

**HB**

**354**

<target><bill>HB 354</bill><subject>HB  
354</subject><comm>SFIN26</comm></target>

# ALASKA STATE LEGISLATURE

**Interim:**

600 East Railroad Avenue  
Wasilla, Alaska 99654  
Phone (907) 373-1842  
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**Session:**

State Capitol Building  
Juneau, Alaska 99801-1182  
Phone: (907) 465-2186  
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## REPRESENTATIVE WES KELLER DISTRICT 14

### Sponsor Statement HB 354

**“An Act relating to eligibility for loans from the Alaska capstone avionics revolving loan fund.”**

In 2008 the Alaska Legislature commissioned the Capstone Avionics Loan Program. It was designed to provide access to a new generation of avionics for Alaskan aircraft owners and operators. The impetus for the program was an FAA pilot program that confirmed the substantial value and effectiveness of the technology. The results of the pilot program revealed a 47 percent decrease in accident rates in the trial area, and the FAA estimates that full implementation will result in 33 percent fewer fatalities statewide.

HB 354 is being proffered to amend existing statute in order to carry out the mission and original intent of the Capstone Avionics Program more effectively. As initially conceived, the program was intended to provide loans that would allow in-state operators and carriers to upgrade their avionics. However, there is an unforeseen gap in eligibility standards precluding significant portions of the target market from participation. Because the threshold for eligibility is predicated upon ownership of aircraft, an operator or carrier that chooses to lease its aircraft or fleet is deemed ineligible to access the program. This bill seeks to redress this deficiency by allowing for maximal participation. HB 354 is being offered only as an improvement to the Capstone Avionics Program because we believe it is in the interest of public safety, especially as it pertains to flights in and out of rural Alaska. Thanks for your consideration!

E-Mail: [Representative\\_Wes\\_Keller@legis.state.ak.us](mailto:Representative_Wes_Keller@legis.state.ak.us)  
Call Juneau Toll free: (800) 468-2186  
Website: [www.akrepublicans.org/keller/](http://www.akrepublicans.org/keller/)

# SENATE FINANCE COMMITTEE REPORT

DATE: 4/10/10

FURTHER:

DATE TURNED  
IN TO OFFICE: \_\_\_\_\_

Finance Committee considered HOUSE BILL NO. 354

HB 354 AK CAPSTONE AVIONICS REVOLVING LOAN FUND

"An Act relating to eligibility for loans from the Alaska capstone avionics revolving loan fund."

and recommends:

- be replaced with  SCS or  CS \_\_\_\_\_ (\_\_\_\_\_)
- adopt previous  SCS or  CS \_\_\_\_\_ (\_\_\_\_\_)
- attached amendment(s)
- adopt \_\_\_\_\_ Letter of Intent
- further referral to \_\_\_\_\_ Committee

**SENATE BILL:**  
 Same Title  
 New Title

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**HOUSE BILL:**  
 Same Title  
 Technical Title Change  
 New Title w/ SCR # \_\_\_\_\_








**NEW FISCAL NOTE(S):**

| Department | Date | Fiscal | Indet. | Zero | FN# |
|------------|------|--------|--------|------|-----|
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|            |      |        |        |      |     |
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**PREVIOUS FISCAL NOTE(S):**

| Department | Date | Fiscal | Indet. | Zero | FN# |
|------------|------|--------|--------|------|-----|
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|            |      |        |        |      |     |

APPROPRIATION - no fiscal note

| SIGNATURES AND RECOMMENDATIONS:   | PRINTED LAST NAME | DO PASS                             | DO NOT PASS              | NO REC | AMEND |
|---|-------------------|-------------------------------------|--------------------------|--------|-------|
|            | Huggins           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |        |       |
|            | Thomas            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |        |       |
|            | Egan              | <input checked="" type="checkbox"/> | <input type="checkbox"/> |        |       |
|            | Olson             | <input checked="" type="checkbox"/> | <input type="checkbox"/> |        |       |
|            | Ellis             | <input checked="" type="checkbox"/> | <input type="checkbox"/> |        |       |
| CO-CHAIR:  |                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |        |       |
| CO-CHAIR:  |                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |        |       |

# FISCAL NOTE

STATE OF ALASKA  
2010 LEGISLATIVE SESSION

Fiscal Note Number: 1  
Bill Version: HB 354  
(H) Publish Date: 3/10/10

Identifier (file name): HB354-CED-INV-3-1-10 Dept. Affected: DCCED  
Title: AK CAPSTONE AVIONICS REVOLVING LOAN FUND RDU: 122  
Component: Investments  
Sponsor: Representative Keller  
Requester: House Labor & Commerce Component Number: 383

**Expenditures/Revenues** (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

|                               | Appropriation<br>Required | Information |            |            |            |            |            |            |
|-------------------------------|---------------------------|-------------|------------|------------|------------|------------|------------|------------|
|                               |                           | FY 2011     | FY 2011    | FY 2012    | FY 2013    | FY 2014    | FY 2015    | FY 2016    |
| <b>OPERATING EXPENDITURES</b> |                           |             |            |            |            |            |            |            |
| Personal Services             | 0.0                       |             | 0.0        |            | 0.0        |            | 0.0        |            |
| Travel                        |                           |             |            |            |            |            |            |            |
| Contractual                   |                           |             |            |            |            |            |            |            |
| Supplies                      |                           |             |            |            |            |            |            |            |
| Equipment                     |                           |             |            |            |            |            |            |            |
| Land & Structures             |                           |             |            |            |            |            |            |            |
| Grants & Claims               |                           |             |            |            |            |            |            |            |
| Miscellaneous                 |                           |             |            |            |            |            |            |            |
| <b>TOTAL OPERATING</b>        | <b>0.0</b>                | <b>0.0</b>  | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> |
| <b>CAPITAL EXPENDITURES</b>   |                           |             |            |            |            |            |            |            |
| <b>CHANGE IN REVENUES</b>     | <b>0.0</b>                |             | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> |

**FUND SOURCE** (Thousands of Dollars)

|                                   |            |            |            |            |            |            |            |
|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|
| 1002 Federal Receipts             |            |            |            |            |            |            |            |
| 1003 GF Match                     |            |            |            |            |            |            |            |
| 1140 AIDEA Dividend               |            |            |            |            |            |            |            |
| 1005 GF/Program Receipts          |            |            |            |            |            |            |            |
| 1037 GF/Mental Health             |            |            |            |            |            |            |            |
| Micro Loan Revolving Loan Program |            |            |            |            |            |            |            |
| <b>TOTAL</b>                      | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> | <b>0.0</b> |

Estimate of any current year (FY2010) cost: 0.0

**POSITIONS**

|           |     |     |     |     |     |     |     |
|-----------|-----|-----|-----|-----|-----|-----|-----|
| Full-time | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Part-time |     |     |     |     |     |     |     |
| Temporary |     |     |     |     |     |     |     |

**ANALYSIS:** (Attach a separate page if necessary)

This legislation amends the Alaska Capstone Avionics Revolving Loan Fund program to allow a lessee of an aircraft that logs a substantial percentage of flight hours in the state to qualify to apply for loans to purchase Capstone Avionics equipment.

The Department of Commerce, Community, and Economic Development anticipates that this will result in a few additional loan requests but that the fiscal impact will be minimal.

Prepared by: Greg Winegar, Director  
Division: Division of Investments  
Approved by: Emil Notti, Commissioner  
Department of Commerce, Community, and Economic Development

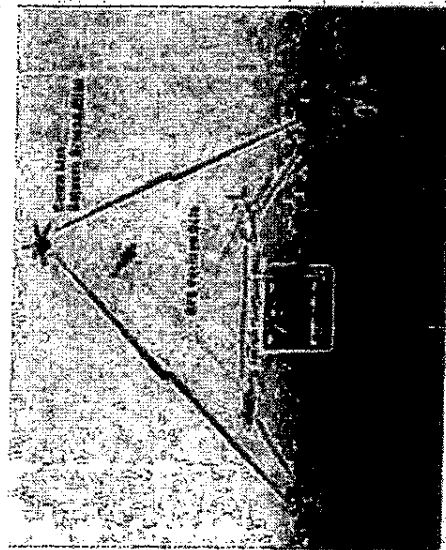
Phone 465-2510  
Date/Time 3/1/10 12:00 AM  
Date 3/1/2010

### Fees

- \$50 application fee. (non-refundable.)
- Closing costs include aircraft title search and FAA recording fee.

### Eligible Equipment

- (1) Universal Access Transceiver (UAT), Automatic Dependent Surveillance - Broadcast (ADS-B) Data Link;
- (2) GPS/WAAS navigation equipment;
- (3) A moving map multifunction display (MFD); or
- (4) Other equipment as determined by the department in consultation with the Department of Transportation and Public Facilities.



ADS-B Technologies, LLC

## Alaska Capstone Avionics Loan Program

AS 44.33.660 - AS 44.33.665  
3 AAC 75.010 - 3 AAC 75.900

### Contact Information

#### Office Hours:

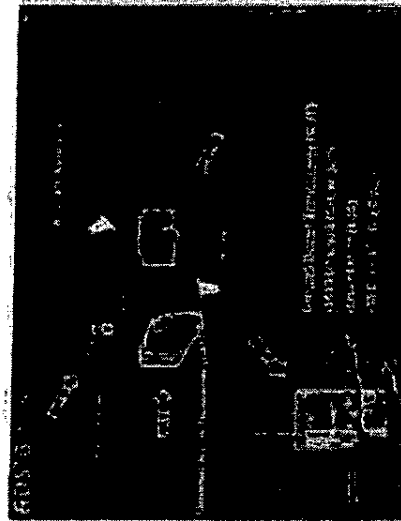
Monday - Friday  
7:30am - 5:00pm

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ADS-B Technologies, LLC

The Alaska Division of Investments, Department of Commerce, Community, and Economic Development complies with Title II of the Americans with Disabilities Act of 1990. This publication is available in alternative communication formats upon request. Please contact the Alaska Division of Investments at (907) 465-2510 or TDD (907) 465-5437 to make any necessary arrangements.

This publication is a summary of the Alaska Capstone Avionics Loan Program and is not intended to create any rights enforceable by law. For further clarification, please refer to Alaska Statutes and Alaska Administrative Codes.

# Alaska Capstone Avionics

## Loan Program



Alaska Division of Investments  
Department of Commerce,  
Community, and Economic  
Development

1-800-478-LOAN

investments@alaska.gov

www.commerce.alaska.gov/investments

# Alaska Capstone Avionics Loan Program



## Goal

To provide long-term, low interest loans for purchase and installation of Capstone avionics equipment for aircraft that operate substantially in Alaska.

## General Requirements

- Aircraft being upgraded must be owned by applicant
- Aircraft being upgraded must be substantially operated in Alaska
- All aircraft must at a minimum, be equipped with a Universal Access Transceiver (UAT) Automatic Dependent Surveillance - Broadcast data link system.
- Proof of substantial flight hours in Alaska, by declaration, certifying that at least 51% of aircraft flight hours were in Alaska.
- Copy of airworthiness certificate and aircraft registration with application.



## Terms & Conditions

- Interest rate will be fixed at 4.0%.
- Maximum loan term is 10-years.
- Maximum loan amount is 80% of the cost.
- Borrower is responsible to pay all direct costs incurred in processing an application including the cost of obtaining an aircraft title report and any recording fees.

## Program Requirements

- **PURCHASE** - Loans are available for the purchase and installation of Alaska Capstone Avionics equipment on aircraft that are utilized in Alaska. Equipment that is purchased and installed no more than 120 days before receipt of the application may also be eligible.
- **REFINANCING** - Refinancing of debt is not allowed under this program.
- **COLLATERAL** - The Alaska Division of Investments will require:
  - (1) a priority lien on the Capstone equipment being financed; and
  - (2) a lien on the aircraft.





February 24, 2010

Representative Wes Keller  
State Capitol, Room 13  
Juneau, Alaska 99801-1182

Dear Representative Keller;

Throughout the course of its history, Peninsula Airways has focused on our responsibility for the safety of every passenger that boards our airplanes. We were early adopters of GPS technology in the 90s, we were one of the first 5 Shield members of the Medallion foundation, and we were active in the first testing of the Capstone system in southwest Alaska. We have recently been working with industry teams to push forward the next wave of navigation equipment designed to enhance air travel safety in Alaska.

Part of the effort to enhance safety is built around the Capstone Loan program that provides low interest loans to early adopters of ADS-B and WAAS technology. To fully appreciate the benefits of this program, Peninsula Airways is requesting that the loan program be expanded to include a lessee of an aircraft, not just the actual owner, as the majority of our larger aircraft are operated under long-term lease agreements. Support of HB354 would show a commitment to improving aviation safety in Alaska and your faithfulness to the economic stability of our vital air transportation system.

Sincerely,

Bryan Carricaburu  
VP/Director of Operations  
Peninsula Airways, Inc.

PenAir, 6100 Boeing Avenue, Anchorage, Alaska 99502, (907) 771-2500



Re: HB 354

To Whom It May Concern:

Era Alaska represents the largest group of Alaskan owned and operated air carriers in the state of Alaska. We provide an essential network of daily scheduled operations to over 100 communities in the state. Era Alaska operates a variety of aircraft throughout our state;

- 18 Cessna Caravan
- 19 Cessna 207
- 10 PA-31-350 Chieftain
- 4 Cessna 406
- 11 Beechcraft 1900C airliner
- 3 Beechcraft 1900D airliner
- 4 DeHaviland Dash 8-100 series aircraft

We have invested heavily in equipping over 90% of our fleet with Capstone avionics suites. Most of the aircraft in the fleet are leased by the airline from a wholly owned leasing company and by its very nature, under current definition, may be prohibited from using the existing loan program sponsored by the State.

The next generation WAAS upgrade to the Capstone suite is absolutely essential to enhancing the safety of our operations and will benefit over 650,000 passengers each year in our system.

Era Alaska and its' affiliated carriers fully support Representative Keller's HB354.

Please feel free to contact me if you have any questions or I can provide further input.

Sincerely,

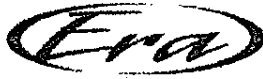
A handwritten signature in black ink, appearing to read "Bob Hajdukovich", written over a white background.

Bob Hajdukovich

CEO, Era Alaska

*Frontier Flying Service, Inc.  
Era Aviation, Inc.  
Hageland Aviation Services, Inc.  
Arctic Circle Air Service, Inc.*





Era Aviation  
6160 Carl Brady Drive  
Anchorage, Alaska  
99502

February 24, 2010

Re: HB 354

To Whom It May Concern:

Era Aviation has proudly participated in the *Alaska Capstone Avionics Loan Program* as administered by the State of Alaska Department of Commerce, Community, and Economic Development. I believe Era was the first commercial (airline) applicant to successfully navigate the loan process through final loan disbursement. The availability of the Capstone Avionics Loan Program was instrumental in Era Aviation's decision to pursue installation of Next Generation avionics for our Bombardier Dash 8-103/106 aircraft. Our new UNS1-Lw FMS/GPS/WAAS navigation receivers represent the most modern technology available anywhere. Use of this new technology will provide our scheduled airline passengers and charter customers with an unsurpassed level of safety and efficiency in use of the US National Airspace System.

Era Aviation has an aggressive avionics upgrade program, in conjunction with using Capstone Avionics Loan Program disbursements, to equip our entire Dash 8 fleet. Unfortunately, a provision of the Loan Program is that the loan may only be submitted by the 'owner' of the aircraft. Most large aircraft are typically leased by the commercial airline through other corporate ownership entities. This existing restriction may unintentionally and unreasonably exclude many large aircraft operated within the State of Alaska from qualifying for a loan from the Capstone Avionics Loan Program. In fact, we are apprehensive that one of our existing Dash 8 aircraft which Era leases from another corporate entity, may fail to fully qualify in actual practice, for the same loan program benefits as the other, identical Dash 8 aircraft which are owned exclusively by Era Aviation.

It is for this reason and the associated goal of promoting higher standards of safety within our Alaskan aviation community that **Era Aviation fully endorses Representative Keller's HB354**, which if passed in its present form would amend the Alaska Capstone Avionics Loan Program to include operators of leased aircraft to obtain loans under that Program. We look forward to the assistance of the Alaska Legislature in helping promote greater use of this important Program.

Please advise if you have any further suggestions or comments regarding this issue.

Sincerely,

Jeff Sharp  
VP, Operations  
Era Aviation  
([isharp@flyera.com](mailto:isharp@flyera.com) or 907-266-8373)

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## Government Industry

0 Comments

# Alaska's Capstone Program

Air Safety Week, May 22, 2006

Capstone is a joint effort by the FAA Alaskan Region and the aviation industry in the state to improve aviation safety and efficiency, essentially by installing the latest in avionics technology in participating aircraft.

Phase one of Capstone is in the southwest Yukon-Kuskokwin delta region, a non-radar area limited to visual flight rules, has provided:

- \* Weather information directly to the cockpit in general aviation flights.
- \* Automated weather systems that enable commercial operators to make GPS approaches at certain airports.
- \* GPS non-precision instrument approach procedures for 10 additional remote village airports.
- \* A data link network allowing participating pilots to see surrounding air traffic on a cockpit display.
- \* An interface with existing radar tracking to provide "radar like" services to participating aircraft.
- \* Ground infrastructure deployment for weather observation, data link communications, surveillance, and flight information services.

Participating aircraft receive:

- \* An instrument flight rules (IFR)-certified GPS navigation receiver.
- \* An ADS-B transmitter/receiver.
- \* A multi-function color display with traffic/terrain advisories.

\* Traffic Information Surface Broadcast (TIS-B) with radar traffic information.

\* Terrain database

\* Flight information data depicting airports and related flight safety information.

In phase two, which is already under way, Capstone is moving into the southeast Alaska around the capital, Juneau, which FAA says is "more environmentally challenged area of the state."

Source: FAA Alaskan Region

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Advanced Search



Saturday, March 1, 2003

## Capstone: Heating Up in Alaska

David Jensen

With a new avionics package approved, an IFR infrastructure being established and a study indicating it delivers safety benefits, the Capstone program in Alaska appears to be on a fast track. Does it represent the FAA at its best?

"This is the FAA at its best," asserts Gordon Pratt, president of Chelton Flight Systems, commenting on the Federal Aviation Administration's Capstone program in Alaska. "It shows the agency as being progressive-oriented."

Pratt may be accused of being biased with his praise, having been awarded in February 2002 the FAA contract to provide the avionics package for Capstone Phase II. But the program's steady progress, plus the findings of a recently released study of Capstone's impact on air safety in Alaska, supports Pratt's view.

Capstone is a proving ground for such new technologies as satellite navigation, broadcast weather and flight information, required navigation performance (RNP), automatic dependent surveillance-broadcast (ADS-B) and on-board synthetic vision display, among others. It is being conducted appropriately in Alaska, where air transportation is essential, as less than 10 percent of the state is accessible by road. The venue also is appropriate because Alaska's mountainous landscape, unpredictable weather and dearth of ground-based nav aids have contributed to a sorry air safety record. For example, one controlled flight into terrain (CFIT) accident occurs on average every nine days in the state. And, from 1992 to 1994, Alaska's crash rate for air taxi and general aviation aircraft was 2.5 times higher than the U.S. average, according to the *FAA Statistical Handbook of Aviation, 1997*.

However, an analysis titled "Capstone Phase I Interim Safety Study, 2000/2001," conducted by the University of Alaska Anchorage and Mitre Corp.'s Center for Advanced Aviation Systems Design (CAASD), indicates that progress is being made to make air travel in Alaska safer. (More on the study later.) Mitre CAASD has been working on Capstone since it began, establishing technical specifications, developing architecture for the program's infrastructure, and designing systems integration, as well as conducting tests and evaluations.

### New Avionics

The Capstone program entered its first phase in 1998, in southwest Alaska's Yukon-Kuskokwim Delta region, where Bethel serves as an aviation center. The program's second phase, launched in 2001, is centered in Juneau and conducted in the southeast Alaska region.

In February the Chelton avionics package for Capstone Phase II was to be approved to provide three-dimensional navigation. The wide area augmentation system (WAAS)/GPS receiver achieved certification under the TSO 145/146 standard, and the display system was approved under various TSOs for a primary flight display (PFD). With the TSO 145/146 certified receiver (see sidebar, page 20), pilots in the Capstone program can use GPS as a sole means of navigation.

The avionics for Capstone Phase II operations comprise the following:

- Navigation and primary flight displays;
- WAAS/GPS receiver;
- Attitude heading reference system (AHRS);
- Air data computer;
- Integrated master caution warning system, which monitors aircraft performance, altitude, airspeed, fuel, area traffic and terrain; and
- Terrain awareness warning system (TAWS).

The Chelton system can include one to four liquid crystal displays, according to Pratt. "Operators in Phase II don't have to take the full suite," adds Worth Kirkman, lead engineer with Mitre CAASD. "Many may take the navigation display, but not take the primary flight display."

The Chelton system can provide pilots with both synthetic vision, for a forward-looking 3-D image drawn from the TAWS data base, and highway-in-the-sky (HITS) imagery, using data from the WAAS/GPS receiver and air data computer. Both graphic features can be shown independently, or one can be overlaid on the other—a capability that may be particularly beneficial when a pilot negotiates an approach to an airport in a mountainous area.

The map display for Capstone Phase II avionics will show marked improvement over the one developed for the Phase I package, which is "a kind of moving map, with a relative notion of the aircraft's relationship to terrain," says Kirkman. The Phase II map provides a "shaded image of the terrain...comparable to a TAWS display," he adds.

The Chelton package was to be certified in perhaps the most advanced Cessna 172RG. The University of Alaska owns the aircraft, and Anchorage-based Northern Lights Avionics Inc. installed a Chelton system that includes two LCDs, a PFD and a navigation display. "The system was designed for cabin-class aircraft," says Pratt. "But the STC covers all aircraft, from Piper Cubs to Citation jets."

Chelton was to have made an initial delivery of 15 systems for the Capstone program by late January. About a half dozen operators each will equip initially one or two of their aircraft with the new avionics. Two Part 135 operators—LAB, in Juneau, and Harris Aviation, in Sitka—are to receive the first systems for installation.

Pratt claims the Capstone package is being delivered to other customers, as well. They include a Hillsboro, Ore., completion center for installation on a [Raytheon] Beech King Air; FR Aviation Ltd. in the UK, for installation in about 100 military helicopters; and the U.S. Air Force and U.S. Drug Enforcement Administration (DEA), for OV-10 Broncos assigned to carry out night crop spraying in the narcotics producing regions of Colombia. "We also have an agreement with Aero Commercial Aircraft Group to provide the system as a factory option," Pratt adds.

## New Infrastructure

While Alaskan aircraft are being equipped for Capstone Phase II, FAA and Mitre CAASD are busy establishing a complementary instrument flight rule (IFR) infrastructure in southeast Alaska. Currently, the infrastructure includes a thin scattering of ground-based nav aids, largely VORs and NDBs, which require line of sight to successfully transmit signals. In mountainous Alaska, this often means limiting route altitudes for IFR flight to as high as 9,000 feet. Communications, too, is limited in southeast Alaska.

However, FAA plans to add VHF ground stations in the region, according to Jim Cieplak, principal systems engineer with Mitre CAASD. "And we are going to take advantage of WAAS and GPS to define our route structure."

"We expect the new routes to be published by the end of March," says Cieplak.

Referring to Victor 440, an IFR route through southeast Alaska, Cieplak adds that "aircraft normally would have to fly at 9,000 feet, using two VORs located in Sitka and Yakutat. But with WAAS/GPS, they can fly as low as 2,000 feet."

Rather than receiving positioning data from the ground, Capstone Phase II-equipped aircraft will receive the data from GPS satellites, with corrections derived from a WAAS geostationary satellite positioned over the Pacific Ocean Region (POR). The WAAS satellite receives the corrections from the west coast WAAS master station in Palmdale, Calif., which processes data from three ground stations in Alaska—in Anchorage, Juneau and Cold Bay. Capstone officials plan to complete the initial low-level IFR route structure in May 2003.

## Special FAR for GPS

A proposed Special FAR (federal aviation regulation) to permit IFR operations using GPS was issued for a 30-day public comment period, beginning in mid-January. The Special FAR "will allow us to use GPS for area navigation in Alaska," says Cieplak. "It will mean that aircraft operating in the region won't need a backup system to GPS. The commercial aircraft will be the exception in that they must have two GPS systems."

The Special FAR permits the use of GPS for lateral navigation (LNAV). "The WAAS/GPS receiver can provide both LNAV and VNAV [vertical navigation], but the TERPS [terminal instrument procedures] for GPS-VNAV haven't been finalized," Pratt reports. "We expect that to be done in 2004."

"When the TERPS are completed, the WAAS/GPS receiver will provide precision approach capability comparable to a [Category I] ILS," he adds. Pratt claims that WAAS/GPS receivers approved for both LNAV and VNAV will allow instrument approaches when conditions present a minimum 250-foot ceiling and half-mile visibility at unlighted airports and 250-foot ceiling and a quarter-mile visibility at lighted airports. "Initially, we will use baro [barometric] VNAV for non-precision approaches," says Pratt, of the Capstone Phase II-equipped aircraft.

In addition to the new low-level IFR routes, Capstone officials also plan to create special WAAS approach/departure procedures at three airports that now allow only VFR operations. These will be established for Haines, Gustavus and Hoonah, all common destinations for Part 135 operators flying from Juneau.

"These destinations are in rocky areas with a lot of weather and near glaciers, which produce fog," says Cieplak. "The minimums at the three airports will be in the range of 800 to 1,200 feet [ceiling] and two to five miles visibility."

At Juneau, Capstone officials plan to achieve 850-foot/two-mile minimums using WAAS/GPS, a considerable improvement over the current 2,120-foot ceiling and four-mile visibility minimums. This reduces the decision altitude at Juneau by more than 1,200 feet," says Cieplak. (Using RNP, Alaska Airlines has been able to reduce the minimums at Juneau to 724 feet and one mile.)

The Mitre CAASD engineer says the Capstone program "will move next to develop WAAS approaches in the Ketchikan/Petersburg area [south of Juneau] and then, eventually, will proceed throughout the state." Alaska has about 285 airports, and only 91 have published instrument approach procedures.

On top of on-board equipment and an IFR infrastructure, preparation for Capstone Phase II also requires considerable training. "All of these factors have to come together," says Cieplak.

He adds that the new Capstone Phase II equipment and procedures produce a large learning curve. "We're not just teaching the pilots, but we're also teaching FAA officials, so they can be up on the technology and specifications."

The Capstone office and University of Alaska are developing a training program for Capstone Phase II. A beta training class was being conducted early this year, and its approval for pilot instruction was expected this month.

### Safety Study

FAA established the Capstone program to improve air travel safety in Alaska, and results from the University of Alaska-Mitre CAASD study give preliminary evidence that the agency is achieving its goal. Although it is too soon to say exactly how beneficial Capstone will be (the study is ongoing), the "Capstone Phase I Interim Safety Study, 2000/2001" indicates that the program contributes to an improved safety record.

To form a baseline, the University of Alaska Anchorage's Institute of Social and Economic Research (ISER) first analyzed the accidents in Yukon-Kuskokwim Delta region prior to the Capstone program, from 1990 to 1999. Researchers "looked at the accidents and found that if the new technology had been installed on all aircraft in the test region during the 1990s, it might have...prevented one in seven accidents and nearly 50 percent of the fatal accidents," according to the study.

ISER subsequently compiled the following preliminary results from Capstone's "phase-in period," 2000 to 2001:

- Capstone equipped aircraft operated by commuter and air-taxi operators were in seven accidents, while non-equipped aircraft were in 12 accidents. Researchers caution, however, that it is premature to "assess whether this is a systematic change that will continue, or just the result of chance variation."
- Of the seven Capstone-equipped aircraft that had accidents, "only one was of the type that the new technology should have prevented." It was a CFIT accident, and the National Transportation Safety Board (NTSB) "found that the pilot had disabled the avionics feature that might have helped him avoid the crash."
- Only one Capstone-equipped aircraft was in a fatal crash. The accident, which took place on takeoff in clear weather, was "not a type of accident that Capstone was designed to address."

While three of the accidents involving non-equipped aircraft resulted from poor runway conditions, no Capstone-equipped aircraft were in such accidents. Researchers admit they "did not anticipate that Capstone avionics could reduce runway-related accidents." Nevertheless, they discovered from interviews with pilots that, with Capstone avionics, the pilots could "identify other planes that have just landed at a particular airport and then get in touch with the pilots of those planes and find out runway conditions."

As the number of airports in southwest Alaska with instrument approaches increased from three to 13, the number of IFR-certified commercial aircraft operating in the area rose from eight to 22 "and will likely continue to increase."

### Positive Feedback

From interviews with pilots and operators in the Yukon-Kuskokwim Valley region, researchers unearthed further positive feedback. They found that nearly half of the 106 pilots surveyed believed the Capstone Project made flying "much safer," and most of the remaining pilots said it "improved safety somewhat." And they found that operators who were reluctant to take part in the program in 1999 and 2000 have since asked to be included.

But problems also were reported. About 15 percent of the pilots complained of "more time spent using avionics instead of looking at where the plane is going and of more aircraft flying close together, because they are all using Capstone's GPS to fly in a straight line between villages." In addition, pilots noted that, in the winter, when wearing heavy gloves, they found it more difficult to operate the Capstone Phase I avionics' buttons and knobs.

The surveyed pilots also warned that the Capstone Phase I avionics require considerable training and that, so far, pilot training with the equipment lacks a quality standard. "Learning to use the GPS takes time," the study states.

"Also, the equipment has so many functions—weather, traffic, flight planning—that pilots can't master them all in one training session."

Still, ISER researchers recommend that the Capstone program continue and that Alaskan operators be encouraged to participate. "The Capstone program won't see its full benefits unless pilots and operators support it and use all its capabilities," ISER researchers state. For more on the ISER study, visit [www.alaska.faa.gov/capstone/docs/docs/htm](http://www.alaska.faa.gov/capstone/docs/docs/htm).

### **TSO 145/146 WAAS/GPS Receiver**

What must a wide area augmentation system (WAAS)/GPS receiver do to achieve the TSO 145/146 standard? Jim Cieplak, Mitre CAASD's principal systems engineer, lists the receiver's performance requirements in four scenarios:

- Receive an instrument flight rule (IFR) WAAS signal.
- If the WAAS signal is not available, the system must automatically revert to a fault-detection and exclusion (FDE) mode (like an "advanced RAIM [receiver autonomous integrity monitoring] mode," according to Cieplak). This mode detects faulty GPS satellites and excludes them from the navigational solution.
- If not enough satellites are in view for FDE, the system must automatically enter normal RAIM mode and give the pilot a RAIM flag, if navigation is unsure.
- With no GPS signal, the system must automatically enter an automated VFR (visual flight rules) dead-reckoning mode, which, with the Chelton avionics package, is done with the attitude heading reference system (AHRS).

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**Investments**

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## Alaska Capstone Avionics Loan Program

State of Alaska > Departments > Commerce, Community, & Economic Development > Division of Investments

### General Requirements

- Aircraft being upgraded must be owned by applicant.
- Aircraft being upgraded must be substantially operated in Alaska.
- Applicant must sign a declaration certifying that the aircraft being upgraded has flown at least 51% of its flight hours in Alaska over the last 12 months.
- Applicant must provide a copy of the airworthiness certificate and aircraft registration.
- All aircraft must at a minimum, be equipped with a Automatic Dependent Surveillance - Broadcast (ADS-B) data link system or sign an intent to equip loan agreement allowing up to 36-months from date of Promissory Note to equip aircraft with ADS-B.

### Program Requirements

- **Purchases** - Loans may be made to purchase and install eligible Capstone avionics equipment in aircraft that are substantially operated in Alaska. Avionics to be financed cannot have been purchased and installed more than 120 days prior to the date that a loan application is received by the Alaska Division of Investments.
- **Collateral** - Loans will be secured by a priority lien on the Capstone avionics being financed and by a lien on the aircraft receiving the improvements.
- **Refinancing** - Refinancing existing debt is not allowed.

### Eligible Avionics Equipment

- Automatic Dependent Surveillance - Broadcast (ADS-B) Data Link.
- GPS/WAAS navigation equipment.
- A moving map multifunction display (MFD); or
- Other equipment as determined by the Department of Commerce, Community, and Economic Development in consultation with the Department of Transportation and Public Facilities.

### Terms and Conditions

- Interest rate will be fixed at 4.0%.
- Maximum loan term is 10-years.
- Maximum loan amount is 80% of the cost.
- Borrower is responsible to pay all direct costs incurred in processing an application including the cost of obtaining an aircraft title report and any recording fees.

### Fees

- Application fee of \$50.00
- Closing costs include aircraft title search and FAA recording fee

### Additional Information

- Alaska Statute
- Regulations

## Alaska Capstone Avionics Loan Application

The following Alaska Capstone Avionics Loan Application pages are in PDF format. You will need the Adobe Reader in order to view/print them. Acrobat Reader is distributed freely and available for download from [Adobe®](#)

[Loan Application](#)

The Alaska Division of Investments, Department of Commerce, Community, and Economic Development complies with Title II of the Americans with Disabilities Act of 1990. This publication is available in alternative communication formats upon request. Please contact the Division of Investments at (907)465-2510 or TDD (907)465-5437 to make any necessary arrangements.

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- [Alaska Capstone Avionics Loan Program](#)
- [Community Quota Entity \(COE\)](#)
- [Commercial Fishing](#)
- [Small Business Economic Development](#)
- [Rural Development Initiative Fund](#)
- [Fisheries Enhancement](#)

### Of Interest...

- [Fisheries Enhancement Revolving Loan Fund Program Overview](#)
- [Interest Rates](#)
- [IFQs for Sale](#)
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## Rural Aviation

DOT&PF > Rural Airports > Frequently Asked Questions > Capstone Program

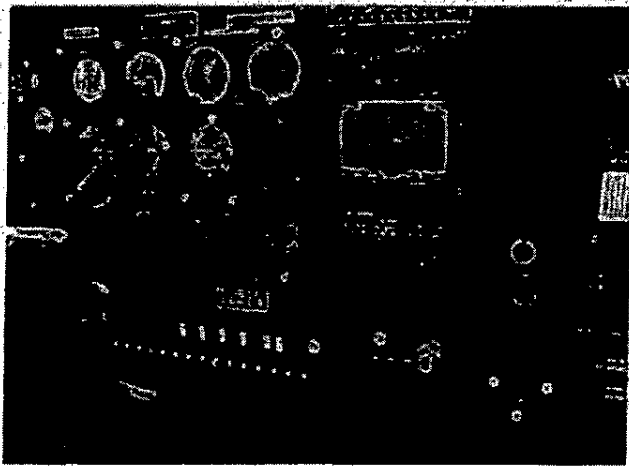
### Capstone Program in Alaska

Why is the FAA NextGen (Capstone) program important?

Alaska experiences the highest aviation accident rate in the nation. The hazards of bad weather, rough terrain, and absence of radar coverage all contribute to the high Alaska accident rate. Congress funded a research and development program called Capstone in southwest and southeast Alaska that created a technology system to improve flight safety and community access in rural Alaska. Capstone demonstrated a 47% reduction in the aviation accident rate, and was so successful that FAA decided to implement the technology nationwide, which is now called Next Generation or NextGen.

What is the FAA NextGen (Capstone) program?

Capstone is a cooperative effort by the FAA, Alaska aviation industry, and State of Alaska to improve aviation safety and community access by using a suite of new technologies that provides better flight information to pilots. Capstone equipped airplanes have a "moving map" video display screen, as can be seen in the picture below, which shows the pilot his own location relative to terrain, weather,

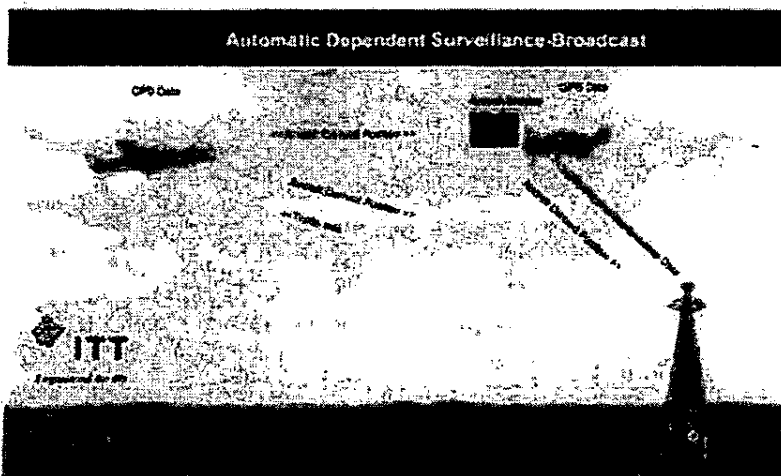


orientation, and other aircraft in the vicinity. Furthermore FAA Air Traffic Control simultaneously receives the aircraft position from a transponder, which greatly enhances communication with and between pilots. The Capstone system provides a Global Positioning System (GPS) instrument approach landing system, automated weather reporting, and communications providing pilots better information and demonstrably improving aviation safety.

Also in the event of an aircraft accident Capstone lets Air Traffic Control know the precise location of a downed aircraft. This allows rescue workers to know exactly where they should go to locate the aircraft, greatly improving the chances of a successful rescue effort in remote locations while substantially reducing search and rescue costs. Capstone provides all players in the aviation system much more and better information improving safety and rural community access for the flying public.

### Rural Aviation Links

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- [Aviation Leasing](#)
- [Frequently Asked Questions](#)
- [Statewide Aviation Staff](#)
- [Public Airports in Alaska](#)
- [Rural Airport Documents](#)
- [Statewide Aviation Links](#)
- [Alaska Airport Photos](#)



The simple graphic above shows how the Capstone system works. The integrated Capstone system technologies include ground based transmitters, communications equipment, transponders, Global Positioning System (GPS) navigation, surveillance, and weather reporting. FAA calls the system "Automatic Dependent Surveillance-Broadcast" (ADS-B), and is managed by their Surveillance and Broadcast Services program office. Air traffic controllers will begin using the "NextGeneration" technology in the Gulf of Mexico in December 2009.

**What is the FAA implementation plan?**

FAA plans to implement Capstone nationally setting geographic priorities based on FAA's evaluation of where they would get the most benefit for their investment. FAA's analysis places Alaska near the bottom of the implementation list even though the Capstone program was developed in Alaska by Alaskans. However, FAA signed an agreement with the Alaska aviation industry to accelerate Capstone implementation in Alaska based on the number of aircraft that would install the Capstone avionics equipment. FAA views this approach as reducing their risk and improving Alaska's Capstone benefit/cost ratio. Full implementation would occur when the Alaska aviation industry achieves avionics equipage in the aircraft that fly 90% of the total flight hours flown in Alaska, or 4,091 aircraft.

The Capstone Statewide Plan calls for a five-year "stair-step" approach where the FAA agreed to install and maintain Capstone ground and satellite infrastructure as specific number of Alaska aircraft install Capstone equipment. If the Alaska aviation industry fails to meet the equipment installation levels, FAA could reallocate the funding to a different geographic area of the U.S.

**Why should the State of Alaska participate?**

The Capstone program is an initiative to improve safety and rural access for the flying public in Alaska. The maximum benefits from the system will be realized by Alaskans when the maximum number of aircraft is equipped with Capstone avionics, which enables pilots to see and be seen on the Capstone system. Full avionics equipage will reduce the chance of mid-air collisions and accidents related to terrain or weather problems. Search and rescue costs will be reduced significantly. Rural access to medevac services will be greatly improved. The Capstone system serves public's best interest by improving public safety.

**What's happening with Capstone in Alaska?**

FAA will fully deploy Capstone infrastructure statewide if Alaska is able to achieve avionics equipage in at least 4,091 aircraft. While Alaskans created and are "early adopters" of Capstone technology, the main challenge is how to pay for avionics in each aircraft. Governor Pain spoke at the 2008 Alaska Aviation Trade Show at the FedEx Hanger about the importance of the Capstone program to aviation safety in Alaska. Governor Pain signed Senate Bill 249, which created the Alaska Capstone Avionics Revolving Loan Fund, a low-interest loan program to help aircraft owners purchase and equip Capstone electronics in Alaska based aircraft. The Division of Investments in the Alaska Department of Commerce, Community, and Economic Development administers the program. Terms of the loan program include no more than 10 years, interest rate not less than 4%, up to 80% of the purchase price, and collateralization for the loans. The loan program began July 1, 2008.

The State of Alaska approved \$125,000 in capital funding in the FY 2009 budget to equip seven aircraft with Capstone electronics. This includes equipping four IFR and three VFR aircraft in the Division of Wildlife Conservation, Alaska Department of Fish & Game.

Additionally the state made a grant of \$30,000 to the Alaska Air Carriers Association to help promote the Capstone Avionics Revolving Loan Fund to aircraft owners

The Alaska Capstone Program was started as a research and development program to improve safety and increase medical evacuation access in rural Alaska. Now the Alaska Capstone program is run by the FAA [Surveillance Broadcast Services \(SBS\) Western Service Area office](#)

#### **NextGen in the media**

Senator Mark Begich wrote recently about Capstone, now known as NextGen, in the publication *The Hill*. Begich said it "is the comprehensive initiative to modernize the nation's air traffic control (ATC) system from outdated ground-based radar to a more accurate satellite tracking system. NextGen also incorporates other technologies, which will increase efficiency in our skies and provide air traffic controllers and pilots with better communications and awareness of weather and surroundings." [read more>>](#)



Article 08. ALASKA CAPSTONE AVIONICS REVOLVING LOAN FUND

Sec. 44.33.650. Declaration of policy.

It is the policy of the state, under AS 44.33.650 - 44.33.690, to increase the safety of air carrier, air taxi, and general aviation intrastate air transportation in the state by providing low interest loans to qualified applicants for the purpose of purchasing and installing capstone avionics equipment.

Sec. 44.33.655. Alaska capstone avionics revolving loan fund.

(a) There is created in the Department of Commerce, Community, and Economic Development a revolving loan fund to be known as the Alaska capstone avionics revolving loan fund to carry out the purposes of AS 44.33.650 - 44.33.690.

(b) The Alaska capstone avionics revolving loan fund consists of the following:

(1) money appropriated to, transferred to, or received by gift, devise, bequest, or donation to the fund;

(2) principal and interest payments or other income earned on loans or investments of the fund;

(3) money chargeable to principal or interest that is collected through liquidation by foreclosure or other process on loans made under AS 44.33.650 - 44.33.690.

(c) Money in the fund may be used by the legislature to make appropriations for costs of administering AS 44.33.650 - 44.33.690.

Sec. 44.33.660. Powers and duties of the department.

The department may

(1) make loans to eligible applicants under AS 44.33.665 for the purchase and installation of capstone avionics equipment;

(2) receive, take, hold, and administer any appropriation, gift, grant, bequest, devise, or donation of money for the fund;

(3) establish amortization plans for repayment of loans, including extensions of the terms of loans;

(4) allow an assumption of a loan if the applicant meets the requirements established under this section;

(5) establish the rate of interest for loans consistent with law;

(6) charge and collect fees for services provided under AS 44.33.650 - 44.33.690;

(7) adopt regulations under AS 44.62 necessary to carry out the provisions of AS 44.33.650 - 44.33.690, including regulations to establish reasonable fees for services provided; and

(8) designate agents and delegate powers as necessary to the agents.

Sec. 44.33.665. Eligibility.

(a) For an applicant to be eligible for a loan under AS 44.33.650 - 44.33.690, the applicant must be the owner of an aircraft that logs a substantial percentage of flight hours in the state as determined by the department. For purposes of this subsection, an applicant may be an individual, corporation, partnership, limited liability corporation, limited liability partnership, limited liability company, joint venture, or nonfederal governmental entity.

(b) After consultation with the Department of Transportation and Public Facilities, the Department of Commerce, Community, and Economic Development shall establish by regulation the standards for capstone avionics equipment eligible for loans.

Sec. 44.33.670. Limitations on loans.

A loan established under AS 44.33.650 - 44.33.690

(1) may not exceed a term of 10 years, except for extensions under AS 44.33.660;

(2) may not bear interest less than four percent per year;

(3) must be secured by collateral acceptable to the department; and

(4) may not exceed 80 percent of the cost of the eligible capstone avionics equipment purchased with proceeds of the loan.

Sec. 44.33.675. Special account established.

(a) There is established as a special account within the Alaska capstone avionics revolving loan fund the foreclosure expense account.

(b) The department may expend money credited to the foreclosure expense account when necessary to protect the state's security interest in collateral on loans granted under AS 44.33.665 or to defray expenses incurred during foreclosure proceedings after a default by an obligor.

Sec. 44.33.680. Disposal of property acquired by default or foreclosure.

The department shall dispose of property acquired through default or foreclosure of a loan made under AS 44.33.650 - 44.33.690. Disposal must be made in a manner that serves the best interest of the state and may include the amortization of payments over a term of years.

Sec. 44.33.690. Definitions.

In AS 44.33.650 - 44.33.690,

(1) "capstone avionics equipment"

(A) means aviation navigation performance and safety technological equipment eligible for financing through the capstone program;

(B) includes global positioning system-based avionics equipment and data link communications suites;

(2) "capstone program" means a technology-focused aviation program administered by the Federal Aviation Administration in this state;

(3) "department" means the Department of Commerce, Community, and Economic Development.