



Highlights of [GAO-10-678](#), a report to congressional requesters

Why GAO Did This Study

Ice formation on aircraft can disrupt the smooth flow of air over the wings and prevent the aircraft from taking off or decrease the pilot's ability to maintain control of the aircraft. Takeoff and landing operations can also be risky in winter weather. Despite persistent efforts by the Federal Aviation Administration (FAA) and others to mitigate icing risks, icing remains a serious concern. GAO reviewed (1) the extent to which commercial airplanes have experienced accidents and incidents related to icing, (2) FAA's inspection and enforcement activities related to icing, (3) the efforts of FAA and others to improve safety in winter weather, and (4) the challenges that continue to affect aviation safety in winter weather. GAO analyzed data obtained from FAA, the National Transportation Safety Board (NTSB), the National Aeronautics and Space Administration (NASA), and others. Further, GAO obtained information from FAA and NTSB officials and representatives of key aviation industry stakeholders.

What GAO Recommends

To help facilitate FAA's efforts to address challenges to improving safety in winter weather conditions, GAO recommends that FAA develop a plan focused on winter operations holistically that includes detailed goals and milestones. In response, the Department of Transportation agreed to consider GAO's recommendation and provided technical comments, which were incorporated as appropriate.

View [GAO-10-678](#) or [key components](#). To view the e-supplement online, click on [GAO-10-679SP](#). For more information, contact Gerald L. Dillingham, Ph.D. at (202) 512-2834 or dillinghamg@gao.gov.

AVIATION SAFETY

Improved Planning Could Help FAA Address Challenges Related to Winter Weather Operations

What GAO Found

According to NTSB's aviation accident database, from 1998 to 2009 large commercial airplanes were involved in six nonfatal accidents related to icing (including in-flight and runway). However, FAA and others recognize that incidents are potential precursors to accidents. Although large commercial airplanes have experienced few icing-related accidents in the last decade, the several hundred icing-related incidents involving these airplanes contained in FAA and NASA databases suggest that they face ongoing risks from icing.

Based on multiple inspections, FAA assesses each large carrier's ground deicing program to ensure that it meets relevant safety regulations. For fiscal years 2005 to 2009, FAA largely met its own requirements for inspecting carriers' ground deicing programs. When a carrier violates a safety regulation, FAA can take enforcement action against the carrier. For fiscal years 2005 to 2009, FAA initiated enforcement actions against large commercial carriers in 274 cases for violations of icing-related regulations.

FAA and other aviation stakeholders have undertaken many efforts to improve safety in icing conditions. For example, in 1997, FAA issued a multiyear plan for improving the safety of aircraft operating in icing conditions and has since made progress on the objectives specified in its plan by issuing regulations, airworthiness directives, and voluntary guidance. However, FAA has not formally updated its 1997 in-flight icing plan, meaning the stakeholders do not have a consolidated and readily accessible source of information on the key in-flight icing actions FAA has under way or planned. NTSB has issued numerous recommendations as a result of its aviation accident investigations, and NASA has contributed to research related to icing. In addition, the private sector has deployed various FAA-required technologies on aircraft, such as wing deicers, and operated ground deicing and runway clearing programs at airports.

GAO's interviews with government and industry stakeholders identified challenges related to winter weather operations that, if addressed, could improve safety. Among others, these challenges include improving the timeliness of FAA's winter weather rulemaking efforts, ensuring the availability of resources for icing-related research, and developing a more integrated approach to effectively manage winter operations. With respect to an integrated approach, FAA said it needs to begin focusing on winter operations holistically because there are many vital elements to safe operations in winter weather, such as airport surface conditions, aircraft ground deicing, aircraft in-flight icing and icing certification, and air traffic handling of aircraft in icing conditions. A plan that addresses both in-flight and ground icing issues, as well as the challenges stakeholders identified for this report, would help FAA measure its ongoing and planned efforts against its goals for improving safety. Furthermore, a comprehensive plan could help identify gaps or other areas for improvement and assist FAA in developing an integrated approach to winter operations.