ALASKA STATE LEGISLATURE
HOUSE TRANSPORTATION STANDING COMMITTEE
February 9, 2023
1:01 p.m.

MEMBERS PRESENT

Representative Kevin McCabe, Chair
Representative Sarah Vance, Vice Chair
Representative Tom McKay
Representative Craig Johnson
Representative Jesse Sumner
Representative Louise Stutes
Representative Genevieve Mina

MEMBERS ABSENT

All members present

COMMITTEE CALENDAR

PRESENTATION(S): UNMANNED AIRCRAFT SYSTEMS UPDATE

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

RYAN MARLOW, UAS/Drone Program Coordinator
Division of Statewide Aviation
Alaska Department of Transportation and Public Facilities
Anchorage, Alaska
POSITION STATEMENT: Presented a PowerPoint, titled "2023 State of Alaska Unmanned Aircraft Systems (UAS) & Advanced Air Mobility (AAM)," during the Unmanned Aircraft Systems Update presentation.

CATHY CAHILL, Director
Alaska Center for Unmanned Aircraft Systems Integration
University of Alaska Fairbanks
Fairbanks, Alaska
POSITION STATEMENT: Presented a PowerPoint, titled "Flying to the Future: Building the Drone Industry in Alaska," during the Unmanned Aircraft Systems Update presentation.

SENATOR SHELLEY HUGHES
Alaska State Legislature
Juneau, Alaska
POSITION STATEMENT: Offered testimony in support of the work of ACUASI during the Unmanned Aircraft Systems Update presentation.

ACTION NARRATIVE

1:01:50 PM

CHAIR KEVIN MCCABE called the House Transportation Standing Committee meeting to order at 1:01 p.m. Representatives Johnson, McKay, Vance, Stutes, Mina, and McCabe were present at the call to order. Representative Sumner arrived as the meeting was in progress.

PRESENTATION(S): Unmanned Aircraft Systems Update

1:03:32 PM

CHAIR MCCABE announced that the only order of business would be the Unmanned Aircraft Systems Update presentation.

1:04:12 PM

RYAN MARLOW, UAS/Drone Program Coordinator, Division of Statewide Aviation, Department of Transportation, explained that via a PowerPoint presentation [hard copy included in the committee packet], he would be discussing the UAS program and where the Department of Transportation and Public Facilities [DOT&PF] is going with the technology. He pointed out a screen shot on the first slide, with a picture of an operation that took place in 2021 showing what the future of unmanned aviation in Alaska looks like, utilizing runways, resources, technologies, and assets to evaluate these technologies in places like the Arctic, the Aleutians, and across the entire state. Mr. Marlow continued on slide 2, titled "Alaska UAS Regulations," which shows 10 regulations that govern UAS use. He summarized operational guidelines, and that all related resources can be found on the DOT website which is shown on the final slide.

1:06:28 PM

MR. MARLOW continued on slide 3, titled "Alaska UAS Development." The slide shows funding sources and partnerships,

and he pointed out the UAS market is growing rapidly in the state of Alaska, and that DOT is finding new applications every day for eliminating risk factors when they can be done by a UAS platform.

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MR. MARLOW moved to slide 4, titled "Alaska UAS Growth for 2022-2023," where he began by pointing out that Alaska is the first state in the nation to have more registered UAS than manned aviation. The slide also shows other locations in the United States where UAS have been deployed - with Alaska leading in ratio of population to drone registrations.

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REPRESENTATIVE MINA inquired about training requirements for pilots to become licensed.

MR. MARLOW replied that currently there are two ways the state licenses operators, and the Federal Aviation Administration (FAA) has posted "part 107" which is the primary commercial licensure for the operation of these vehicles. The focus is to first get certification on the aircraft and hands-on procedures, and then students will jump into their specific area of training. The trainings are done annually, and he noted DOT&PF has seen a growth of approximately 20 pilots per year.

1:10:48 PM

MR. MARLOW moved to slide 5, titled "Recreation UAS Safety Test (TRUST)," which featured the latest from the FAA for those not pursuing civil operations. He pointed out there are about 5,800 recreational fliers in Alaska, and approximately half have taken the "TRUST test," which is a free test that is being pushed for being a requirement for all new students.

MR. MARLOW proceeded to slide 6, titled "Alaska UAS Technical Working Group." The slide highlighted five agencies under the Alaska Geospatial Council and the number of platforms each has. He explained the benefits include the sharing of manuals, procedures, and integrating with communities.

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MR. MARLOW moved to slide 7, titled "DOT&PF UAS Program." The slide highlighted DOT&PF's expansion into various groups

including avalanche [under Maintenance and Operation "M&O"], geotechnical groups, airport inspections, hydrology, environmental, bridge design - to name a few. He explained the attrition rates, also shown on the slide, were being compensated for with DOT&PF's training program, averaging a cost savings of about $7,000 per day.

MR. MARLOW continued to slide 8, titled "Statewide UAS Support," and pointed out that all supports are facilitated through DOT&PF's Remote Sensing Lab. There are three labs located in Anchorage, Juneau, and Fairbanks. The supports aren't only for DOT but for other local municipalities and, in addition, include field support and hazmat shipping.

MR. MARLOW showed slide 9, titled "DoD Blue UAS Deployment," which features a heavily focused-on item called Blue UAS that are available for government purchase and operations, and he explains many of the grants DOT&PF is starting to see are now requiring Blue UAS.

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MR. MARLOW moved on to slides 10-12, titled "Bridge Inspection and Scanning." Slide 10 shows part of an "underbelly process" in which inspections and imagery can be done by the perspective of looking up. Slide 11 features thermal loading, where dead concrete can be spotted in the imagery, providing a better look at the infrastructure. Slide 12 highlights digitizing as high a resolution as possible and the processing of three-dimensional (3D) data that reveals flaws not otherwise visible.

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MR. MARLOW moved to slide 13, titled "Autonomous Bridge Inspection and Scanning," showing a 3D model of a bridge that had been scanned. The erosion in the timber is visible through this high-resolution data. The data also evaluates if the bridge is sound, needs updated maintenance, or needs to be closed.

MR. MARLOW continued to slides 14 and 15, titled "Avalanche Mapping and Monitoring." He summarized that the ability to fly these systems in various areas can result in detecting how deep the snow is and where mitigation may need to occur. He also explained some of the avalanche chutes are remote, so this year DOT&PF will be deploying remote systems for real-time feedback.

He mentioned geographic information systems (GIS) creating digital models - and the importance of remote-sensing data.

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MR. MARLOW continued to slide 16, titled "Aviation Infrastructure Monitoring and GIS," where he explained the slide shows why DOT&PF is heavily focused on GIS. The slide featured pictures of airport projects, relating to pavement conditions, vegetation encroachments, and transparency of project funding.

MR. MARLOW moved on to slide 17, titled "AI Crack Detection & Pavement Condition Index (PCI)." He pointed out that with drone data and GIS is the ability to start using artificial intelligence (AI). The imagery on the slide shows detection of the current status of runways and asphalts.

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REPRESENTATIVE VANCE asked if Mr. Marlow is aware of the fiscal impact with this amount of data storage and possible sharing between departments and whether there is a current "ask" in the budget.

MR. MARLOW confirmed that has been a big item on data governance on the UAS side as to what data to keep, discard, or archive, and DOT&PF is paying close attention to these data formats and what is most valuable.

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REPRESENTATIVE MINA asked what the current limits on data storage are.

MR. MARLOW replied the only limitations are bandwidth capabilities. He explained DOT&PF has the storage in Cloud, but Alaska does not have a dedicated Cloud storage service, so the data has to head to Washington or Oregon to be stored. He stated this as being part of the big push to GIS to manage all the data.

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REPRESENTATIVE VANCE questioned the data showing various vulnerabilities in infrastructures and asked if there are added security measure to protect the data.

MR. MARLOW replied that DOT&PF has been spending significant time with the State of Alaska Office of Information Technology (OIT) regarding Cloud migration and supporting the security of the data, with consideration of whether data needs to be secured or put into different environments. He explained he can get more information from OIT, and he reiterated that security is a critical area.

MR. MARLOW returned to the PowerPoint, to slide 18, which shows Sandpoint Airport [post-earthquake], and the ability to capture environments such as runway damage not visible without the technology. He pointed out the timeliness and cost-effectiveness of using the imagery versus paying for a crew to go out and inspect.

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MR. MARLOW moved on to slide 19, titled "Statewide UAS Livestream and Cloud Processing." He stressed the search and rescue side and evaluating the use of lower-orbit technologies and the ability to livestream using the Cloud process. He explained that when disasters occur, the data is processed in real time via the Cloud.

MR. MARLOW proceeded to slide 20, titled "Traffic Safety Intelligent Transportation Systems (ITS)," where he explained "reality captures" being the primary theme and DOT&PF's partnerships with other agencies to deploy the UAS to increase scanning speeds for larger scenes such as traffic accidents.

MR. MARLOW moved to slide 21, titled "Alaska Rural Remote Operations Workplan (ARROW)." He explained the State of Alaska is pursuing a DOT&PF Strengthening Mobility and Revolutionizing Transportation (SMART) grant for deploying the systems to rural communities.

MR. MARLOW continued to slide 22, titled "Advanced Air Mobility," which he noted would lead into the next presenter's segment. He described advanced air mobility as the impact of "next-gen" services - taking everything that is currently known about airspace and tackling it with technology. He continued his explanation on advanced air mobility on slide 23, titled "FAA Alaska Aviation Safety Initiative (FAASI)," and noted the technology could also enhance many aeronautical-based programs.

MR. MARLOW brought attention to slide 24, titled "AAM Development and Planning," where he explained that DOT&PF had

started planning with advance air mobility, many aspects of aviation and airspace, and, most notably, wireless infrastructure connectivity. The goal is to bring these many aspects into one safe environment.

MR. MARLOW proceeded to slide 25, titled "AAM GAP Analysis and Transportation System," which shows many areas in Alaska that are all dependent on aviation. He quoted the FAA describing Alaska as having "its own airspace," and on resource development, he noted airspace may become Alaska's next large resource.

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REPRESENTATIVE MINA requested to return to slide 23, titled "FAA Alaska Aviation Safety Initiative (FAASI)," and asked for more information about the top safety concerns and how the safety outreach is going.

MR. MARLOW replied that the FAA started the process in 2020 and has conducted meetings via Teams and reached out to industry stakeholders focusing on the primary slides in the presentation. The FAASI team has "set the footprint" for DOT to recognize known problems - and what is done to correct them. He noted this gathered information is available as a published document as well, and he offered to send it to the committee for further review.

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MR. MARLOW continued the presentation on slide 26, titled "AAM Rural Broadband Connectivity," and he explained the testing being done throughout the state of Alaska. He stated that the systems, while working, are "not quite there yet," but the potential they offer for surveillance and real-time communications, he opined, is outstanding.

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MR. MARLOW moved to slide 27, titled "Alaska Continuously Operating Reference Network (ACORN)," which featured another project where DOT is partnering with the Department of Natural Resources (DNR) to help push a state wide reference network. He continued to slide 28, titled "AAM Technology Deployment," and highlighted two areas DOT&PF would like to evaluate some of the "next-gen" technologies: Deadhorse, Alaska, and Bethel, Alaska. He then concluded with slide 29, titled "Alaska UAS & AAM

Resources." He briefly summarized the intention of the PowerPoint and pointed out contact information on the slide.

1:41:06 PM

REPRESENTATIVE MINA questioned if there has been any impact on the land surveying workforce due to progress with drone technology.

MR. MARLOW replied absolutely; the land survey paved the way for many of these technologies.

REPRESENTATIVE MINA addressed the data being collected and questioned how any privacy concerns are being addressed by DOT&PF.

MR. MARLOW responded that all the data is being collected, and as for privacy, the prime focus is on individual projects, primarily infrastructure projects.

REPRESENTATIVE MINA asked how DOT&PF would address a drone flying away.

1:44:30 PM

MR. MARLOW replied his position was created around managing that situation. He explained DOT&PF is working with systems deemed not "air-worthy," and a significant amount of time is spent testing and creating failure environments to ensure the safety and reliability of the systems.

1:46:25 PM

CATHY CAHILL, Director, Alaska Center for Unmanned Aircraft Systems Integration (ACUASI), University of Alaska Fairbanks, said she would update the committee on the works of ACUASI. She began by showing an approximate 3-minute overview video which is part of the "Empower Alaska" campaign for the University of Alaska. She proceeded with a PowerPoint presentation [hard copy included in the committee packet], titled "Flying to the Future: Building the Drone Industry in Alaska." She showed a slide, titled "ACUASI," which highlighted the mission of ACUASI to: assist the FAA with the safe integration of drones into national airspaces; support Alaska drone users and the industry; and conduct scientific research. She noted that the scientific research is part of the University of Alaska system.

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MS. CAHILL moved on to a slide that explained ACUASI's overall goal, titled "Goal - Complete Integration of Drones Systems with Traditional Aircraft in the National Airspace System." She then proceeded to the next slide, titled "Who Are We?" She explained the combination and diversity of individuals including academics, military veterans, pilots, and more means ACUASI is bringing the "best and brightest" together from all different directions for a common purpose.

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REPRESENTATIVE MCKAY referred back to slide 4, which shows a cargo plane and a drone on the same airfield in Inuvik, Canada. He asked what Canada can do, that the U.S. cannot do.

1:56:02 PM

MS. CAHILL explained that in the U.S., the FAA is concerned about losing "link" with aircraft. In Canada there are not such restrictions, and drones can be flown further. She said ACUASI is working on detection technology.

1:58:50 PM

CHAIR MCCABE asked if Ms. Cahill just received an FAA letter or waiver regarding line of sight.

1:59:06 PM

MS. CAHILL responded ACUASI just received a waiver to some rules and regulations for larger aircraft. She explained there is an established level of trust with the FAA, resulting in the FAA giving additional permissions.

2:01:11 PM

CHAIR MCCABE commented on working close with big box delivery companies and delivering packages via drones.

MS. CAHILL confirmed ACUASI is tied in with several of the delivery companies but the "last mile delivery" is not the focus; delivery the last hundreds of miles to rural communities is.

2:02:35 PM

MS. CAHILL continued to the next slide, titled "ACUASI's Military Experience," and explained the importance of having an operational team that understands aviation safety but also understands "completing the missions."

MS. CAHILL moved on to the next slide, titled "FAA Recognition of ACUASI's Expertise." She quickly proceeded to the next slide with the same title and explained the expansion of areas of recognition by the FAA.

MS. CAHILL continued to the next slide, titled "BVLOS Aviation Rulemaking Committee." The focus being how the rules and regulations will allow for advanced air mobility. She noted ACUASI is not just a drone program, it comprises aviators, who want to defend the Alaska way of life.

2:05:22 PM

MS. CAHILL moved to the next slide, titled "Partners Beyond," that featured the many partners of ACUASI. She moved on to the next slide, titled "ACUASI Strategic Planning," and explained there were a series of strategic planning efforts, and in addition, 16 stakeholders from across Alaska were brought together to discuss the creation of a drone economy in Alaska. Continuing to the next slide, titled "What Really Makes Us Different," she explained that ACUASI is looking to pick something that works for Alaska, and will "test anything for anyone." She said the Beyond Visual Line Of Sight (BVLOS) challenge must be broken. The goal is for the long distance missions to be able to get accomplished.

2:08:05 PM

MS. CAHILL moved to the next slide, titled "Advanced Air Mobility." She began by pointing out ACUASI was told it is the leader for advanced air mobility in the United States, and she proceeded to name projects not only in Alaska but also in California. She proceeded to the next slide, titled "Cargo Delivery," where she made a point of the goal being to fly where traditional aircraft cannot and to help alleviate the effects of pilot shortage.

2:11:07 PM

MS. CAHILL moved to the next slide, titled "Fairbanks International Airport." She noted ACUASI has a hangar at the

airport in preparation for future operations. She continued to the next slide, titled "Large Drone (DRS Sentry) at Fairbanks International Airport." The slide shows a date of May 22, 2022, as being the date of the first operations at the Fairbanks International Airport. She explained the drone was described by a standard flight instructor as "acting like any other aircraft." She moved to the next slide, titled "Next Step: Fairbanks to Nenana," regarding the next step for ACUASI's larger aircraft.

2:13:10 PM

MS. CAHILL continued to the next slide, titled "Emerging Technology Test Ranges." The slide highlights ACUASI's three emerging technology test ranges: the Nenana Municipal Airport, the Palmer Municipal Airport, and the Valdez Airport. She noted the ability to test under Arctic conditions as crucial. She moved on to the next slide, titled "Nenana Municipal Airport," where ACUASI is in the process of building a hangar. She pointed out that Nenana and Fairbanks are both on the road system and are good stepping stones to other communities.

2:15:03 PM

MS. CAHILL moved to the next slide, titled "Hot off the Press!" She explained in February, ACUASI received the first ever waiver granted by the FAA that expanded the ability to help drone manufacturers get their aircraft approved for use in the National Airspace System.

2:17:41 PM

MS. CAHILL moved on to the next slide, titled "DAA System: User Interface." The focus of AQUASI is "detect and avoid testing." The slide shows an aerial visual of where testing is done. The next slide, titled "Pipeline Monitoring," reflects that ACUASI will be doing many operations. The following slide, titled "Experience Flying Large Drones BVLOS - Transport Canada Operations," highlights ACUASI's work with Transport Canada.

2:19:49 PM

MS. CAHILL continued to the next slide, which shows an image of open water, and she explained the drone is spotting an underwater whale that cannot be spotted by the human eye. On the following slide, Ms. Cahill pointed out the enhanced image

of the whale taken by the drone, and that the type of whale and gender can also be determined from the image.

2:21:05 PM

MS. CAHILL proceeded to the next slide, titled "Disaster Response." The focus being how to communicate during a disaster and how to deal with disasters with maximum effect with the limited resources available. She moved on to the next slide, titled "Counter-drone (FAA, DOG, DHS,...)," and she explained the function of a counter-drone is to be able to spot, detect, track, identify, and/or mitigate drones that have clueless, criminal, or careless intent.

2:25:32 PM

MS. CAHILL continued to the next slide, titled "Education," and being part of the University of Alaska, she explained, education is key. All the universities are working on developing curriculum that will also include distance learning opportunities.

2:28:14 PM

MS. CAHILL moved to the next slide, titled "What's Next?" She summarized some of the projects and missions that ACUASI will be part of in the following six months. She proceeded to the next slide with the same title, and explained ACUASI will also be conducting many counter-drone campaigns outside of Alaska under different conditions.

2:30:31 PM

MS. CAHILL continued to the next slide, titled "Update on FY 23 Funding," where she began by stating her appreciation for the influx of funding for fiscal year 2023 (FY 23) to lay the foundation for the drone economy, which also encompassed the hiring of faculty and instructors. She continued to the next slide with the same title, and she noted the special permission under the FAA's BEYOND program to push the boundaries on the visual line of sight and reiterated the assistance with the longer distance cargo deliveries.

2:33:21 PM

MS. CAHILL continued on the next slide, titled "FY 24 Funding Request," where she stressed the importance of programs being

developed for high school students and the hope for their retention in Alaska. She continued on the next slide with the same title, now focusing on the three previously highlighted technology test ranges for anticipated testing.

2:35:06 PM

MS. CAHILL moved on to the next slide, titled "ACUASI's Future Impact on Alaska's Drone Economy," reiterating the goals to lead the way in the safe integration of drones in Alaska and what that will encompass. She then offered to answer questions.

2:37:12 PM

REPRESENTATIVE MINA asked if there are more companies that are gravitating and investing in drone technologies in Alaska.

MS. CAHILL responded that many companies have expressed interest in moving branches up to Alaska.

2:39:39 PM

SENATOR HUGHES added commentary in support of ACUASI's work.

2:41:43 PM

CHAIR MCCABE, in closing, urged Ms. Cahill to open a dialogue with Wasilla High School to engage the students in this emerging technology.

2:43:20 PM

ADJOURNMENT

There being no further business before the committee, the House Transportation Standing Committee meeting was adjourned at 2:43 p.m.