Weather Camera Program Overview

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Our Mission
Improve Aviation Safety and Efficiency in the NAS

Goals
- Reduce weather-related aviation accidents
- Reduce weather-related flight interruptions
- Improve aviation flight decision making
- Enhance Flight Service Operations
Baseline Program Performance Metrics

**Safety**: Reduction of *Weather-Related Aviation Accidents*

(2007 Accident *Baseline* = 0.28 *weather-related accidents per 100,000 hours of operations*)

- 2008 Target = 0.24, Actual = 0.21
- 2009 Target = 0.22, Actual = 0.21
- 2010 Target = 0.20, Actual = 0.17
- 2011 Target = 0.18, Actual = 0.13
- 2012 Target = 0.17, Actual = 0.17
- 2013 Target = 0.16, Actual = 0.13
- 2014 Target = 0.15, Actual = 0.04

*(85% reduction 2007 - 2014)*

**Efficiency**: Reduction of Weather-Related Flight Interruption hours

(2007 Baseline = 15,374 *hours of weather-related flight disruptions*)

- 2008 Target = 11,327, Actual = 13,588
- 2009 Target = 9,748, Actual = 8,709
- 2010 Target = 8,370, Actual = 8,149
- 2011 Target = 7,941, Actual = 5,533
- 2012 Target = 7,724, Actual = 5,442
- 2013 Target = 7,503, Actual = 5,286
- 2014 Target = 7,369, Actual = 5,129

*(69% reduction 2007 - 2014)*
Weather Camera Program Overview

Camera Sites
- 230 Alaska FAA Camera Sites
- 5 Hawaii FAA Camera Sites
- 219 NAV Canada ‘Hosted’ Sites
- 23 Colorado DOT ‘Hosted’ Sites
- 4 Montana DOT ‘Hosted’ Sites
- 2 Mississippi ‘Hosted’ Sites
- 1 Michigan/Utah ‘Hosted’ Sites

Website Data Sets
- [https://weathercams.faa.gov](https://weathercams.faa.gov)
- Images, METARS, TAFS, PIREPS
- Satellite, RADAR, RCO/RCAGs
- Airports, Sectionals, NOTAMs, & more.

Wide Range of Users
- GA, Part 121/135/91
- Helicopter, EMS, SAR, Military
- NOAA / NWS
FAA Weather Cameras: Needs-Driven Innovation

- Aviation accidents resulted from lack of current adequate weather information. Weather camera images provide current weather information along the route of flight to facilitate improved decision making.
Look Before you Fly, versus Fly out and take a look!

- Improves Pilot Self-Briefing, Pre-flight and “Go/No-Go decision making”
- Reduces accidents, fatalities, and weather-related flight interruptions
Route-based Flight Decision Making
Weather Camera System Architecture

Cameras
- IP/POE
- Weather Proof
- RMM/RMC
- Heated Lenses

Vaisala WXT-536
- Winds Speed
- Wind Direction
- Temperature
- Humidity

Cloud Network

Camera Control Unit
- RMM/RMC
- Self repairing
- Low power
- Low Cost

I.P. Telecomm
- Cellular
- VSAT
- Radio Link
- Cable Modem
- DSL, Others

API - Data Feed
- Flight Service
- National Weather Service
- Public Users

WCAM OCC (RMM/RMC)

https://weathercams.faa.gov

Federal Aviation Administration
August 2013: NTSB Safety Recommendations

- **A-13-025** – Establish WCAM Service in Hawaii
- **A-13-026** – Establish WCAM Services in CONUS
- **A-13-027** – Enable Flight Service Specialists to brief images as a part of pilot weather briefings.
Hawaii Camera Installations

26 FAA Camera Facilities

- FAA Owned and Maintained
- Engineering Surveys completed.
- First Site installed at Loleau, Kauai
- 5 sites installed to date
- Estimated completion Sep 2023
Colorado DOT Cameras

FY 2020 - 2021
• 13 Mountain Pass WCAMs
• 10 Municipal Airport WCAM’s
• Images Integrated in WCAM Website

FY 2022 - 2023
• 40 additional Camera installs
Enables State DOT’s to participate in the FAA Weather Camera Program

- State DOT’s own and maintain camera systems
- FAA shares designs/technologies for installation and operations
- FAA retrieves, formats and integrates images onto its website: https://weathercams.faa.gov
New Business Case

• Expand FAA Owned and Operated Weather Camera Systems to additional sites in Alaska and Continental U.S. (CONUS) locations not served by DOT cameras
  - Evaluating up to 330 additional locations in the business case
  - 160 Alaska Weather Camera Locations (On-Airport/VWOS)
  - 170 CONUS Weather Camera Locations (Off-Airport)
Other WCAM Projects of Interest

Projects Under Test and Development

- **VWOS – Visual Weather Observation System**
  - Advanced, 360 degree camera system
  - Non Certified, self-validating weather sensors
  - Would be installed at Alaska, Hawaii, and CONUS airports where Certified Observations are not available

- **VEIA – Visual Estimation through Image Analysis**

- **Satellite WIFI telecommunications (Starlink, OneWeb)**
End

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