Legislative Council
600 East Boulevard Avenue, Bismarck, ND 58505

WORKFORCE COMMITTEE

Thursday, November 30, 2023
Discovery Hall, Energy and Environmental Research Center
University of North Dakota, Grand Forks, North Dakota
Friday, December 1, 2023
Hidatsa Room, Memorial Union, North Dakota State University, Fargo, North Dakota

Representative Shannon Roers Jones, Chairman, called the meeting to order at 9:04 a.m.

Members present: Representatives Shannon Roers Jones, Dick Anderson, Josh Christy, Hamida Dakane, Jay Fisher, Mike Motschenbacher, Scott Wagner, Jonathan Warrey; Senators Jeff Barta, Ryan Braunberger, Randy A. Burckhard, Michael A. Wobbema

Member absent: Representative Landon Bahl

Others present: See Appendix A

It was moved by Senator Barta, seconded by Representative Motschenbacher, and carried on a voice vote that the minutes of the September 28, 2023, meeting be approved as distributed.

EXISTING AUTONOMOUS SYSTEMS AND INFRASTRUCTURE STUDY

Mr. Brandon Bochenski, Mayor, Grand Forks, welcomed the committee to Grand Forks.

Mr. Charles Gorecki, Chief Executive Officer, Energy and Environmental Research Center, provided welcoming remarks to the committee.

Mr. Dustin A. Richard, Counsel, Legislative Council, presented a memorandum entitled *Existing Autonomous Systems Study - Background Memorandum*.

Ms. Cortnee Jensen, Executive Director of Strategic Partnerships, University of North Dakota, provided testimony (Appendix B) relating to the committee's study of existing autonomous systems and infrastructure in North Dakota. She noted:

- Autonomy is the ability to perform complex tasks with a sustainable reduction of human intervention.
- Artificial intelligence is a critical component of autonomy.
- Artificial intelligence is the development of computer systems to perform tasks typically performed by humans.
- Autonomy is used in several industries within the state, including agriculture, transportation, manufacturing, construction, energy, and data management.

Dr. Mark Askelson, Associate Vice President for National Security Research, University of North Dakota, provided testimony (Appendix C) regarding the committee's study of existing autonomous systems and infrastructure in the aerospace industry in North Dakota. He noted:

- The Research Institute for Autonomous Systems is a program at the University of North Dakota (UND) to promote and grow autonomous research and systems around the world.
- Recent trends have shown machines are performing tasks traditionally completed by a human.

Mr. Trevor Woods, Executive Director, Northern Plains Unmanned Aerial Systems Test Site, provided testimony (Appendix D) regarding the committee's study of existing autonomous systems and infrastructure in the aerospace industry in North Dakota. He noted:

- The amount of time and funding required to train pilots is causing workforce shortages in the aviation sector.
- Autonomous systems will help relieve some workforce pressures in the aviation sector.
- The average age of a commercial airline fleet is increasing in the United States.
- The role of the Northern Plains Unmanned Aerial Systems (UAS) Test Site is to innovate, test, and advance aerial autonomy across North Dakota and the United States. The test site addresses technology implementation and regulatory challenges facing industry and governmental partners in advancing aerial autonomy.
- North Dakota is a national leader in aerial autonomy.

Ms. Erin Roesler, Director of Operations, Vantis, and Mr. Frank Matus, Director, Air Traffic Control and Digital Aviation Solutions of the Americas, Thales, provided testimony (Appendix E) regarding the committee's study of existing autonomous systems and infrastructure in the aerospace industry in North Dakota. They noted:

- Vantis is North Dakota's UAS network, and is one of seven sites tasked with integrating drones into the national airspace.
- Several barriers including laws, regulations, and the lack of shared infrastructure hinders the full use and integration of drones into the national airspace.
- Vantis is attempting to create a sanitized airspace that allows several different aircraft types to operate simultaneously at different altitudes.
- While hardware and software are key components of the Vantis network, policies, procedures, safety plans, and management protocols are equally important to ensuring the national airspace remains safe and functional.
- Due to the work at Vantis, the federal government is becoming less apprehensive about the integration of drones into the national airspace.

Mr. Tom Swoyer, President, Grand Sky Development Company, LLC, provided testimony (Appendix F) regarding the committee's study of existing autonomous systems and infrastructure in the aerospace industry in North Dakota. He noted:

- One of Grand Sky's primary missions is to support and integrate emerging technologies for the United States Department of Defense.
- Grand Sky is retrofitting and installing RQ-4 Global Hawk aircraft with autonomous technology for the United States Department of Defense.
- Continued investment in programs such as the legacy investment for technology loan fund will bolster the development of autonomous systems and emerging technologies in the state.
- Policies and regulations that hinder the development and deployment of autonomous systems are discouraged.

Mr. Tommy Kenville, Founder and Chief Executive Officer, ISight Drone Services, provided testimony (Appendix G) regarding the committee's study of existing autonomous systems and infrastructure for safety purposes in North Dakota. He noted Isight Drone Services is a private business, which employs 29 commercially licensed pilots and operates in the agriculture, communication, emergency services, energy, and insurance sectors.

Ms. Tanya Sand-Driver, Geographic Information System Director, Three Affiliated Tribes of the Fort Berthold Reservation, provided testimony (Appendix H) regarding the committee's study of existing autonomous systems and infrastructure in North Dakota. She noted the Three Affiliated Tribes will need to obtain a beyond visual line of sight waiver from the Federal Aviation Administration to continue the expansion of drone use on the Fort Berthold Reservation.

Mr. Darin Hanson, Director, Homeland Security Division, Department of Emergency Services, provided testimony (Appendix I) regarding the committee's study of existing autonomous systems and infrastructure for safety purposes in North Dakota. He noted:

- During emergencies, the Department of Emergency Services (DES) coordinates and assembles agencies and stakeholders to address ongoing crises.
- Regulatory hurdles and constraints that stem from federal policies or regulations are a significant concern.
- DES monitors and counters threatening drone use.

Mr. Travis Nelson, Trooper, North Dakota Highway Patrol, provided testimony (Appendix J) regarding the committee's study of existing autonomous systems and infrastructure for safety purposes in North Dakota. He noted:

- Crash reports for the North Dakota Highway Patrol are generated by autonomous systems.
- These reports generally are used and accepted as evidence as part of insurance claims and court proceedings.

Mr. Matthew Dunlevy, Founder, Chief Executive Officer and Chairman, SkySkopes, Inc., provided testimony regarding the committee's study of existing autonomous systems and infrastructure for the inspection of infrastructure in North Dakota. He noted:

- Drones are detecting energy inefficiencies in buildings by capturing heating and cooling losses with the use of thermodynamic cameras.
- Due to the regulatory and business-friendly climate of North Dakota, investment in the state's drone industry allows investment dollars to be stretched further as opposed to investment in other states with more stringent regulations.
- First responders have increased the use of drones to help save lives. The University of North Dakota and TrainND Northwest are two of the premier UAS programs in the country.

Ms. Terri Zimmerman, Chief Executive Officer, Packet Digital and Botlink, provided testimony (Appendix K), regarding the committee's study of existing autonomous systems and infrastructure in North Dakota. She noted:

- Packet Digital and Botlink develop, build, and distribute power modules for autonomous systems on the ground, underwater, and in space.
- The autonomous systems market is valued at approximately $38 billion. By 2028, the market is forecasted to be $62 billion.
- Packet Digital's subsidiary, Badland Batteries, plans to construct and operate a battery cell production factory in North Dakota to reduce dependence on foreign manufacturing.

Ms. Bethany Kurz, Director of Analytical Solutions, Energy and Environmental Research Center, provided testimony (Appendix L) regarding the committee's study of existing autonomous systems and infrastructure in North Dakota. She noted:

- More aggressive oil well stimulation techniques have enabled drilling operators to extract and recover larger amounts of crude oil in the Bakken Formation.
- Enhanced oil recovery paired with autonomous technology likely will extend high levels of oil and gas production in the state.

Dr. Ryan Adams, Associate Director of the National Security Initiative and Professor of Engineering, University of North Dakota, provided testimony (Appendix M) regarding the committee's study of existing autonomous systems and infrastructure in North Dakota. He noted:

- The College of Engineering and Mines at UND works with private and public partners to advance the growth of autonomous systems and artificial intelligence.
- Information must be relayed as quickly and predictably as possible to achieve maximum latency and jitter metrics in autonomous systems.

Mr. Seth Arndorfer, Chief Executive Officer, Dakota Carrier Network, provided testimony (Appendix N) regarding the committee's study of existing autonomous systems and infrastructure and the facilitation of these systems in North Dakota. He noted:

- Per capita, North Dakota is the most fiber-connected state in the United States. Autonomous systems are unable to thrive in the state without an expansive and robust fiber optic network.

- Additional fiber infrastructure and vertical assets need to be installed to expand autonomous systems in the state.
- It is possible to achieve 5G speeds throughout the state if transmission towers are placed no further than 5 miles apart.

Mr. Anthony Molzahn, Co-founder and Chief Executive Officer, Devii, provided testimony (Appendix O) regarding the committee's study of existing autonomous systems and infrastructure and the facilitation of these systems in North Dakota. He noted:

- The Internet is composed of digital pipes, known as application programming interfaces, which allow for the free flow of data and information.
- Devii developed technology to build application programming interfaces autonomously to save on time and labor.

Mr. William Cromarty, Founder and Chief Executive Officer, Kirkwall, LLC, provided testimony (Appendix P) regarding the committee's study of existing autonomous systems and infrastructure and the facilitation of these systems in North Dakota. He noted:

- Kirkwall LLC, defends drones, autonomous agricultural equipment, and autonomous industrial control systems from critical failure.
- Most agricultural companies outsource cybersecurity and autonomous defense to third-party specialists.
- The wolfhound program is a program where technology companies contract with the United States military to replace corrupted code within military infrastructure.
- Some studies suggest that drones delivering Narcan to rural and indigenous areas is more efficient than by an ambulance.

Ms. Anita Frederick, President, Tribal Nations Research Group, provided testimony (Appendix Q) regarding the committee's study of existing autonomous systems and infrastructure in North Dakota. She noted:

- Tribes in North Dakota are using drones for drug and international border surveillance, emergency service response, crop identification, and abandoned or dangerous building inspections.
- Autonomous systems are being developed to maintain grass and remove snow.

Mr. Josh Riedy, Founder and Chief Executive Officer, Thread, provided testimony (Appendix R) regarding the committee's study of existing autonomous systems and infrastructure and the facilitation of these systems in North Dakota. He noted:

- Society is becoming more technologically advanced, and the demand for electrical power will continue to rise.
- Continued investment in start-up technology companies like Thread will make North Dakota a desired destination for autonomous development.

Mr. Brian Opp, Technological Systems Business Development Manager, Department of Commerce, provided testimony regarding the committee's study of existing autonomous systems and infrastructure and the facilitation of these systems in North Dakota. He noted the state has numerous talented and collaborative individuals who are passionate about the continued development of autonomous systems in the state.

Mr. Kenley Nebeker, Executive Director, TrainND Northwest, provided testimony (Appendix S) regarding the committee's study of existing autonomous systems and infrastructure and the facilitation of these systems in North Dakota. He noted:

- Individuals seeking to become data managers for autonomous systems need updated workforce training.
- TrainND Northwest is creating workforce training programs centered around the use of artificial intelligence in UAS technologies.
- TrainND created a UAS curriculum for high school students attending career and technical education centers throughout the state. The curriculum was funded with appropriations from the Legislative Assembly.

Mr. Mason Sisk, Senior Policy Advisor, Governor's office, provided testimony regarding the committee's study of existing autonomous systems and infrastructure and the facilitation of these systems in North Dakota. He noted the

Governor's office is eager to work with the Legislative Assembly to create a statewide plan for autonomous systems.

Mr. Peter Johnson, Director of Government Relations and Public Affairs, University of North Dakota Alumni Association and Foundation, thanked the committee for holding the first day of the meeting at UND.

The committee recessed at 3:26 p.m. on Thursday, November 30, 2023, and reconvened at 10:03 a.m. on Friday, December 1, 2023, in the Hidatsa Room, Memorial Union, North Dakota State University, Fargo.

Mr. Alan Kallmeyer, Interim Dean of Engineering, North Dakota State University, and Mr. Frank Casey, Associate Director of the North Dakota Agricultural Experiment Station, provided testimony (Appendix T) regarding the committee's study of existing autonomous systems and infrastructure in the agriculture industry in North Dakota. They noted:

- North Dakota State University engineering students are constantly studying, interacting, and creating new autonomous technologies during coursework.
- Drones purchased with federal grants must be made in the United States.

Mr. Maynard Factor, Vice President of Business Development, Kratos Defense and Security Solutions, provided testimony (Appendix U) regarding the committee's study of existing autonomous systems and infrastructure in the agriculture industry in North Dakota. He noted:

- Autonomous platoon trucks travel at posted roadway speeds.
- The autonomous platoon program uses trucks that allow human riders to easily shut down autonomous functions and retain control of the vehicle.
- In an autonomous truck platoon, the human driven lead truck sets the gap between all other autonomous trucks.
- Redundant navigation systems, braking systems, sensors, and active safety systems are integrated into the trucks used in the autonomous truck platoon to ensure safety and proper handling.

Dr. William Aderholdt, Director, Grand Farm, provided testimony (Appendix V) regarding the committee's study of existing autonomous systems and infrastructure in the agriculture industry in North Dakota. He noted:

- Autonomous systems on farms need reliable and dependable fiber optic connectivity.
- Grand Farm uses and continues to add innovative systems to explore and validate emerging autonomous technologies.
- Testing and implementing emerging autonomous technologies helps establish the capabilities and limitations of these systems in an agricultural setting.

Mr. David Batcheller, General Manager, Appareo Systems and Site Leader, AGCO Corporation, provided testimony (Appendix W) regarding the committee's study of existing autonomous systems and infrastructure in the agriculture industry of North Dakota. He noted:

- AGCO tests and implements precision agricultural technologies at Dakota Smart Farm, which is a 300-acre extension of Grand Farm.
- At present, autonomous agricultural systems do not know how to calculate and weigh correct outcomes versus incorrect outcomes.
- The cornerstone of a successful autonomous system is the connectivity solutions and off-board systems on which it operates.
- Policymakers should afford innovators the freedom to operate and not unduly regulate industries developing emerging autonomous technologies.

Mr. Ryan Raguse, President, Bushel, provided testimony (Appendix X) regarding the committee's study of existing autonomous systems and infrastructure in the agriculture industry of North Dakota. He noted:

- Bushel administers a wide variety of agricultural applications to assist farmers in major aspects of a farming operation, including inventory, satellite imagery, accounting, and exchange rates. Autonomous systems are completing farm tasks across the United States because the agricultural labor market continues to tighten.

- The advent of large language models will help future farmers integrate and operate autonomous technologies.

Dr. Todd Pringle, Advanced Engineering Manager, John Deere, provided testimony (Appendix Y) regarding the committee's study of existing autonomous systems and infrastructure in the agriculture industry of North Dakota. He noted:

- John Deere is developing sensors to monitor the health of agricultural machinery.
- Public-private partnerships should continue to develop autonomous technologies. However, private entities privy to these partnerships should be afforded greater shares of ownership from any intellectual property created by the partnership.

Mr. Denver Tolliver, Director, Upper Great Plains Transportation Institute, provided testimony (Appendix Z) regarding the committee's study of existing autonomous systems and infrastructure in the ground transportation industry in North Dakota. He noted:

- Labor unions in the railroad and longshoreman industry oppose continued automation in the transportation industry.
- Labor unions in the motor carrier industry do not oppose continued automation in the transportation industry due to continued driver shortages and other workforce challenges.
- Insurance policies will need to adapt to emerging technologies such as autonomous trucking.

Mr. Russ Buchholz, Innovation and Facilities Manager, Department of Transportation, provided testimony (Appendix AA) regarding the committee's study of existing autonomous systems and infrastructure in the ground transportation industry in North Dakota. He noted:

- The goal of the autonomous attenuator platooning program is to continue to automate trucking and eliminate the risk of serious injury for a driver on the job site.
- Most consumer automated vehicles utilize partial driving automation rather than full driving automation.
- The Department of Transportation will seek to implement automated snow removal crews on North Dakota roads once reliable technology is developed.

Mr. Josh Fisher, Senior Director, State of Affairs Division, Alliance for Automotive Innovation, provided testimony (Appendix BB) regarding the committee's study of existing autonomous systems and infrastructure in the ground transportation industry in North Dakota. He noted:

- The state of Ohio has implemented a rural automated driving systems project to increase autonomous transportation across rural Ohio.
- The lack of a consistent federal framework, not the lack of technology, is the largest obstacle in deploying autonomous vehicle networks across the United States.
- The initial cost of autonomous vehicles will be high, but likely will decrease over time as technologies filter down to older vehicles.

Mr. Bryce Wuori, Co-founder and Chief Executive Officer, Pavewise, provided testimony (Appendix CC) regarding the committee's study of existing autonomous systems and infrastructure in the construction industry in North Dakota. He noted:

- Pavewise is a software company that helps paving contractors become more efficient through automation and technology.
- North Dakota continues to be a leader in developing and utilizing automated technology for machine control in the construction industry.
- The financial environment in North Dakota has aided the growth of Pavewise.
- Pavewise primarily works in the horizontal construction industry, but does offer onsite software services to a select number of vertical construction companies.

Mr. Jodie Mjoen, President and Chief Executive Officer, Impact Dakota, provided testimony (Appendix DD) regarding the committee's study of existing autonomous systems and infrastructure in the manufacturing industry in North Dakota. He noted:

- The focus for the next 25 years in the manufacturing industry is who can make parts the smartest, not necessarily the cheapest. Two factors driving the current workforce shortage in the United States are a decrease in available workers and an increase in jobs.
- A common misconception about smart manufacturing is that it will lead to a decrease in jobs.
- Smart manufacturing helps retain a company's workforce and expand overall capacity.

Ms. Marnie Walth, Head of Legislative Affairs, and Dr. David Newman, Chief Medical Officer, Sanford Virtual Care Initiative, Sanford Health, provided testimony (Appendix EE) regarding the committee's study of existing autonomous systems and infrastructure in the health care industry in North Dakota. They noted:

- The typical pressures on a medical facility's nursing staff have declined due to the advent and use of video visits and telehealth.
- Sanford Health utilizes tools to record and detect vital signs from a remote location.
- Artificial intelligence is integrated in commonly used medical devices, including insulin detectors and radiology machines.
- Messaging applications between health providers and patients utilize generative artificial intelligence to accurately respond to patient inquires.

Mr. Shawn Riley, Co-founder, Bisblox, provided testimony regarding the committee's study of existing autonomous systems and infrastructure in North Dakota. He noted:

- Bisblox is the first venture studio in North Dakota.
- The company specializes in building businesses that rely heavily on artificial intelligence.
- A common fear surrounding artificial intelligence is the loss of jobs in the labor market.
- Artificial intelligence is closing workforce shortages by automating mundane tasks such as data entry.
- Society continues to evolve using technology and adapts to the changing professions of the time.
- Policymakers in the state should continue to enact policies to expand the entrepreneurial footprint of emerging technologies.

No further business appearing, Chairman Roers Jones adjourned the meeting at 3:17 p.m.

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Dustin A. Richard
Counsel

ATTACH:31