On behalf of the University Corporation for Atmospheric Research (UCAR), a consortium of 76 research universities that manages the National Center for Atmospheric Research, I submit this written testimony regarding the FY 2012 appropriation for the record of the House Committee on Appropriations, Subcommittee on Transportation, Housing and Urban Development, and Related Agencies. I urge the Subcommittee to fully fund the $110 million request for the Federal Highway Administration’s (FHWA) Intelligent Transportation Systems (ITS) program including the ITS Wireless Innovation Initiative. Further, I ask that the Subcommittee also support $2.87 billion for the Federal Aviation Administration’s (FAA) Facilities & Equipment account and $190 million for its Research, Engineering and Development account.

“America is at a transportation crossroads. To compete for the jobs and industries of the future, we must out-innovate and out-build the rest of the world.”

– Transportation Secretary, Ray LaHood, testifying before the House Appropriations Subcommittee on Transportation, House and Urban Development, March 29, 2011

The Department of Transportation (DOT) relies on its partnerships with state DOTs, local transportation agencies, the first responder community, freight community, and the academic community, to meet its mission of ensuring a fast, safe, efficient, accessible and convenient transportation system that meets our vital national interests and enhances the quality of life of the American people. The academic and research community contributes directly to this mission with applied research and development of cutting-edge technologies to move people and shipments safely and expeditiously. Research on the physics of microbursts, for example, has resulted in the development of wind shear detection technologies, which has resulted in zero aircraft crashes today. Applied research is now being conducted on road snow and ice control, aircraft icing and turbulence, etc resulting in products that are saving industry and states tens of millions of dollars per year. I urge you to support the requested levels for the following programs:

**Federal Highway Administration Research, Technology, and Education Program**

Understanding and addressing adverse weather conditions helps mitigate the impacts of congestion and accidents, and is a high priority for the FHWA. The Research, Technology, and Education Program provides for a comprehensive, nationally coordinated program that aims to advance DOT organizational goals and accelerate innovation delivery and technology implementation in this area. This program includes a request of $257 million for several Research and Innovative Technology Administration programs, one of which I would like to comment on, FHWA’s Intelligent Transportation Systems (ITS).

**Intelligent Transportation Systems**
Every year, thousands of people are injured or killed in accidents on our nation’s highways because of bad weather and poor road conditions. The consequences go beyond those human costs to include lost productivity to commercial motor vehicle operators and the expense to local governments responsible for clearing accidents and repairing damaged roadways, to say nothing of the inconvenience to motorists. Thanks to its investment in R&D, soon innovative new wireless technologies will allow cars to share important safety data with one another, such as adverse weather and road conditions. Knowing about icy or foggy road conditions two miles ahead of drivers, for example, will save lives and keep the highways moving smoothly.

DOT’s IntelliDrive (renamed “Connected Research Vehicle”) program is the centerpiece of the DOT ITS 2010-2014 Strategic Research Plan. Intellidrive partners government, industry, academia and others to specify, develop and produce the necessary technology to gather and broadcast a car’s “heartbeat” continuously, including weather conditions. Road weather connected vehicle applications are the next generation of applications and services that assess, forecast, and address the impacts of weather on roads, vehicles, and travelers. Such applications will build upon decision support tools currently undergoing development, testing, and deployment (such as the Clarus Regional Demonstrations, the Maintenance Decision Support System and Vehicle Data Translator).

To meet its core research and technology transfer mission, I urge you to support the requested amount of $110 million for ITS, including IntelliDrive and its V-V and V-I Communications for Safety ($43.3 million) and Dynamic Mobility Applications ($14 million) and ensure that road weather is included as an important safety and mobility research and development topic in these programs.

Intelligent Transportation Systems Wireless Initiative

DOT’s ITS program is also launching a new research initiative focused on real-life transportation problems by improving transportation safety, relieving congestion, and enhancing productivity. The budget request includes funding for the ITS Wireless Initiative, which will be managed by RITA and funded out of the Miscellaneous Appropriations account. This new program will develop “living laboratories,” while leveraging the existing transportation infrastructure, where innovative wireless communications methods and applications can be developed safely to advance into deployment. To accomplish its goals, the DOT will leverage the knowledge, expertise and experience of the research community. I urge you to support the request for this initiative of $100 million.

Federal Aviation Administration (FAA)

The FAA’s 2012 budget request supports continued aviation safety research, focusing on critical areas such as turbulence, in-flight icing, storm prediction, oceanic weather, and restricted visibility. For more than two decades, the FAA has funded R&D efforts aimed at improving short-term forecasting of storm hazards affecting aviation.

Research, Engineering, and Development (RE&D)

The FY 2012 request continues important work in current research areas, including aviation weather research. This budget supports enhanced Next Generation Air Transportation System (NextGen) research and development efforts in the areas of air-ground integration, weather information for pilots, and environmental research for aircraft technologies and alternative fuels to improve aviation’s environmental and energy performance. The following programs can be found within the RE&D section of the FY12 FAA budget request.
Weather Program

The goal of the Weather Program is to increase safety and capacity, and to support NextGen. A number of aviation weather research projects are underway, in collaboration with industry representatives, focusing on in-flight icing, turbulence, winter weather and deicing protocols, thunderstorms, ceiling, and visibility. One example of a system that translates a large amount of weather data into significant safety and delay improvements is the Consolidated Storm Prediction for Aviation (CoSPA). Thunderstorms and winter storms have long been recognized as significant safety hazards, as well as major causes of system delays. Using CoSPA, accurate forecasts of storms can be translated into probable impacts to the system. This allows for improved decision making, providing improved safety and reduced delays.

I am very concerned that the budget request of $16.4 million simply won’t be able to support the R&D needs of the Weather Program. The request for this program is down more than two percent from the FY 2010 level and is operating at half the level of funding ten years ago. To address the challenges and to meet the research needs of NextGen, the Weather Program must receive, at a minimum, $18 million for FY 2012.

Weather Technology in the Cockpit

The recent crash of an Air France jet over the Atlantic Ocean, killing all 216 passengers and 12 crew members, is an example of the limits of pilots’ ability to cope with severe weather. Pilots currently have little weather information as they fly over remote stretches of the ocean, which is where some of the worst turbulence encounters occur. Providing pilots with at least an approximate picture of developing storms could help guide them safely around areas of potentially severe turbulence.

The Weather Technology in the Cockpit Program leverages research activities with other agencies, academia and the private sector by enabling the adoption of cockpit technologies that provide pilots with hazardous weather information and improve situational awareness.

I am very disappointed that the FY 2012 request for this small but life-saving program was reduced almost four percent from FY 2010 levels. I urge you to fund the Weather Technology in the Cockpit program at $10 million, at a minimum.

Facilities and Equipment

Within Facilities and Equipment, I would like to call your attention to two very important programs, NextGen Network Enabled Weather and Reduce Weather Impact.

NextGen Network Enabled Weather (NNEW)

Delays in the National Airspace System (NAS) are primarily attributable to weather. According to the FAA, over the last five years, over 70 percent of delays of 15 minutes or more, on average, were caused by weather. Weather also impacts safety. Between 1994 and 2003, weather was determined to be a contributing factor in over 20 percent of all accidents. Currently, most operational decision tools do not utilize weather information effectively or at all. Therefore, exploring, identifying, and employing better methods for data collection and communication will help facilitate the flow of operation-specific weather data and information to end users.

The NNEW multiagency project is dedicated to using and developing technologies and standards for NextGen that will support effective dissemination of weather data. NNEW will develop the FAA’s
portion of the 4-Dimensional Weather Data Cube. This will provide standardized information from disparate contributors and locations, to a variety of end-users, such as air traffic managers and pilots.

*The FY 2012 request for NNEW is $27.35 million, a $7 million increase over FY 2010. To develop the NextGen weather dissemination system smoothly and efficiently, I urge you to support this request.*

**NextGen Reduce Weather Impact**

The goal of the NextGen Reduce Weather Impact program is to provide increased capacity in the National Airspace System that reduces congestion and meets projected demand in an environmentally sound manner. The current weather observing network is inadequate to the needs of NextGen, and improvements will be central to the work in the Reduce Weather Impact Program. Working with appropriate scientific, modeling and user communities, current sensor information and dissemination shortfalls will be identified and evaluated. Investigating technologies for optimizing and improving automated aircraft weather reporting will also be conducted, to meet NextGen requirements.

The Reduce Weather Impact portfolio will leverage the NNEW transformational program that will interface with NOAA’s 4-D Weather Data Cube, for universal common access to weather information.

*To continue this work, I urge you to increase the NextGen Reduce Weather Impact program funding to $43.2 million, an increase of $7.6 million from FY 2010.*

On behalf of UCAR, I want to thank the Subcommittee for its leadership in supporting research and development and technology transfer programs within the FHWA and FAA and for your commitment to ensuring safer, more efficient air and road travel. I urge you to support these relatively small, but critically important R&D programs within the FHWA and FAA FY 2012 budgets.