On behalf of the University Corporation for Atmospheric Research (UCAR) and the university community involved in weather and climate research and related education, training and support activities, I submit this written testimony for the record of the House Committee on Appropriations, Subcommittee on Transportation, Housing and Urban Development, and Related Agencies.

UCAR is a consortium of 71 universities that manages and operates the National Center for Atmospheric Research (NCAR) and additional research, education, training, and research applications programs in the atmospheric and related sciences. The UCAR mission is to serve and provide leadership to the atmospheric sciences and related communities through research, computing and observational facilities, and education programs that contribute to betterment of life on Earth. In addition to its member universities, UCAR has formal relationships with over 100 additional undergraduate and graduate schools including several historically black and minority-serving institutions, and 40 international universities and laboratories. UCAR is supported by the National Science Foundation (NSF) and other federal agencies including the Federal Highway Administration (FHWA), and the Federal Aviation Administration (FAA). I would like to comment on the FY 2009 budgets for these agencies.

The Federal Highway Administration
The FY 2009 budget request for the FHWA should support the Administration’s and the country’s commitment to a safe, efficient, and modern surface transportation system. Weather research and intelligent transportation system (ITS) technology significantly contributes to this commitment. According to the National Academy of Sciences, adverse weather conditions obviously reduce roadway safety, capacity and efficiency, and are often the catalyst for triggering congestion. In the U.S. each year, approximately 7,000 highway deaths and 450,000 injuries are associated with poor weather-related driving conditions. This means that weather plays a role in approximately 28 percent of all crashes and accounts for 19 percent of all highway fatalities.

Road Weather Research and Development Program
Request: $3.3 million

Bad weather contributes to 15 percent of the nation’s congestion problems; the economic toll of weather-related deaths, injuries and delays is estimated at $42 billion per year. The Road Weather Research and Development Program (Section 5308 in the SAFETEA-LU authorization bill) funds the collaborative work of surface transportation weather researchers and stakeholders. This work is potentially life saving for the users of the national surface transportation system. Much has been accomplished already in understanding and developing decision support systems to address the impact of poor weather on the surface transportation system including congestion. For example, State Departments of Transportation (DOTs) have
already benefitted from the development and implementation of real world decision support solutions, including the Winter Maintenance Decision Support System which has been successfully demonstrated by 23 state DOTs, and the Clarus System, a research and development initiative to demonstrate and evaluate the value of integrating and processing data from state DOT weather observation systems across the nation. However, additional resources are required to develop technologies that will support improvements in traffic and emergency management to develop, test, and implement solutions nationally that will reduce congestion and save lives.

A fully funded Road Weather Research and Development Program could support such activities as developing technologies that would integrate weather and road condition information in traffic management centers, improved understanding of driver behavior in poor weather, developing in-vehicle information systems and wireless technologies that provide warnings to drivers when poor weather and road conditions exist, improving the understanding of the impact of weather on pavement condition, and developing new active control strategies (e.g., signal timing and ramp metering) optimized for poor weather and road conditions.

SAFETEA-LU (Section 5308) contains language that established the Road Weather Research and Development Program within the FHWA ITS Research and Development Program, with annual authorized funding at $5.0 million (significantly less than the National Research Council’s recommendation of $25.0 million). This road weather research program is well supported by numerous organizations including the American Association of State Highway and Transportation Officials (AASHTO), the Intelligent Transportation Society of America (ITSA), the Transportation Research Board (TRB), the National Research Council (NRC), State Departments of Transportation (DOTs), numerous commercial weather service companies, and the American Meteorological Society (AMS). Improved safety, capacity, efficiency and mobility, of the national roadway system will benefit the general public, commercial trucking industry, State DOT traffic, incident and emergency managers, operators and maintenance personnel. Environmental benefits will be realized due to improved efficiency in the use of anti-icing and deicing chemicals for winter maintenance, reduced congestion, and improved mobility. I urge the Committee to fund the Road Weather Research and Development Program at the authorized level of $5.0 million, at a minimum, in FY 2009.

Federal Aviation Administration (FAA)
Fliers nationwide are stuck in an air traffic jam. Famous for delays, Chicago, New York, and most recently, Newark airports, have all reached travel capacity, forcing them to reduce the number of flights in and out. To make matters worse, it is estimated that by 2025 U.S. air transportation will increase two to three times. Today’s existing air traffic control system will not be able to manage this staggering growth rate. Fortunately, the federal government has proactively responded by undertaking an unprecedented initiative: the Next Generation Air Transportation System (NextGen). While a joint effort involving a number of agencies, the FAA has taken the lead by developing a budget that truly supports developing and implementing NextGen. The FAA accounts mentioned in this testimony all support the much-needed transformation of the National Airspace System.
Research and Engineering Development Account (RE&D)
The following programs can be found within the RE&D section of the FY09 FAA budget request.

Weather Program
Request: $16.9 million

According to the FAA, 70 percent of flight delays are caused by weather. A key area for NextGen is using advanced forecasting techniques and shared information among all system users – dispatchers, pilots and controllers. FAA’s Weather Program is a research program focused on improved forecasts of atmospheric hazards such as turbulence, icing, thunderstorms and restricted visibility. Improved forecasts enhance flight safety, reduce air traffic controller and pilot workload, and enable better flight planning and productivity. The request of $16.9 million, however, is essentially flat; in real terms, it is down. To truly reduce delays associated with weather, it is essential this program be provided at least $20 million. Enhanced research and improved technologies will result in longer forecast lead times, increased accuracy and ultimately, more efficiency and safer skies. Two years ago, the request for the Weather Program was $19.5 million, but has declined since. I urge the Committee to support the goals of NextGen and provide the Weather Program $20.0 million, at a minimum, in FY 2009.

Weather Technology in the Cockpit
Request: $8 million

Weather, according to the FAA, is more than twice as likely to cause general aviation fatalities as any other factor and is also the largest cause of general aviation fatalities in the United States, equating to 200 deaths annually. Weather uplinks in the cockpit, when combined with a thorough preview of the weather during pre-flight planning and other cockpit weather avionics, will help ensure that general aviation pilots increase awareness and reduce accidents. Weather Technology in the Cockpit, a new and innovative program, will provide a common weather picture to pilots, controllers, and users, and will expedite flight planning and decision-making. “Cockpit weather” applied research will focus on hardware and software standards, integrate weather information, and prototype forecasting products for the flight deck. I urge you to support the FY 2009 request of $8 million, which will revolutionize the way pilots and controllers receive and use weather information in real-time.

Joint Planning and Development Office (JPDO)
Request: $20 million

The multi-agency Joint Planning and Development Office (JPDO) has accomplished much since its inception five years ago. The JPDO has a challenging mandate: to coordinate and manage six agencies focused on bringing NextGen online by 2025. It has completed its integrated work plan on how NextGen will improve safety, security, mobility, efficiency, and capacity to transform the nation’s air transportation system. Recently, the Secretary of Transportation tasked the JPDO to develop an action plan that would accelerate implementation of NextGen. The plan will address constraints and opportunities in both the near- and mid-term. After the action plan is approved, the intent is for the partner departments and agencies to start immediate implementation. In order to move forward with this directive, I urge the Committee to fund the Joint Planning and Development Office at the FY 2009 request of $20 million.
Wake Turbulence
Request: $10.1 million

Aircraft in flight create wake turbulence, dangerous swirling air masses that trail from aircraft wingtips. Better detection and forecasting of wake turbulence is a key element in the FAA’s safety program. Research results and technologies derived from the Wake Turbulence program will allow airports and airlines to operate more efficiently, increasing capacity and safety, by providing a better understanding of this phenomenon. I urge the Committee to support the FY 2009 request of $10.1 million for the wake turbulence program.

Atmospheric Hazards/Digital System Safety
Request: $4.8 million

The Atmospheric Hazards/Digital System Safety Research Program focuses on reducing the number of accidents or potential accidents associated with aircraft icing. The program promises to develop and test technologies that detect icing, predict anti-icing fluid failure, and ensure safe operations both during and after flight in icing conditions. To prevent the number and severity of icing-associated accidents, I urge you to support the FY 2009 request of $4.8 million for this life-saving program.

Within FAA’s Air Traffic Organization – Capital Programs, I would ask that you pay particular attention to the following critical programs:

NextGen Network Enabled Weather (NNEW) and Reduced Weather Impact
Request: NNEW: $20 million Reduced Weather Impact: $14.4 million

The current weather dissemination system is inefficient to operate and maintain. Information gathered by one system is not easily shared with other systems. This leads to redundant and inconsistent information, and in many cases information not being universally available or used leading ultimately to suboptimal decisions. The complementary goals of NNEW and RWI are to integrate tens of thousands of global weather observations and sensor reports from ground-, airborne-, and space-based sources into a single national (eventually global) weather information system, constantly updated as needed. This integration will be enabled by system-wide availability of observational and forecast weather information to all NextGen users, service providers, military planners, security personnel, and the flying public. The key word is "information." No longer will it be necessary to manually gather and integrate diverse weather data to realize a coherent picture of the weather situation -- that will be accomplished with automation assistance prior to dissemination to interested parties. This will enable “common situational awareness” of the weather, and rapid dissemination of any changes.

The request of $20 million for NNEW is significantly more than the FY2008 enacted level of $7 million, which illustrates the FAA’s commitment to NextGen. Because NextGen Network Enabled Weather and the Reduced Weather Impact Program are directly aligned with the goals of a flexible, safe, efficient air traffic system, I urge you to support the FY 2009 request of $20 million for NNEW and $14.4 million for Reduced Weather Impact.

Wind Profiling and Weather Research-Juneau
Request $1.1 million

In the late 1990s, after two 737s encountered severe turbulence during departure from the Juneau Airport, the FAA mandated a system be developed to provide high-wind alerts to pilots
at the airport. The Wind Profiling and Weather Research-Juneau program supports the design and development of the Juneau Airport Wind System (JAWS), an operational system designed to detect and warn of wind and airport turbulence hazards. This will result in reduced severe delays and flight cancellations. The FY09 request of $1.1 million, however, is a dramatic cut, which is extremely disruptive to the research program. *In order to complete the work of developing this turbulence alerting system, I urge the Committee to support the FY 2008 enacted level of $4.0 million for Wind Profiling and Weather Research-Juneau.*

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On behalf of UCAR, as well as all U.S. citizens who use the surface and air transportation systems, I want to thank the Committee for the important work you do that supports the country’s scientific research, training, and technology transfer. We understand and appreciate that the nation is undergoing significant budget pressures at this time, but a strong nation in the future depends on the investments we make in research and development today. We appreciate your attention to the recommendations of our community concerning the FY 2009 FHWA and FAA budgets and your concern for safety within the nation’s transportation systems.