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United States Government Accountability Office
Washington, DC 20548

May 17, 2006

The Honorable Ken Calvert
Chairman
Subcommittee on Space and Aeronautics
Committee on Science
House of Representatives

Subject: *Responses to Questions for the Record; Hearing on The Future of Air Traffic Control: The R&D Agenda*

Dear Chairman Calvert:

This letter responds to your April 26, 2006, request that we address questions submitted for the record by Members of the Subcommittee related to the March 29, 2006, hearing entitled *The Future of Air Traffic Control: The R&D Agenda*. Our answers to your questions are attached. Our responses are based on our previous and ongoing work and our knowledge of the areas addressed by the questions. We prepared our responses during May 2006 in accordance with generally accepted government auditing standards. Because our responses are based in large part on previously issued products for which we sought and incorporated agency comments, we did not seek agency comments on our responses to these questions.

We are sending copies of this report to the Administrator, Federal Aviation Administration, and the Director, Joint Planning and Development Office. We will make copies available to others on request. This report is also available on GAO's Web site at www.gao.gov.

If you have any questions or would like to discuss the responses, please contact me at (202) 512-2834 or dillinghamg@gao.gov.

Sincerely yours,

Gerald L. Dillingham

Gerald L. Dillingham, Ph.D.
Director
Physical Infrastructure Issues

Enclosure – 1

Responses to Post-Hearing Questions for the Record
The Future of Air Traffic Control: The R&D Agenda
Subcommittee on Space and Aeronautics
Committee on Science
House of Representatives
Submitted May 17, 2006

Questions for Gerald L. Dillingham, Ph.D., Director
Physical Infrastructure Issues
Government Accountability Office

Questions for the Record Submitted by Chairman Ken Calvert

1. Several witnesses stated that maintaining support for JPDO from its participating agencies over the long-run was critical. What organizational and management changes, if any, do you recommend to enhance long-term support of JPDO?

To date, the Joint Planning and Development Office's (JPDO) current organizational structure appears to facilitate the federal interagency collaboration that is central to JPDO's mission. However, as the transition to the next generation air transportation system (NGATS) moves forward, the volume and complexity of the tasks will increase. Consequently, it is important for JPDO to define and institutionalize the roles and responsibilities of its partner agencies to ensure the long-term support for planning and implementing NGATS. The institutionalization of roles and responsibilities is especially important since the NGATS effort will extend through eventual changes in agency and JPDO leadership. Currently, there is no formal, long-term agreement on the partner agencies' roles and responsibilities in creating NGATS. According to JPDO officials, a memorandum of understanding that would define the partner agencies' relationships was being developed as of August 2005, but has not yet been completed.

Also important to enhancing the long-term support of JPDO are steps to integrate the NGATS goals into partner agencies' budget processes. Currently, JPDO is working with the Office of Management and Budget (OMB) to establish a process for identifying the NGATS as a unified program. We believe that this is a good first step to ensure that NGATS moves ahead in a coordinated, coherent manner.

In addition, one mechanism for enhancing and sustaining federal collaborations is to use agencies' strategic and annual performance plans as tools for establishing complementary goals and strategies. However, based on our initial assessment of the partner agencies' strategic plans, we found that only the Department of Transportation (DOT), the National Aeronautics and Space Administration (NASA), and the Federal Aviation Administration (FAA) have incorporated the NGATS goals into their agency-level strategic plans. Although we have not completed our review of the partner agencies' strategic plans, including the National Oceanic and Atmospheric Administration's (NOAA) strategic plan, more opportunities exist for integrating the

NGATS goals into the partner agencies' plans and budgets. For example, only NASA's current reauthorization act requires the agency to align its aviation research projects to directly support the NGATS goals. This type of congressional action can reinforce accountability for the JPDO collaboration by aligning agency goals and strategies with those of NGATS and further institutionalize the NGATS goals into the partner agencies' plans.

[Chairman Calvert]

2. What critical policy decisions must be made by the Senior Policy Committee before the JPDO can start down a particular technology and architecture path? For example, do decisions need to be made on the degree to which responsibility for aircraft can be handed over to automated systems, or whether some airplanes will be allowed to fly using "Visual Flight Rules" instead of filing a flight plan, or how NGATS will treat commercial aviation vs. general aviation? What significant policy issues do you think fall into this category?

Before the JPDO can start down a particular technology and architecture path, the Senior Policy Committee (the Committee) must first approve the budget guidance that the JPDO provides to the partner agencies. That document recommends specific research initiatives, technologies, and schedules for implementation and deployment. For fiscal year 2007, the JPDO's Integrated Product Teams (IPT) identified a number of "Jump Start" initiatives, including putting Automatic Dependent Surveillance–Broadcast (ADS-B) and System Wide Information Management (SWIM) on the fast track. These initiatives were included in agency budget guidance that was approved by the Committee. In the future, such decisions will flow from the enterprise architecture. JPDO plans to have an early version of the enterprise architecture available by the end of this fiscal year, with significant IPT input.

The policy decisions suggested in the question above are among those that the Committee could decide. For example, the Committee could address policy issues surrounding how roles and responsibilities for handling increased traffic may shift as a result of the increased reliance on automation envisioned in NGATS. Concerning general aviation, JPDO officials noted that NGATS has the potential to provide significant benefits to this community. However, they said that it is difficult to specify exactly what decisions the Committee would have to make concerning general aviation. Officials said that most of these decisions, when they occur, will be tied to the requirements of the enterprise architecture. In any event, it is likely that decisions on concepts and policies relating to general aviation would be made in concert among JPDO, the Committee, and FAA to address concerns such as visual flight rules vs. instrument flight rules. New technologies would require testing or demonstrating for use in the national airspace system (NAS). Also, FAA would have to start developing the regulation for implementation at the appropriate point so that the regulation would be available at the appropriate time.

[Chairman Calvert]

3. What are your views about the wisdom of having JPDO contract out much of the development work for NGATS to a lead systems integrator? What are the advantages and disadvantages of bringing in a lead systems integrator for NGATS?

Determining whether using a lead systems integrator (LSI) would be advantageous or disadvantageous in planning NGATS depends on a number of considerations. According to criteria developed by the National Academies, Committee on Systems Integration for Project Constellation, using an LSI could

- provide better systems integration knowledge, experience, and capabilities;
- recruit more talented personnel and manage complex organizational and international relationships;
- better identify and obtain advanced technologies from many sources;
- provide more experienced and disciplined project management experience; and
- bring greater credibility (public and political) to the project.

Determining whether the use of an LSI is the most efficient and effective way to achieve these goals for NGATS should be a major consideration in JPDO's decision whether to engage an LSI. However, our work has shown that using an LSI does not guarantee success. For example, the Department of the Army (Army) has used an LSI for the Future Combat Systems because the program was the most significant technology and integration challenge that it had ever undertaken. Because of the complexity of this program, the lack of knowledgeable personnel, and the need for more management and acquisitions flexibility than could be obtained through normal contracting procedures, the Army selected an LSI. However, we reported that the program was behind schedule and over budget despite its use of an LSI.

Questions for the Record Submitted by Ranking Member Mark Udall

1. Would a requirement—enforced by OMB—that the agencies involved in the JPDO develop an annual, coordinated, cross-agency budget laying out the resource allocations by agency and by JPDO-defined goal make the JPDO planning process more credible and help overcome the intrinsic weakness of a JPDO that doesn't actually control budgets?

Yes, we believe that an annual, coordinated, cross-agency budget request would be beneficial in trying to realize the goals of JPDO. We have previously stated that JPDO faces a challenge in leveraging resources among its partner agencies because JPDO is fundamentally a planning and coordinating body that lacks authority over the key human and financial resources needed to continue developing plans for NGATS.

JPDO is currently working with OMB to develop a systematic means of reviewing the partner agency budget requests so that NGATS-related funding in each is easily identified. We plan to further explore these budgetary issues with JPDO and OMB as part of our ongoing work, and to report our findings later this year.

[Ranking Member Udall]

2. What do you consider to be the most important R&D challenges that will have to be overcome if the JPDO is to successfully deliver a Next Generation Air Transportation System?

Identifying important research and development (R&D) challenges will depend to some extent on the development of the NGATS enterprise architecture. However, it is already known that one important R&D challenge that must be overcome to deliver NGATS is to fully understand and address the human factors challenges associated with automation. For example, using automation raises questions about the extent to which the system will be automated and whether controllers will have the ability to accept or reject automated commands. Additionally, the human factors issues related to changing the workload of air traffic controllers and pilots is critically important because NGATS envisions a shift of some of a controller's workload to pilots. Although JPDO has begun to model how shifts in air traffic controllers' workloads would affect their performance, it has not yet begun to model the effect of how this shift in workload to pilots would affect pilot performance. According to a JPDO official, modeling the effect of changes in pilot workload has not yet begun because JPDO has not yet identified a suitable model for incorporation into its suite of modeling tools.

Another important challenge facing JPDO's delivery of NGATS will be obtaining the resources necessary to complete the R&D of technologies that NASA has initiated. With NASA's new focus on fundamental aeronautics research, the agency does not intend to develop technology to the level that it did in the past. JPDO will have to fill this gap by leveraging the resources necessary to further develop, validate, and demonstrate these technologies. We plan to explore how NASA's new focus on fundamental aeronautics research will impact the transition to NGATS as part of our ongoing work.

[Ranking Member Udall]

3. How well are the various agencies' R&D programs aligned with the requirements of the NGATS? What will it take to ensure that the R&D programs are properly aligned?

For alignment of R&D programs with the needs of NGATS, JPDO must identify the R&D projects across partner agencies that support NGATS and encourage the agencies to fund and develop these projects. These efforts are already under way, as JPDO is examining the partner agencies' R&D programs to see if they are consistent with NGATS goals. As part of these efforts, JPDO has identified five early opportunities—R&D programs in the fiscal year 2007 budget that it can focus on immediately. These programs include network-enabled operations to strengthen national security, cooperative surveillance via ADS-B to increase security and safety, the development of SWIM, defining NGATS Required Total System Performance (RTSP), and aligning levels of service to match RTSP.

The NGATS enterprise architecture, when completed, will be a key tool that helps partner agencies align their R&D programs. Because it will provide a blueprint for NGATS, partner agencies will better understand what R&D is needed to allow their systems to interact with those of other partner agencies in meeting the goals of NGATS. It will also help private sector manufacturers align their R&D activities to support NGATS.

[Ranking Member Udall]

4. Is the current structure and authority of the JPDO adequate to meet the responsibilities given the Office to develop and implement the NGATS, and if not, what changes are needed? If you think changes are needed, how soon do they need to be made?

To date, JPDO's current organizational structure appears to facilitate the federal interagency collaboration that is central to JPDO's mission. However, JPDO is fundamentally a planning and coordinating body that lacks authority over the key human and technological resources needed to continue developing plans and system requirements for NGATS. Consequently, the ability to continue leveraging resources of its partner agencies will be critical to JPDO's success, especially as partner agencies' will need to commit more resources for further refining and implementing NGATS.

Under its current structure, JPDO has begun taking critical steps to achieve its mission and align the resources of its partner agencies. These steps include efforts to identify opportunities for coordinating and leveraging partner agencies' research and development efforts, using staff from the partner agencies to support JPDO work, and begin aligning its partner agencies' budgets to support the NGATS. However, JPDO could be doing more under its current structure. For example, the institutionalization of roles and responsibilities is especially important since the NGATS effort will extend through eventual changes in agency and JPDO leadership. However, there is no formal, long-term agreement on the partner agencies' roles and responsibilities in creating NGATS.

As JPDO continues to evolve and mature as an organization, changes to JPDO's authority and structure will need to be continuously evaluated and considered. Officials and stakeholders have suggested several options for changing the structure and authority of JPDO. These options include

- making JPDO a program office with its own budget;
- elevating the position of the JPDO director within FAA or DOT;
- using an LSI; or
- adding a legislative requirement for partner agencies to align their research projects with the NGATS goals.

For example, NASA's current reauthorization act requires the agency to align its aviation research projects to directly support the NGATS goals. This type of congressional action can reinforce accountability for the JPDO collaboration by aligning agency goals and strategies with those of the NGATS and further institutionalize the NGATS goals into partner agencies' plans. However, before changes are made to JPDO's structure and authority, the pros and cons of each of these options should be evaluated.

[Ranking Member Udall]

5. What specific roles are human factors R&D and training playing in the design of the NGATS, and how important are they to the overall success of the NGATS?

JPDO officials have recognized the importance of human factors considerations for R&D and have indicated their intention to apply human factors throughout the planning and development phases of NGATS. For example, as part of the planning for NGATS, JPDO has used modeling to study how changes in the duties of air traffic controllers could affect the workload and performance of other airport ground personnel. The human factors issues related to shifting some workload from air traffic controllers to pilots is also critically important. However, JPDO has not yet begun to model the effect of this shift on pilot performance because, according to a JPDO official, the office has not yet identified a suitable model for incorporation into its suite of modeling tools.

JPDO also intends to study the human factors implications of training air traffic controllers. A JPDO official said that they have not yet begun to assess these implications because the enterprise architecture—a blueprint for NGATS which will indicate the technologies to be used—is still being prepared. However, the transition from the current NAS to NGATS could affect training. For example, according to a JPDO official, it is anticipated that, during the transition period, controllers will have to be cross-trained on both the equipment being replaced as well as the NGATS equipment, resulting in increased training costs.

JPDO officials have also indicated that they anticipate using human factors considerations to plan and validate the operational concepts during the research and development phase that have been identified for NGATS. Human factors considerations include the development of scenarios to use for testing new equipment as well as to explore training needs of aviation personnel.

5a. What do you think are the most important human factors issues to be addressed?

While JPDO officials have identified some important human factors issues to date, additional important human factors issues include how new procedures and technologies are introduced to controllers; what techniques are used to train controllers; what support equipment, such as simulators, can be introduced to aid controller training; and whether various controller functions should be replaced by automation or remain manual with some automated actions that support the controller.

[Ranking Member Udall]

5b. NASA has lost a number of its human factors researchers in recent years—what impact will that have on the ability of the JPDO to address the key human factors issues associated with the NGATS?

We have not yet examined the contributions of NASA researchers to JPDO's efforts on human factors. We plan to explore this issue and include our findings in our report on JPDO to be released later this year.

[Ranking Member Udall]

6. What is the relationship between FAA's Air Traffic Organization and the JPDO—is it sufficiently well defined?

FAA's Air Traffic Organization (ATO) has responsibility for operating, maintaining, and modernizing the current air traffic control system. JPDO is responsible for planning and coordinating the broader, longer-term transformation to NGATS. The formal relationship is that JPDO reports to ATO's Chief Operating Officer for day-to-day management oversight and to FAA's Administrator for national direction. At present, this relationship is in the process of maturing. Within the last year, ATO has reportedly modified its modernization plans to represent the FAA portion of JPDO's plan for NGATS. This is a positive development.

Our work has shown that collaborating agencies should work together to define and agree on the respective roles and responsibilities, including how the collaborative effort will be led. In JPDO's case, there is no formalized long-term agreement with any of the partner agencies, including FAA, on their roles and responsibilities in creating NGATS. According to JPDO officials, a memorandum of understanding that would define partner agency relationships was being developed as of August 2005, but has not yet been completed.

Further definition of the roles and responsibilities between ATO and JPDO will be particularly important, since both organizations have responsibilities related to planning NAS modernization. JPDO's planning must build upon the ATO's existing modernization program, while the ATO must ensure that its ongoing modernization efforts are consistent with JPDO's plans. ATO faces a challenge in funding the current system to keep it up and running on a 24/7 basis while funding the transition to NGATS.

JPDO's former director served concurrently as the ATO's Vice President for Operations Planning, which helped with coordination between the two organizations. However, FAA now plans to establish separate positions for the JPDO Director and the ATO Vice President for Operations Planning. Doing so increases the importance of establishing a clearly defined relationship between these organizations.

[Ranking Member Udall]

7. Through what mechanisms are the views of industry being incorporated in the JPDO planning process, and how well are those mechanisms working thus far? What, if anything, would you recommend be done to improve the interaction of industry with the JPDO planning process?

JPDO's mechanism for incorporating industry's views into the planning process is the NGATS Institute (the Institute). The Institute was created within a non-profit arm of the Aerospace Industries Association. Its mission is to facilitate the participation of experts from the private sector, academia, and state and local governments with the JPDO, and to conduct special studies. To date, the Institute has placed 197 experts on the IPTs.

The Institute is governed by a 16-member Institute Management Council (IMC), which is broadly representative of the aviation stakeholder community. The IMC's co-chairs, for example, are from the Air Line Pilots Association (which represents commercial pilots) and the Air Transport Association (which represents major commercial airlines). Other members are from regional airline operations, business aircraft operations, helicopter operations, and other aviation-related entities. The Institute held its first public meeting on March 28, 2006, in Washington, D.C. IMC board members and JPDO officials answered questions from attendees and discussed NGATS challenges.

The Institute is also holding a series of investment analysis workshops to collect information from industry to provide input on NGATS programs, costs, sequence, and schedule. The first workshop, in April 2006, was for members of the commercial and business aviation community. In May or June, a second workshop is planned for general aviation, military, and public safety sectors. A third workshop is planned for early July for airports and state and regional aviation groups. JPDO plans to spend six months working with participants from the three workshops to refine its cost estimates.

JPDO could improve the interaction of the aviation industry in its planning process by incorporating greater industry input into JPDO's four divisions—Enterprise Architecture, Enterprise Engineering and Integration, Portfolio Management, and Evaluation and Analysis. This could include seeking the expertise of industry experts to work collaboratively to develop the operational concepts and performance requirements that will make up JPDO's enterprise architecture. In addition, we believe that producing tangible benefits early on will be a key factor in sustaining the involvement of industry stakeholders.

[Ranking Member Udall]

8. Are there any technology transfer issues that need to be addressed? Will NASA, for example, support development activities to the point where industry will pick up advanced development needed for deployment of key technologies?

NASA does not plan to support technology development to the point where industry is willing to step in. NASA plans to focus on fundamental research and then turn work over to FAA for further development. While a NASA official noted that developing technology to higher levels before industry picks it up does not necessarily guarantee success, a draft report from FAA's Research, Engineering, and Development Advisory Committee (REDAC) points out that placing a greater reliance on FAA to perform the further R&D (heretofore performed by NASA) would require FAA to establish the infrastructure needed to perform this work. REDAC concluded that such developments would delay NGATS implementation—probably by five years. Participants at JPDO's recent NGATS Investment Analysis Workshop, which included representatives from commercial airlines, business aviation, and aviation equipment supply industry, said that industry has no interest in filling this gap due to the risk and lack of profit opportunity. We are currently evaluating whether NASA's reorientation of its aeronautics program to fundamental research leaves a gap in the technology transfer process.

Question for the Record Submitted by Representative Sheila Jackson Lee

1. What is the reason for the lack of participation of the air traffic controllers in the activities of the JPDO, and what is the impact of their lack of participation?

Our research showed that the National Air Traffic Controllers Association (NATCA) initially assigned a controller to JPDO as part of its liaison program with the FAA. On June 28, 2005, FAA notified NATCA that it was terminating the liaison assignments effective July 29, 2005, citing budget constraints and the implementation of the ATO. The controller who had been acting as the liaison within JPDO's Agile Air Traffic System IPT was among the controllers who returned to his facility. Since that time, no active controller has participated in the NGATS planning effort of JPDO.

At a more senior level, in May 2005, NATCA President John Carr sought and was given a seat on the IMC, which oversees the policy and recommendations of the NGATS Institute. The Institute itself is the mechanism for incorporating the views of stakeholders from private industry, state and local governments, and academia into the work of JPDO. Mr. Carr subsequently notified the IMC that he could not attend the meetings. On December 14, 2005, he was notified by the IMC that he had been removed for lack of attendance at the IMC's meetings. According to JPDO officials, the IMC has left a seat open in hopes that the controllers will participate in NGATS after a new labor-management agreement between NATCA and FAA has been settled.

We believe that adequate stakeholder participation in the planning and development of NGATS is critical. In particular, the participation of current air traffic controllers is important because NGATS will likely involve major technological and operational changes that will affect their work. Our work on FAA's current air traffic control modernization program has shown that without early and continuing stakeholder input, costly rework and delays can occur late in system development. Similarly, the input of active controllers on JPDO's planned research—especially on how controllers interact with pilots and air traffic systems in a highly automated environment—can help to identify potential safety issues early, before costly changes become necessary. Controllers' input could also inform JPDO's analyses of issues such as timeliness, cost-effectiveness, and the safe transformation of the nation's air traffic control system.

Questions for the Record Submitted by Representative Jim Costa

1. Does the JPDO believe that the Next Generation Air Transportation System (NGATS) will be able to handle three times today's traffic if the nation's major airports are not modernized as well?

JPDO will have to consider several issues related to airport capacity. JPDO's Evaluation and Analysis Division has modeled the capacity of the national airspace system (NAS) and found that the 35 largest airports will be a critical factor in limiting the capacity of the NAS as they reach their saturation points. JPDO models indicate that capacity at almost half of these 35 airports will be limited.

While JPDO expects to add runways at some of these large airports and increase the use of nearby secondary airports, JPDO anticipates that this solution still leaves airport capacity 12 percent below that needed to accommodate a three-fold increase. Moreover, increased use of secondary airports could raise environmental and infrastructure issues. For example, local residents could object to increased noise, and travelers could have concerns about transportation to and from these airports.

JPDO's Airport IPT has been considering how airport capacity can be expanded. While JPDO and FAA are integrating JPDO's NGATS plan and FAA's Operational Evolution Plan into one plan, an official told us that the ability of JPDO to enhance airport capacity is still limited because enhancement decisions are made at the state and local level. The official also noted that JPDO cannot channel federal funds from the Airport Improvement Program to airports where capacity expansion is most needed.

[Representative Costa]

2. How will the NGATS be able to mitigate the impact severe weather has on the system?

The NGATS will never be able to completely address the impact of severe weather on the NAS, but could mitigate the impact. Currently, FAA holds daily conference calls to attempt to manage the flow of air traffic during the spring and summer thunderstorm season, but those efforts are hampered by inconsistent data and forecasts. Fast moving thunderstorms, which are difficult to predict with the required precision to support aviation operations, can needlessly ground aircraft thousands of miles away resulting in flight delays and cancellations. JPDO estimates that 60 percent of weather delays are potentially avoidable.

Although in NGATS, aircraft will still need to navigate around the most severe weather events, JPDO expects that NGATS will be able to better manage the problem that severe weather poses to the flow of air traffic. To this end, JPDO and its partner agencies are undertaking several initiatives. For example, JPDO's Evaluation and Analysis division is developing computer models to forecast the results of storms to show how they would affect capacity around an airport. The Weather IPT is studying aircraft systems that would help reduce the effects of turbulence on the aircraft and passengers. The Department of Defense, FAA, NASA, and NOAA are working to combine an array of weather data into one real-time weather picture by using data from tens of thousands of global weather observations and sensor reports from ground, air, and space-based sources. The expectation is that every aircraft will become a node in the NGATS network, thereby ensuring that all users of the system have access to the same sensory-rich information. Sensors will help produce computerized forecasts that will improve forecasting, thereby providing more usable airspace around storms.

[Representative Costa]

3. Keeping in mind that nearly all of today's delays are due to severe weather, runway limitations, and over scheduling: Is it reasonable for us to believe that the billions of dollars the JPDO's proposals are sure to cost in the implementation of the NGATS will solve the delay problems we already face today?

It is doubtful that JPDO's efforts will completely eliminate delays, especially when they are weather-related, but we and others have reported that maintaining the status quo will result in gridlock and significant losses to the nation's economy if airspace demand triples by 2025. JPDO is seeking a variety of solutions to increase capacity and efficiency throughout the system.

As noted in the NGATS Integrated Plan, there has never been a transformation effort similar to this one with as many stakeholders and as broad in scope. Through collaboration and new technologies, JPDO hopes to meet the challenge of projected demand that will soon surpass the current system's capacity. This involves an entirely new approach—one that uses modern communication technologies, advanced computers, precision plotting through the global positioning system (GPS), and modern computer-based decision-assistance programs. For example, JPDO is developing more precise ways to manage the impact of bad weather. Through the Weather IPT, JPDO is employing extensive computer modeling to develop better predictive forecasts to help pilots avoid bad weather. Improvements in forecasts will allow pilots and controllers to more precisely pinpoint severe weather.

In addition, FAA is revamping its Operational Evolution Plan to enhance capacity at the nation's 35 largest airports so that its scope and time frames for accomplishments are more consistent with JPDO's. To maximize runway usage, JPDO is planning to build on FAA programs that permit planes to land on some parallel runways in low visibility conditions. Low visibility currently eliminates the use of parallel approaches and landings at some airports, which reduces capacity.

Some airports present unique challenges. For example, LaGuardia cannot build more runways due to space constraints. For such airports, JPDO is considering administrative options, such as limiting the number of takeoffs and landings at peak hours, or permitting only certain types of aircraft to land there. JPDO is also considering market-based options, such as charging a premium to land during peak usage time.

[Representative Costa]

4. What does the JPDO see as the most urgent problem that needs to be addressed in the near future, not 25 years down the road?

Several near-term challenges facing the NGATS effort were identified by JPDO officials and other participants in a recent public meeting of the NGATS Institute. A number of participants mentioned that development of a cost estimate for NGATS is critical, since Congress needs to understand what it will take to fund NGATS. Another challenge identified was institutionalizing the collaborative processes established by JPDO. Given the 2025 time frame and the complexity of the effort, it is important that JPDO be able to withstand changes in staffing and administrations. Institutionalizing the collaborative process in the short term will strengthen the ability to achieve success in the long term.

Another near-term challenge identified by a meeting participant was the need to effectively communicate the importance of the transition from the current system to NGATS. An NGATS official noted that the American public needs to be educated about the effects of not going forward with this transition. Raising the awareness and support of policy makers about NGATS now, while it is in the planning stages, could lead to a more proactive and cost-effective transition in the long run.

One challenge—establishing the credibility of the NGATS effort—was mentioned at the public meeting as well as at an expert panel that we conducted in March 2006 to discuss JPDO and NGATS. As we have previously stated, although FAA is now doing a better job of meeting milestones with its major air traffic control acquisition programs, earlier attempts at modernizing the NAS encountered many difficulties. JPDO will need to show nonfederal stakeholders that the NGATS effort, while complex, is moving forward and has the commitment of the partner agencies behind it. Establishing the federal government's commitment to NGATS should help JPDO to maintain the interest and enthusiasm of nonfederal stakeholders who are participating on a *pro bono* basis in the NGATS effort.

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