OBAMA-BIDEN TRANSITION PROJECT

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Perspective on NASA Priorities for Civil Aviation

For several decades the United States has been the world leader in advancing the sciences of flight, but our nation's ability to conduct basic aeronautical research by NASA is being reduced to a precipitous level. This situation threatens America's future competitiveness in aviation and could have a profound technological and economic impact upon our nation in future years.

NASA has contributed to advancing the sciences of flight but recent Administration funding cuts and redirection of NASA research funding into other government priorities is now threatening NASA's ability to conduct important aeronautical research. Conversely, while NASA continues to reduce its agenda on basic and pre-competitive aeronautical research, European research in aeronautical sciences continues to increase significantly.

Overall aeronautics funding declines pose a significant threat to airline operators, the travelling public, the industry at large, and overall national competitiveness. The issue is not about a lack of funding sources or is it regarding government and industry ideology on cooperative basic research. It is fundamentally about how America prioritizes an important U. S. industry.

America needs a fully funded agenda of long term aeronautical research if this nation is to remain a world leader in aviation. The government should work with industry and academia in establishing a dialog to determine and implement an agenda for long term NASA Aeronautics Research. The following are recommendations for specific areas of focus for NASA:

Environment Research: Governments worldwide have recognized the critical role that technology plays in preparing nations to adapt to and confront climate change, and significant foreign government funding is being allocated to incentivize the development of innovative and environmentally progressive technologies in commercial aviation. U.S. industry will continue to pioneer environmentally progressive products and services for aviation stakeholders and remains committed to improving technologies for sustainable, renewable energy systems. Toward this end, the industry could benefit tremendously from NASA engagement in R&D initiatives in environmentally progressive technologies, including projects focused on low emissions engine technology, alternative fuels (including sustainable biofuels), and alternative power sources of aircraft and/or ground support equipment. NASA can also play a key evaluation/testing role for the US government – such as ensuring that aviation emissions are evaluated in context with other sectors and modes of transportation, and developing models to help industry and government stakeholders accurately evaluate the potential benefits of alternative fuels. In addition to emissions reduction technology, NASA can play an important role in R&D programs related to noise reduction – partnering with industry to develop, demonstrate and test efficient and quiet designs and operations.

Air Traffic Management: NASA is the sole agency responsible for long-term ATM research and development. In that role NASA is responsible for foundational and transitional research and development that supports modernization of the air transportation system. Unfortunately, NASA's budget for ATM research and development has been steadily decreasing, creating a real risk to air transportation modernization. It is critical to both our economy and our environment that NASA increase spending on ATM research and development to accommodate the capacity demands of our growing economy. Spending on technologies and concepts that improve the efficiencies of our air transport system are a key component of emissions reduction priorities. A key example is the work that NASA worked with other stakeholders on Tailored Arrivals at San Francisco Airport. Building on research led by NASA over the last few years, Tailored Arrivals were implemented for operational use at the beginning of 2008. Fuel savings for a fully

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completed Tailored Arrival have ranged between 1400 and 2800 lbs of fuel for each aircraft trip. NASA must continue to fund programs that improve air traffic efficiency in all phases of flight. NASA's leadership in this area is critical to a safe, secure and efficient air transportation system.

Fundamental Long-Term Aeronautics Research: It is essential for the NASA and partner research institutions to contribute to foundational technology development. The priority areas of research in this realm include aerodynamics, materials, aero structures, aircraft systems, advanced aircraft computing and networks, manufacturing processes, and methods for aircraft noise reduction.

Systems Testing: Airplane Flight Test programs are an essential element of demonstrating compliance with all regulations and ensuring safe operations in service. However, flight test programs are very expensive, and significant benefits can be gained by conducting as much testing as possible in lab and simulation-based environments. Research on how to structure these lab test programs and how to ensure safety and compliance in the most economic fashion when aircraft system changes have been made will help industry. This research must demonstrate that the test programs are sufficient to ensure that no escapes have occurred and that airplanes entering into service are fully compliant and service ready.

Wind Tunnels: An integral part of any airplane development program is the ability to evaluate design performance through the use of multiple wind tunnels that allow the manufacturer to simulate the myriad flight conditions faced by a future airplane program. Multiple tunnels allow users to simulate myriad flight conditions and are used during the product development, certification/acceptance testing and in-service support phases of the product development. Given the tremendous capital costs associated with building and maintaining effective wind tunnels, industry has relied on government agencies to augment existing in-house wind tunnel capabilities to assess candidate vehicle designs. These government wind-tunnels thus become a critical component of design and development programs, and NASA’s ability to offer world class tunnel capability for a commercial fee is essential.