-Payload Communications (CNPC) and payload data links. These frequencies need to be interference free and deconflicted from other users of the particular RF bands we need to utilize. This is a worldwide issue not unique to the UAS Test Sites, but a significant issue worthy of noting. Many agencies at the national level are working on these issues, but we are impacted in the interim. As an example, we currently have two funded projects awaiting approvals to operate due to RF spectrum issues.

### **Summary**

Our end goal of all of this investment and effort is to ultimately support the development of a new industry in the United States, and position North Dakota as the prime location for UAS companies to establish operations. Already, we have seen notable successes including the recent announcement of the Florida-based UAS company, Altavian, selecting North Dakota as the primary location for their UAS manufacturing operations; and the Grand Sky UAS industrial property development at Grand Forks AFB just celebrated their ground-breaking. Additionally, Grand Sky has multiple clients either already committed or in serious negotiations for lease options including their initial tenant, Northrop-Grumman Corporation, who will break ground for their new facility next month.

The Department of Commerce and the entire NP UAS TS team have been aggressively working to attract private sector clients to work with the test site resulting in several contracts to begin conducting research and/or aircraft certification in 2015. Based upon the multitude of companies involved in mature discussions, we expect that many more will result in business activity for the test site and North Dakota assuring our growth as our experience and reputation grows. Although it is impossible to predict how many clients we may ultimately serve, it is not unrealistic to assume that, at times, we could be challenged with more business than we are able to handle – a great problem to have and we look forward to it.

Madam Chairman that completes my testimony and I will be glad to answer any questions.