
Office of Inspector General

*Actions to Improve Performance of
the National Aviation System*

*Office of the Secretary of Transportation
Federal Aviation Administration*

Report Number: CR-2001-060

Date Issued: June 11, 2001





Memorandum

U.S. Department of
Transportation


Office of the Secretary
of Transportation

Office of Inspector General

Subject: **ACTION:** Actions to Improve Performance
of the National Aviation System
CR-2001-060

Date: June 11, 2001

From:

Alexis M. Stefani 
Assistant Inspector General for Auditing

Reply to

Attn. of: JA-50:x69970

To: Deputy Secretary
Federal Aviation Administrator

On May 3, 2001, at a hearing of the Appropriations Committee, Subcommittee on Transportation and Related Agencies, U.S. House of Representatives, we provided testimony on the status of our actions, and those of the Department of Transportation (DOT) and Federal Aviation Administration (FAA) to address the growing problem of flight delays and cancellations. These commitments were made during the March 15, 2001 hearing on aviation delays. A copy of our statement is attached.

Progress has been made on most of the action items since the March hearing. As part of our commitments, we developed an initial baseline of the 14 proposed runway projects, including completion dates, current status, estimated costs, and major challenges to completing these runways on time. Once fully developed, the baseline will be passed on to FAA for future monitoring and updates. With respect to DOT and FAA commitments, the most progress occurred on: (1) developing a standard departmental definition of flight delays, (2) establishing a system for tracking the causes of flight delays and cancellations, (3) developing capacity benchmarks for the 31 major airports, and (4) developing the National Operational Evolution Plan (a set of initiatives and milestones for expanding capacity in the air traffic control system).

While progress has been made on these items, the key for each of them is implementation and execution. For example, a key issue with FAA's capacity benchmarks is their use—by the airlines, airports, and FAA—to better manage existing capacity and to identify areas for improvement. The benchmarks will also require regular updates to reflect operational and infrastructure changes at the 31 airports.

In our statement, we highlighted some areas that require management attention. With respect to the Department's progress in establishing a uniform system for tracking the causes of flight delays and cancellations, we recommend that DOT:

1. Resolve outstanding reporting discrepancies and put in place the refinements needed to fix them.
2. Extend the causal reporting methodology to the other airlines in DOT's delay reporting system as soon as sufficient confidence in the approach is achieved.
3. Begin an expedited rulemaking to require mandatory reporting of the causal data if voluntary reporting is not achieved.

For those airports experiencing significant congestion and flight delays, we recommend that FAA work with the airlines and airports to:

1. Maintain a current baseline of all new runway projects and ensure milestones are established and met.
2. Devise additional capacity-enhancing projects for Boston, Kennedy, LaGuardia, Newark, O'Hare, Philadelphia, and San Francisco and other highly delayed airports (as required) to avoid the need to employ demand management techniques.
3. Determine what administrative and/or market-based options are appropriate and economically efficient for managing excess demand at those airports experiencing high levels of congestion and delays and for which capacity-enhancing projects are unlikely to satisfy current or projected demand.
4. Develop a system for allocating capacity at LaGuardia before September 15, 2001, when the temporary allocation of slots by lottery expires.

Finally, regarding FAA's Operational Evolution Plan, we recommend that FAA:

5. Reach agreement among all parties by July 2001 on specific activities and milestones to be included in the final plan.
6. Implement and execute the plan and hold FAA managers accountable for meeting the plan's milestones in their performance standards.

In accordance with DOT Order 8000.1C, we would appreciate receiving your written comments within 30 days. If you concur with our recommendations, please indicate the specific actions taken or planned and the target dates for completion. If you do

not concur, please provide your rationale. Furthermore, you may provide alternative courses of action that you believe would resolve the issues.

We appreciate the courtesies and cooperation extended by your staff. If you have any questions or need further information, please contact me at (202) 366-1992 or Mark R. Dayton, Deputy Assistant Inspector General for Competition, Economic, Rail, and Special Programs, at (202) 366-9970.

Attachment

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Mr. Chairman and Members of the Committee:

At your March 15, 2001, hearing on aviation delays, you asked each of the panelists to list five actions they would take to help reduce the growing number of flight delays and cancellations. We appreciate the opportunity today to provide an update on our actions, and those of the Department of Transportation (DOT) and the Federal Aviation Administration (FAA). Consistent with our oversight role, we committed to monitoring a number of important actions being taken by DOT and FAA to address the growing problem of flight delays and cancellations.

Progress has been made on most of the action items since the March hearing. The most progress has occurred on: developing a standard DOT definition of flight delays, establishing a system for tracking the causes of flight delays and cancellations, developing capacity benchmarks for the 31 major airports, and developing the National Operational Evolution Plan (a set of initiatives and milestones for expanding capacity in the air traffic control system). While progress has been made on these items, the key for each of them is implementation and execution.

As Figures 1-3 on page eight show, delays, cancellations, and flight operations are closely tracking those of last year, a record year for delays and cancellations. However, few of these action items are likely to provide much relief to delays and cancellations in time for this summer. Nevertheless, they are a good start in providing relief in the next several years. Actions most likely to reduce delays this summer are voluntary ones taken by some airlines to revamp their schedules at their hub airports and efforts to disperse traffic away from congested hubs where economically feasible. The initiative of the FAA and the airlines to work cooperatively in sharing information and managing disruptions under the auspices of the Spring/Summer 2001 program and work on the seven choke points should provide benefits this summer as well.¹ Other factors not on our list or FAA's that can affect delays this summer include: the resolution of airline labor negotiations, the level of severe weather, and the performance of the economy and the demand for business travel.

In addition to monitoring actions by FAA and DOT, we committed to three additional actions. Since the last hearing, we have developed a baseline of the 14 currently proposed runway projects, examined the voluntary actions some airlines have taken to reduce delays, and developed a list of demand management options that we are reviewing. We will monitor airport schedules for further voluntary airline actions (if any) taken in response to the release of the capacity benchmarks last week. Runway construction and demand management actions,

¹ These are seven points in the airway system that have become overloaded in recent years, particularly in bad weather, and tend to be the nexus for delays that can spread through the air traffic control system.

however, are unlikely to provide much relief this summer. Each of these commitments will be fully examined in longer-term analysis and review, and will result in two reports on airline delays that we will issue this summer: the first two commitments in a report in July, and the third commitment in a report in September.

The following includes a brief summary of each action item and any progress that has occurred since the March 15, 2001 hearing.

1. Monitor DOT's progress in establishing a uniform system for tracking the causes of flight delays and cancellations.

Done:

- On March 28, 2001, Administrator Garvey announced before this Committee that FAA would adopt the Department's current definition of a delayed flight—as one arriving 15 minutes or more after the scheduled arrival time.
- Three of the four air carriers that volunteered to participate in the delay reporting pilot program have submitted causal data for flight delays occurring in February 2001 and all four carriers have submitted cancellation data for the same month. The fourth carrier is expected to submit its delay data within the next week.
- The Bureau of Transportation Statistics (BTS) and FAA are analyzing the submitted data to resolve discrepancies between the airline-reported causes for delayed flights and FAA's information on those flights.

Actions Needed:

- Resolve these reporting discrepancies within the next 2 weeks and put in place the refinements needed to fix them.
- Extend the causal reporting methodology to the other airlines in DOT's delay reporting system as soon as sufficient confidence in the approach is achieved.
- Begin voluntary reporting by the airlines. This can be done on a pilot basis (without release to the public) if data validation and verification are required to ensure the accuracy of the data and their consistency across all of the carriers.
- Begin an expedited rulemaking to require mandatory reporting of the causal data.
- Airlines should notify air travelers before they book their flights if they are purchasing a ticket on a chronically delayed or cancelled flight, that is, one that has been cancelled and/or delayed at least 40 percent of the time in the prior month.

2. Track airline voluntary actions, such as dispersal of flights from hubs to smaller airports, to help reduce flight congestion and delays.

Done:

- American reduced the size of peak operations periods at Dallas/Fort Worth by slowing its arrival and departure rates and providing more connecting time between flights. (See Figures 4 and 5 on page nine.)
- Delta reduced the size of peak operations periods at Atlanta by increasing the number of departure and arrival banks from 10 to 12. Banks are the clustering of arriving and departing flights into narrow periods of time (e.g., scheduling 15 departures at 7:00 to 7:15 am). This was done without reducing flight opportunities to its customers because the total number of flights per day has remained the same. (See Figures 6 and 7 on page nine.)
- American and Northwest reduced the number of scheduled flights at some of their major hub airports in April.

Action Needed:

- Rescheduling at hub airports by airlines that have not done so on an independent and voluntary basis.
- DOT compare 2001 and 2000 flight schedules of airlines at their hubs to gauge the effects of the airlines' voluntary actions on flight delays and cancellations.

3. Monitor runway construction at the major airports, including costs and schedule status, to ensure additional capacity is produced within established milestones.

Done:

- OIG developed an initial baseline of the 14, currently proposed, runway projects, including completion dates, current status, estimated costs, and major challenges to completing runways on time. (See Table 1 on page 10 for the baseline schedule.) Within the next 3 years (by January 2004), seven of the runway projects are to be completed. The remaining seven will be completed between May 2005 and September 2007.

Actions Needed:

- Full development of this baseline by OIG and publishing of the results this summer.
- Continuous tracking of this baseline by FAA and prompt action to keep runway projects on schedule as risks to meeting planned completion dates are identified.

4. Analyze administrative and market-based options as short-term measures for managing excess demand at congested airports.

Done:

- OIG developed a list of demand management options that are currently being examined as part of an ongoing study. These options range from administrative actions, such as slot lotteries and anti-trust immunity for scheduling, to market-based solutions, such as congestion pricing and flat landing fees.

Actions Needed:

- Complete the OIG study and publish our findings this summer regarding the pros and cons of each demand management option including who benefits and who bears the cost of each option.
- FAA and the Port Authority of New York and New Jersey develop a system for allocating capacity at LaGuardia before September 15, 2001 when the temporary allocation of slots by lottery expires. (See Figure 8 on page nine for the effect of the slot lottery that began in February 2001.)

5. Monitor FAA's progress towards meeting its six commitments.

Commitment 1: Complete action items pertaining to seven major airspace choke points and measure results.

Done:

- FAA has completed 11 of the 21 action items designed to reduce the effect on air traffic of the seven major airspace choke points, all of which are east of the Mississippi River. Several new air traffic control sectors have been established and more are planned.
- FAA has entered into a memorandum of agreement with the controllers' union regarding airspace redesign. The agreement outlines the general ground rules for working through airspace redesign issues and safeguards controller pay from changes if the airspace redesign effort lowers a facility's traffic level.

Actions Needed:

- Complete the following items by the planned date of December 31, 2001, and incorporate the completion dates in the performance standards of the accountable FAA managers.
 1. Flip flop the "Yardley" and "Robbinsville" sectors to increase the flow rate for traffic that affects the New York Center.
 2. Assess military airspace for its ability to accommodate traffic through Canada.
 3. Smooth traffic flows in the Great Lakes Corridor.

4. Conduct and evaluate the Tactical Altitude Assignment Program Test. This program will keep flights flying at lower altitudes for longer periods after takeoff.
 5. Reduce the window for the expected Departure Clearance Time during Ground Delay Programs with the goal to minimize the use of multiple restrictions on the same flight.
- Complete these remaining action items by the planned date of July 30, 2002, and incorporate the completion dates in the performance standards of the accountable FAA managers.
 1. Establish a Traffic Coordinator position in the “Liberty West” sector to help coordinate traffic flows in the New York area.
 2. Create a new sector to relieve the busy “Elmira” high sector in the New York Center.
 3. Create an automation interface for radar data between the Cleveland and Toronto Centers.
 4. Design and establish nine new sectors at various locations.
 5. Develop new procedures for the Chicago tower, TRACON, and Center that provide alternate flight paths around bad weather and congestion without controller guidance.

Commitment 2: Use capacity benchmarks to identify areas for improvement (i.e., action plan) at the 10 most delayed airports.

Done:

- FAA completed capacity benchmarks for 31 major airports.
- FAA developed action plans for the eight most delayed airports, which accounted for 75 percent of FAA-tracked delays in 2000.

Actions Needed:

- FAA, the airlines, and the airports need to ensure that milestones are established for the vital capacity enhancement projects at the eight most delayed airports and that those milestones are met.
- These eight airports, with the exception of Atlanta, project insufficient capacity growth to keep up with the projected growth in demand over the next 10 years; therefore, delays are apt to grow at these airports rather than decrease. (See Table 2 on page 11.) FAA, the airlines, and the airports need to devise additional capacity-enhancing projects for these airports to avoid the need to employ demand management techniques.
- DOT and FAA need to determine what administrative and/or market-based options are appropriate and economically efficient for managing excess demand at those airports experiencing high levels of congestion and delays and for which capacity-enhancing projects are unlikely to satisfy current or projected demand (e.g., LaGuardia).

Commitment 3: Ensure air traffic control modernization efforts under Free Flight Phase 1 (FFP1) and Free Flight Phase 2 (FFP2) remain on schedule.

Done:

- FAA has made progress in implementing elements of FFP1. New information-exchange systems (Collaborative Decision Making and Surface Movement Advisor) are largely in place, and new automated controller tools—User Request Evaluation Tool and Center-TRACON Automation System—are in use at a small number of air traffic control facilities.
- Preliminary results indicate that FFP1 will provide modest improvements in capacity, though the benefits will vary by location.

Actions Needed:

- FAA has significant work remaining to complete the development and deployment of the new automated controller tools, which account for over 80 percent of the FFP1 investment.
- FAA needs to complete the FFP2 plan, which includes conducting human factors assessments, completing research management plans, developing a risk mitigation strategy, and finalizing costs for Data Link.

Commitment 4: Reach agreement with airlines and airports on near-term, mid-term, and long-term actions for increasing capacity in the National Airspace System (NAS), as outlined in the National Operational Evolution Plan.

Done:

- FAA presented the draft Operational Evolution Plan on April 23, 2001 to airline and airport officials for their comment. Included in the plan was a summary of proposed responsibilities and required actions to be taken by the FAA, airlines, and airports in the near-term, mid-term, and long-term.

Actions Needed:

- Obtain and analyze the industry's comments on the draft Operational Evolution Plan.
- Reach agreement among all parties by July 2001 on specific activities and milestones to be included in the final plan.
- Implement and execute the plan and hold FAA managers accountable for meeting the plan's milestones in their performance standards.

Commitment 5: Streamline Federal, state, and local procedures for approving enhancements to airport capacity.

Done:

- FAA has begun implementing initiatives to improve the timeliness of environmental reviews. These include increased staffing on expert teams to expedite certain environmental impact statements (EIS), improved Federal and state interagency coordination during environmental reviews, and increased use of categorical exclusions from detailed environmental reviews for projects that have historically resulted in no significant impacts. Such projects include construction of aprons, reconstruction of runways, and marking or grooving runways.

Actions Needed:

- Issue FAA's overdue report to Congress on Federal environmental requirements related to the planning and approval of airport improvement projects.
- Issue the best practices guide for EIS management and preparation and evaluate the effectiveness of the streamlining initiatives currently being put in place.

Commitment 6: Develop standard DOT definition for tracking and reporting flight delays.

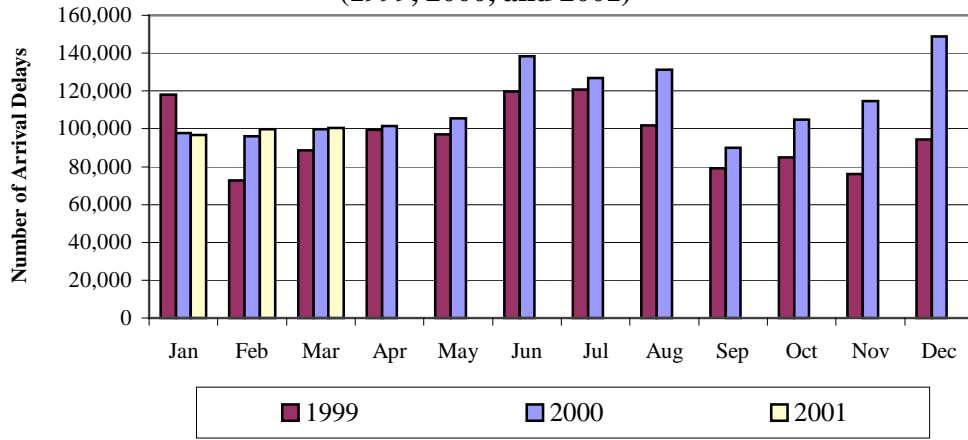
Done:

- DOT and FAA have agreed upon a standard definition for a flight delay.

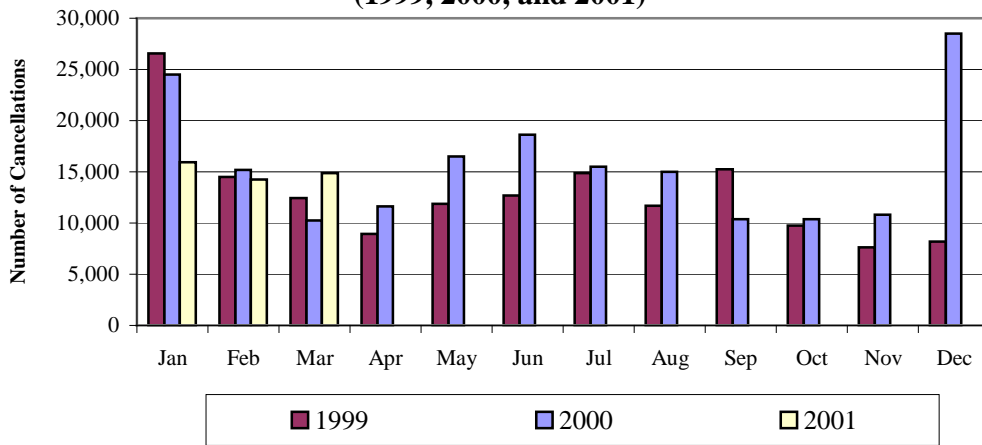
Actions Needed:

- Set a deadline for publishing information on the growth in schedule times for flights between the largest airports on the BTS web site.
- Set a deadline for completing the work on a set of measures to gauge and track the inefficiencies of the air traffic system already built into airline schedules.

**Figure 1: 10 Major Airlines - Arrival Delays
(1999, 2000, and 2001)**



**Figure 2: 10 Major Airlines - Cancellations
(1999, 2000, and 2001)**



**Figure 3: Major Airlines - Scheduled Flights
(1999, 2000, and 2001)**

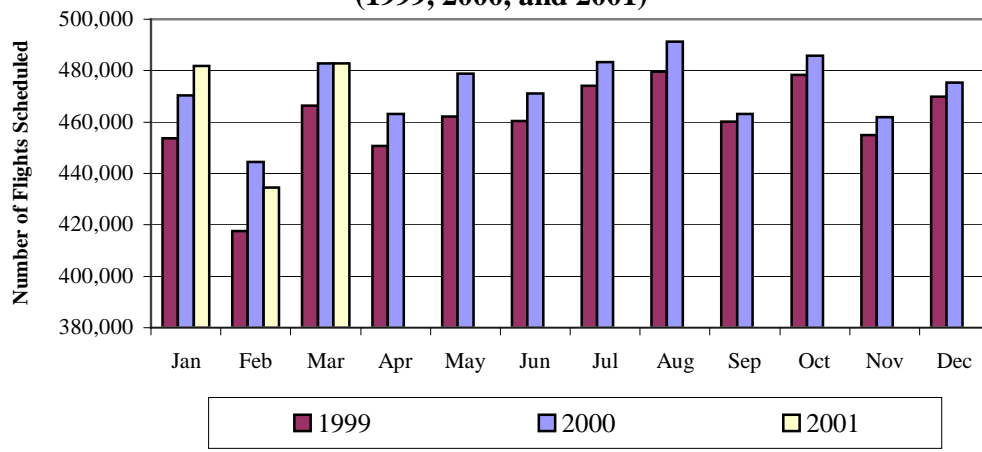


Figure 4: American's Scheduled Arrivals at Dallas (4/10/00 vs. 4/9/01)

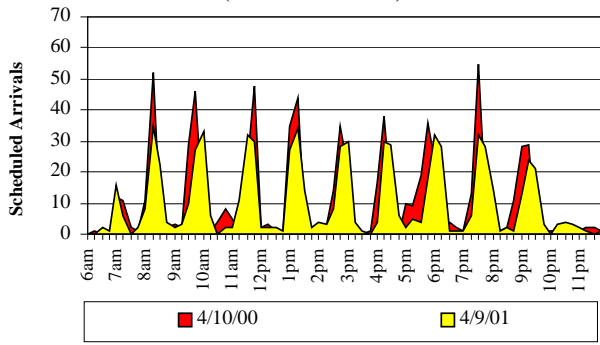


Figure 5: All Airlines Scheduled Arrivals at Dallas (4/10/00 vs. 4/9/01)

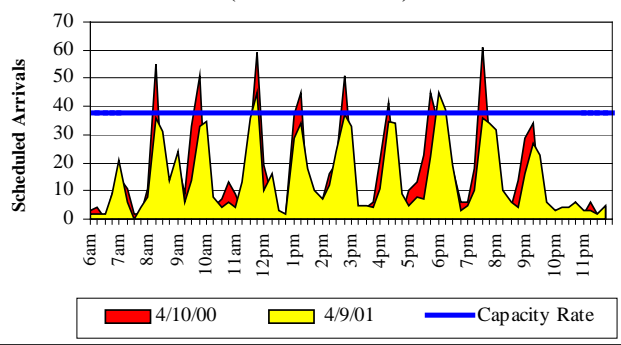


Figure 6: Delta's Scheduled Departures at Atlanta (4/10/00 vs. 4/9/01)

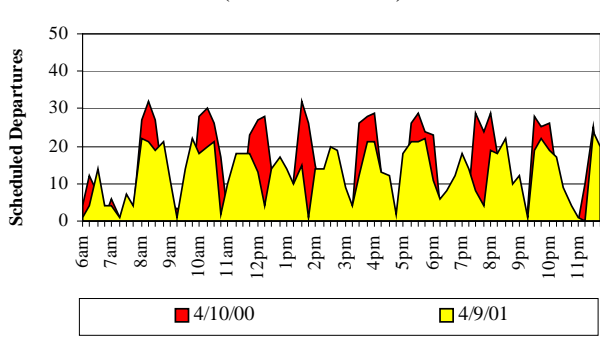


Figure 7: All Airlines Scheduled Departures at Atlanta (4/10/00 vs. 4/9/01)

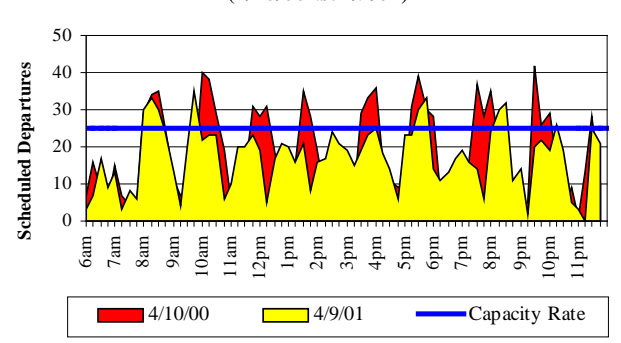


Figure 8: FAA-Reported Delays at LaGuardia

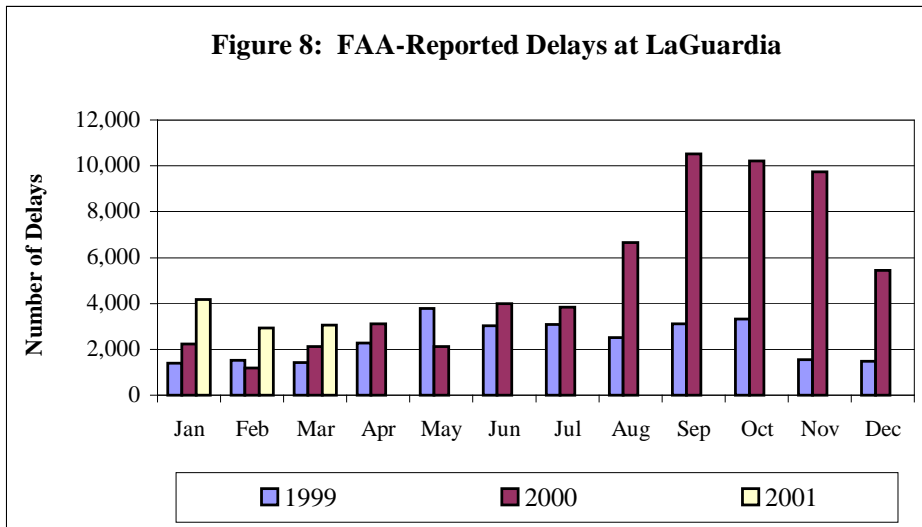


Table 1: Preliminary Results of OIG Survey of New Runway Projects

Airport	Projected Completion Date	Current Status	Estimated Cost (\$ in Millions)	Major Challenges to Completing Runway On Time
Detroit	11/01	Started construction on April 2000.	225	Installation of Nav aids.
Miami	5/03	Started construction on April 2001.	213	Coordination between New Northside runway and adjacent projects.
Orlando	7/03	Design completed on May 2001.	203	None noted.
Houston	9/03	Section 404 Permit received in February 2001.	205	Obtaining environmental approvals including air quality and the Section 404 Wetlands Permit. Installation of Nav aids.
Denver	11/03	Under construction.	150	Timely receipt of required Federal funding.
Minneapolis	12/03	Started construction on October 1998.	600	Permits, Nav aids, coordination with FAA, tenant relocations, and weather.
Charlotte	1/04	Design to be started in August 2001.	160	Multiple legal sufficiency reviews for EIS and adequate FAA funding.
Atlanta	5/05	Completing EIS.	1,000	Transportation and placement of 27 million cubic yards of dirt, building a runway and taxiway structure over I-285.
Boston	8/05	Completing EIS.	76	Environmental review process, litigation, and local community/ political opposition.
Cincinnati	12/05	Completing EIS.	220	Approval of EIS and property acquisitions.
St. Louis	5/06	First construction contract to be bid on April 24, 2001.	1,156	Utility relocations, intra-agency reviews, permitting, and property acquisition.
Seattle	12/06	Under construction but awaiting U.S. Army Corps of Engineers Section 404 permit to fill wetlands.	773	Pressure from local jurisdictions and uncertain permitting process.
Dulles	5/07	Design Phase Selection in May 2001.	217	FAA environmental staff appears insufficient compared to workload.
Dallas/Ft. Worth	9/07	Capacity planning complete on July 2001.	350	Timely review of environmental documentation.

**Table 2: FAA’s Projected Increases in Capacity and Operations
At the Eight Most Delayed Airports (Next 10 Years)**

No.	Airport	Percentage Change in Capacity	Percentage Change in Flight Operations	Net Difference
1	Atlanta	37	28	+9
2	Boston	4	6	-2
3	Kennedy	2	18	-16
4	LaGuardia	10	17	-7
5	Newark	10	20	-10
6	O’Hare	6	18	-12
7	Philadelphia	17	23	-6
8	San Francisco	0	18	-18

I will now address each of our commitments in more detail.

MONITOR DOT'S PROGRESS IN ESTABLISHING A UNIFORM SYSTEM FOR TRACKING THE CAUSES OF FLIGHT DELAYS AND CANCELLATIONS.

DOT's ability to address delays and cancellations is significantly hampered by the lack of a uniform system for tracking delays, cancellations, and their causes. Congress highlighted the need for good causal data over a year ago, as part of The Wendell H. Ford Aviation Investment and Reform Act for the 21st Century or AIR-21 (dated April 5, 2000). This Act directed the Secretary of Transportation to modify existing regulations governing the air carrier data submissions to DOT "to disclose more fully to the public the nature and source of delays and cancellations experienced by air travelers."

In response to this requirement, the Department established the Air Carrier On-Time Reporting Advisory Committee (Task Force). The Task Force issued its interim report to Secretary Slater on November 29, 2000. The report made a number of recommendations, including causal categories for both delays and cancellations and the establishment of a pilot program with selected airlines. The recommended causal categories for both flight delays and cancellations are: (1) circumstances within the air carrier's control, (2) current or forecasted extreme weather, and (3) conditions in the National Aviation System (NAS). FAA will assign delay cause to flights reported by the air carriers as NAS-related delays. These NAS categories are closed runways or taxiways at an airport, air traffic

control equipment problems, normal but disruptive weather patterns, and the volume of traffic in the system.

Over the last 6 weeks, DOT has made substantial progress on the pilot program. However, the timetable for actually beginning to report causal data to the public is not clear at this time. The non-pilot reporting air carriers will need some time to implement and test the new reporting system. Thereafter, if all the reporting airlines agree to begin voluntarily reporting causal data, such reporting is possible sometime this summer. However, if a rulemaking is required to make the new causal reporting mandatory, it is unlikely that the new system would be in place before the start of 2002.

Done:

- On March 28, 2001, Administrator Garvey announced before this Committee that FAA would adopt the Department's current definition of a delayed flight—as one arriving 15 minutes or more after the scheduled arrival time.
- Three of the four air carriers that volunteered to participate in the delay reporting pilot program have submitted causal data for flight delays occurring in February 2001 and all four carriers have submitted

cancellation data for the same month. The fourth carrier is expected to submit its delay data within the next week.

- The Bureau of Transportation Statistics (BTS) and FAA are analyzing the submitted data to resolve discrepancies between the airline-reported causes for delayed flights and FAA's information on those flights.

Actions Needed:

- Resolve these reporting discrepancies within the next two weeks and put in place the refinements needed to fix them.
- Extend the causal reporting methodology to the other airlines in DOT's delay reporting system as soon as sufficient confidence in the approach is achieved.
- Begin voluntary reporting by the airlines. This can be done on a pilot basis (without release to the public) if data validation and verification are required to ensure the accuracy of the data and their consistency across all of the carriers.
- Begin an expedited rulemaking to require mandatory reporting of the causal data.

- Airlines should notify air travelers before they book their flights if they are purchasing a ticket on a chronically delayed or cancelled flight, that is, one that has been cancelled and/or delayed at least 40 percent of the time in the prior month.

If the airlines are reluctant to report voluntarily this summer, the BTS is exploring whether it has authority to require reporting under the new system through its “Special Report” authority as defined in 14 Code of Federal Regulations 385.19(e). In such a case, these monthly “special reports” would continue until the rulemaking is completed. BTS should not have to exercise this authority. Once the bugs have been worked out of the new approach and it is extended to all reporting airlines, those airlines should report voluntarily to the Department. The information such causal reporting will provide is crucial to understanding the delay problems in the aviation system and it should not be held hostage to the completion of a rulemaking.

TRACK AIRLINE VOLUNTARY ACTIONS, SUCH AS DISPERSAL OF FLIGHTS FROM HUBS TO SMALLER AIRPORTS, TO HELP REDUCE FLIGHT CONGESTION AND DELAYS.

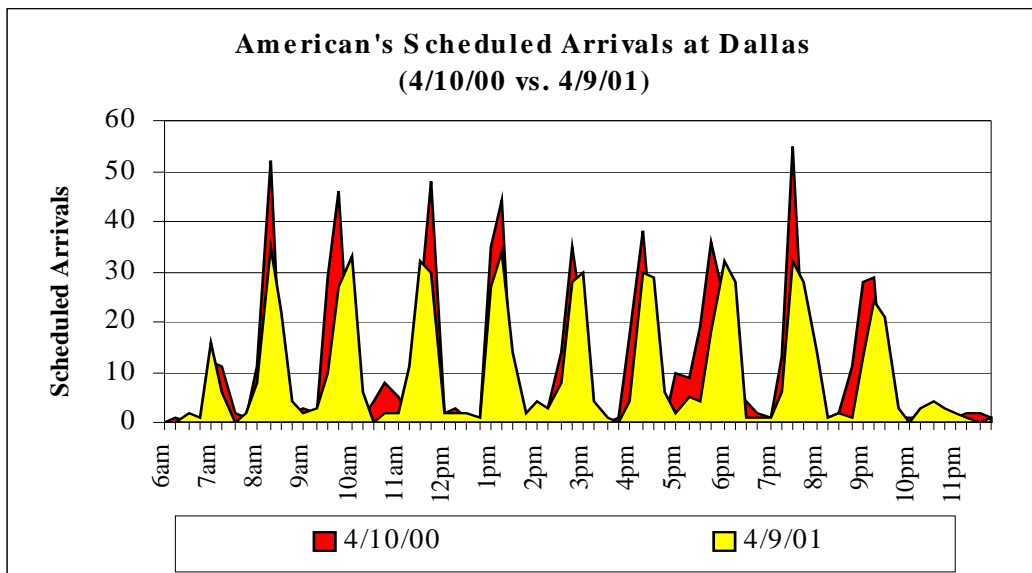
For the coming summer travel season, voluntary schedule changes by the airlines offer the greatest opportunity for reducing delays. As we testified in March,

FAA’s airport capacity benchmarks will provide an important baseline for tracking the dispersal of flights from the main hub airports to smaller airports, and for gauging the success of the airlines’ other voluntary actions to adjust demand on airport capacity. Voluntary hub rescheduling will prove critical in the short-term, particularly this summer, and dispersal away from hubs, where economically justified, may prove significant over the long term in helping reduce airport congestion and flight delays.² The benchmarks were issued last week. Now is the time for each airline to look at what it can do individually and independently to adjust its flight schedules voluntarily.

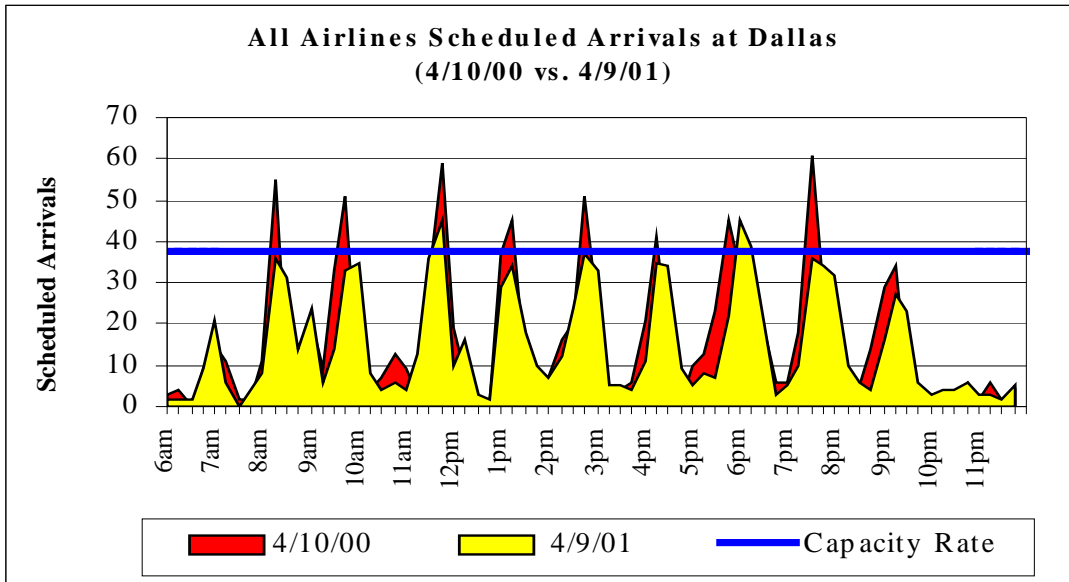
We are aware of at least two airlines that have taken steps to reschedule flights at their main hubs. Last year, American announced two initiatives to address its delay problems. One was the “isolation” of American’s Chicago hub and the other, a retiming of flights into and out of Dallas/Fort Worth. Under the first initiative, American “isolated” some markets, with flights now going back and forth between Chicago O’Hare and endpoint airports, rather than going on to a third airport. This approach is designed to isolate weather-induced delays at O’Hare only to flights that involve travel to or from Chicago. Therefore, flight delays will not ripple out to other markets that are unaffected by the weather problems at O’Hare.

² A recent study, dated April 11, 2001, by Salomon Smith Barney suggests that the growth of hub dominance within the U.S. airline industry has peaked. In 2000, the hub and spoke airlines grew faster in non-hub markets than in their hubs for the first time since 1992. Furthermore, the percentage of connecting passengers declined due to an increased bypassing of the hub through direct flights.

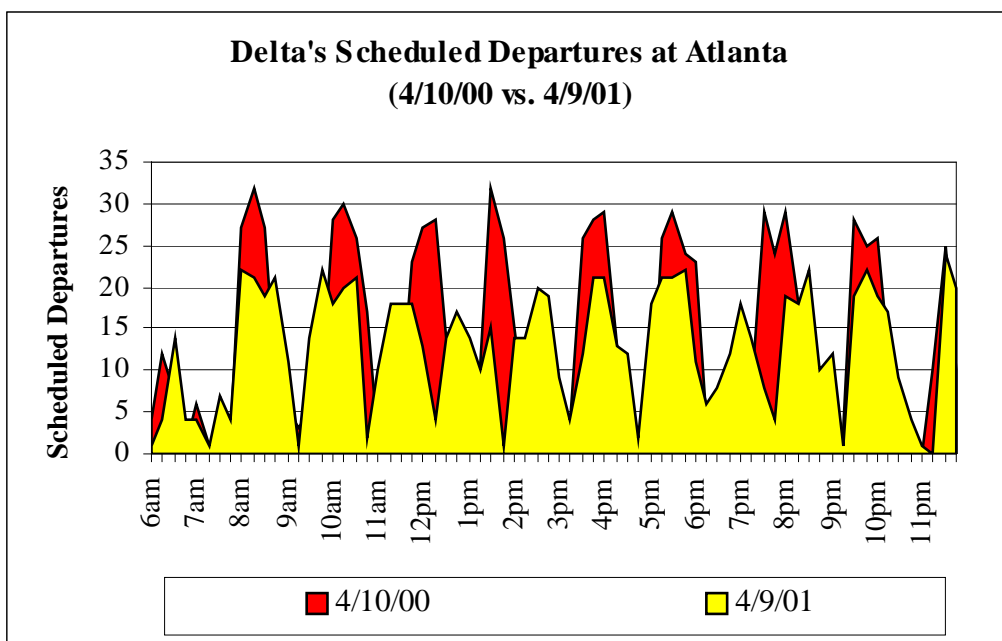
Under the second initiative, American expanded the connecting time between flights, thereby spreading the number of arrivals to and departures from Dallas/Fort Worth over longer time periods. According to American, this latter effort aimed to eliminate the bunching of flights into the airport at peak times. This point is supported by our analysis of American's scheduled arrivals at Dallas/Ft. Worth (see following figure).



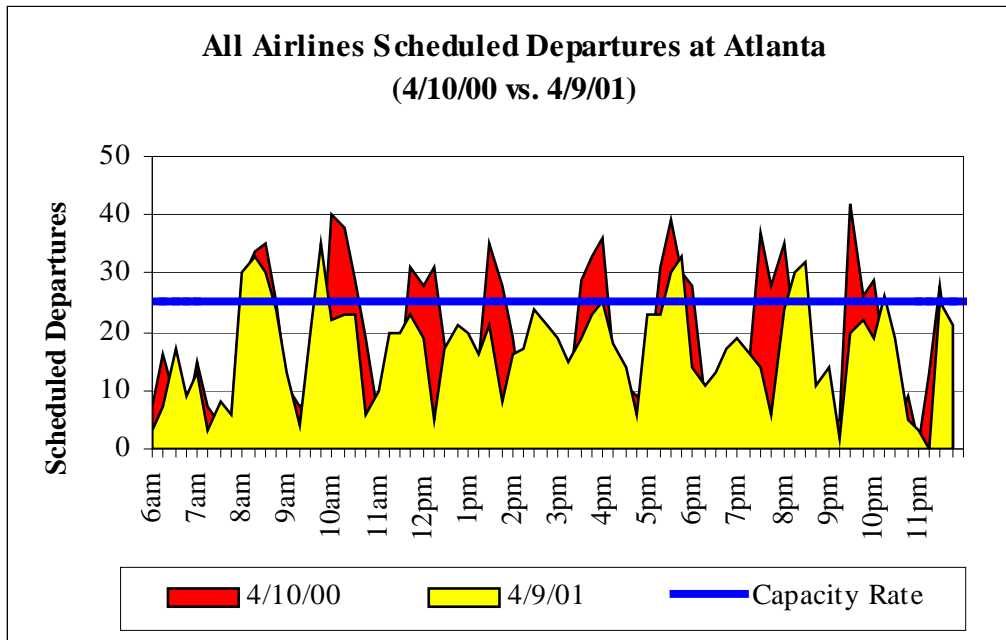
Moreover, American (which comprises nearly 70 percent of scheduled flights at Dallas/Ft. Worth) succeeded in moving many of the airport's arrival peaks below FAA's capacity benchmark, as illustrated by the next figure.



In a similar vein, Delta recently increased the number of departure and arrival banks at Atlanta Hartsfield airport from 10 to 12. According to Delta, the goal of this rescheduling is to disperse flights from peak periods of demand to less congested periods. This point is supported by our analysis of Delta's scheduled departures at Atlanta (see following figure).



Moreover, Delta (which comprises over 70 percent of scheduled flights at Atlanta) succeeded in moving many of the airport's departure peaks below FAA's capacity benchmark, as illustrated by the next figure.



Whether by increasing connecting times or the number of departure banks, such voluntary actions should help to reduce congestion and, in turn, flight delays. Whether the airlines' voluntary efforts continue into the busy summer travel season remains to be seen. The Department needs to closely evaluate such actions to determine their effect on flight congestion and delays this year. As part of our ongoing audit in this area, we will be measuring the impact of these recent initiatives as well as any others undertaken by the major airlines.³

³ At the request of the Senate Commerce, Science, and Transportation Committee, OIG is assessing the extent to which growing flight volume, airline scheduling practices, and ground infrastructure constraints have led to increases in flight delays and cancellations. We anticipate issuing our report this summer.

Done:

- American reduced the size of peak operations periods at Dallas/Fort Worth by slowing its arrival and departure rates and providing more connecting time between flights.
- Delta reduced size of peak operations periods at Atlanta by increasing the number of departure and arrival banks from 10 to 12.⁴ This was done without reducing flight opportunities to its customers because the total number of flights per day has remained the same.
- American and Northwest reduced the number of scheduled flights at some of their major hub airports in April.

Action Needed:

- Rescheduling of hub airports by airlines that have not done so on an independent and voluntary basis.
- DOT compare 2001 and 2000 flight schedules of airlines at their hubs to gauge the effects of airlines' voluntary actions on flight delays and cancellations.

⁴ Banks are the clustering of arriving and departing flights into narrow periods of time (e.g., scheduling 15 departures at 7:00 to 7:15 am).

MONITOR RUNWAY CONSTRUCTION AT THE MAJOR AIRPORTS, INCLUDING COSTS AND SCHEDULE STATUS, TO ENSURE ADDITIONAL CAPACITY IS PRODUCED WITHIN ESTABLISHED MILESTONES.

Over the last decade, only 6 of the 30 largest airports have built new runways. However, another 14 airports are in various stages of adding new runways, with completion dates ranging from 2001 to 2007. According to our analysis of FAA's capacity benchmarks, these 14 runways (as well as one completed late last year at Phoenix) will increase capacity at these airports approximately 22 percent under good weather conditions, and nearly 27 percent under adverse weather conditions. Given the significant capacity generated by these new runways, it is paramount that these projects stay on track.

Based on initial survey work, we have assembled a baseline of the 14 proposed runway projects, including completion dates, current status, estimated costs, and major challenges to completing these runways on time. (See Table 1 on page 10.) Some of the challenges cited by the airports to completing these runways on time include: property acquisition; environmental studies and permits, opposition from local jurisdictions, and coordination between FAA and airport officials on installing needed navigational equipment.

The milestones established by the airport authorities are matters of importance that need to be carefully monitored. FAA's intervention to assist airport authorities in keeping projects on track may be necessary as risks to meeting the planned completion dates are identified. While these are local projects that will have to address local concerns, the projects do benefit the national interest and would benefit from continuous oversight and assistance from the FAA.

Done:

- OIG developed an initial baseline of the 14, currently proposed, runway projects, including completion dates, current status, estimated costs, and major challenges to completing runways on time. Within the next 3 years (by January 2004), seven of the runway projects are to be completed. The remaining seven will be completed between May 2005 and September 2007.

Actions Needed:

- Full development of this baseline by OIG and publishing of the results this summer.
- Continuous tracking of this baseline by FAA and prompt action to keep runway projects on schedule as risks to meeting planned completion dates are identified.

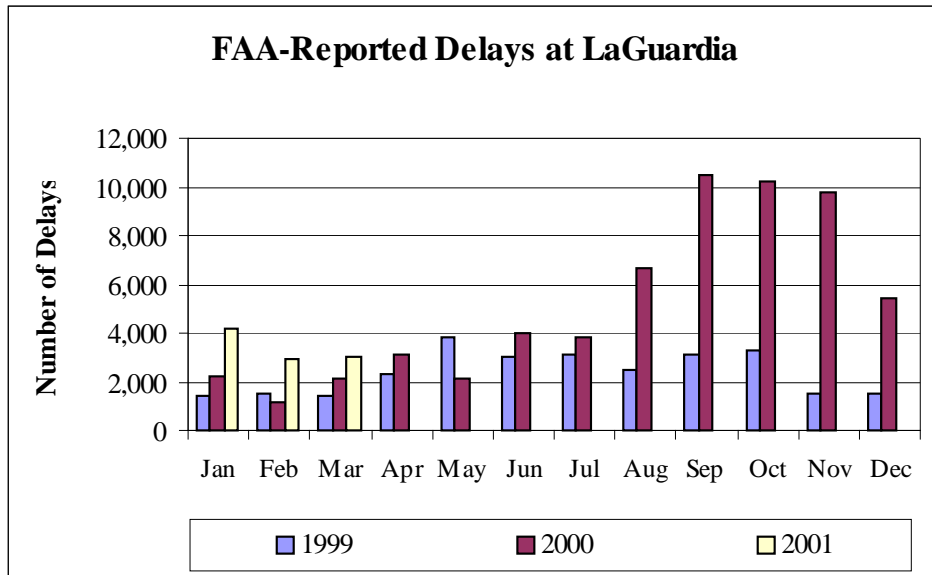
ANALYZE ADMINISTRATIVE AND MARKET-BASED OPTIONS AS A SHORT-TERM MEASURE FOR MANAGING EXCESS DEMAND AT CONGESTED AIRPORTS.

A variety of options are being considered by Congress, DOT, and airport operators to manage growing flight demand at some of the more congested airports. Among the administrative and market-based options being considered are: congestion pricing, flat landing fees, slot lotteries and auctions, anti-trust immunity for scheduling purposes, and various operational restrictions (e.g., aircraft size and perimeter rules). While each of these options has the potential to help curb flight congestion, and, in turn, reduce delays, various concerns have been raised as to their impact on new entrant and regional airlines, service to smaller communities, and airfares. Of particular importance are answers to who benefits from each option and who bears the cost.

The most recent example of an administrative approach is the use of a lottery program at LaGuardia. LaGuardia is a slot-controlled airport. AIR-21 permitted exemptions to the slot controls for new entrant airlines and for airplanes with fewer than 71 seats—typically used for service to small communities. After the exemption took effect, LaGuardia experienced more than a 26-percent increase in the number of daily scheduled flights, and with this increase an even larger percentage growth in flight delays as tracked by FAA. For example, delays were

up more than 525 percent in November 2000 as compared to the same period in 1999.

As a result, FAA conducted a lottery to cut the number of new flights to 159 more than under the prior slot controls, with many of these flights being reserved for new entrants and regional jet operators. As the following figure illustrates, the number of reported delays dropped noticeably once the lottery went into effect in late January 2001, with FAA's February and March 2001 delay statistics more closely matching those of previous years. Nevertheless, delays are still greater than in 2000.



FAA's lottery program, however, is only a temporary measure for easing congestion at LaGuardia and is due to expire on September 15, 2001. FAA is currently exploring various administrative and market-based options for managing

air traffic demand at LaGuardia in the long-term and will seek public comments via a Federal notice to be issued in May 2001.

Done:

- OIG developed a list of demand management options (i.e., administrative and market-based) that are currently being examined as part of an ongoing study. These options range from administrative actions, such as slot lotteries and anti-trust immunity for scheduling, to market-based solutions, such as congestion pricing and flat landing fees.

Actions Needed:

- Complete the OIG study and publish our findings this summer regarding the pros and cons of each demand management option including who benefits and who bears the cost of each option.
- FAA and the Port Authority of New York and New Jersey develop a system for allocating capacity at LaGuardia before September 15, 2001 when the temporary allocation of slots by lottery expires.

MONITOR FAA'S PROGRESS TOWARDS MEETING ITS SIX COMMITMENTS:

We found that FAA had made progress in meeting most of its six commitments to the Committee. The following summarizes our assessment of each commitment.

Commitment 1: Complete action items pertaining to seven major airspace choke points and measure results.

Since we testified in March, the status of key short-term action items remains unchanged—11 of 21 planned actions have been completed. FAA expects 5 of the remaining 10 action items to be completed by December 2001. These items include increasing the flow rate for traffic to New York airports from Washington Center airspace by balancing traffic to Newark and LaGuardia (which must pass through narrow sectors located in Washington Center airspace) and working with the military to revise airspace to accommodate traffic rerouted through Canada. The remaining 5 action items are scheduled for completion by July 30, 2002. These items are longer-term actions that will require phased implementation, future funding, equipment, or involve international agreements.

It is important to note that FAA's efforts thus far reflect only short-term efforts and do not speak to a much larger effort to redesign the national airspace from a strategic perspective. The costs of this effort are not yet known but will likely be

substantial. A key cost driver is the environmental work required to make changes in air traffic patterns. Environmental concerns become more pronounced and complex at lower altitudes where aircraft are preparing to land and take off.

Done:

- FAA has completed 11 of the 21 action items designed to reduce the effect on air traffic of the seven major airspace choke points, all of which are east of the Mississippi River. Several new air traffic control sectors have been established and more are planned.
- FAA has entered into a memorandum of agreement with the controllers' union regarding airspace redesign. The agreement outlines the general ground rules for working through airspace redesign issues and safeguards controller pay from changes if the airspace redesign effort lowers a facility's traffic level.

Actions Needed:

- Complete the following items by the planned date of December 31, 2001, and incorporate the completion dates in the performance standards of the accountable FAA managers.
 1. Flip flop the "Yardley" and "Robbinsville" sectors to increase the flow rate for traffic that affects the New York Center.

2. Assess military airspace for its ability to accommodate traffic through Canada.
 3. Smooth traffic flows in the Great Lakes Corridor.
 4. Conduct and evaluate the Tactical Altitude Assignment Program Test. This program will keep flights flying at lower altitudes for longer periods after takeoff.
 5. Reduce the window for the expected Departure Clearance Time during Ground Delay Programs with the goal to minimize the use of multiple restrictions on the same flight.
- Complete these remaining action items by the planned date of July 30, 2002, and incorporate the completion dates in the performance standards of the accountable FAA managers.
 1. Establish a Traffic Coordinator position in the “Liberty West” sector to help coordinate traffic flows in the New York area.
 2. Create a new sector to relieve the busy “Elmira” high sector in the New York Center.
 3. Create an automation interface for radar data between the Cleveland and Toronto Centers.
 4. Design and establish nine new sectors at various locations.
 5. Develop new procedures for the Chicago tower, TRACON, and Center that provide alternate flight paths around bad weather and congestion without controller guidance.

Commitment 2: Use capacity benchmarks to identify areas for improvement (i.e., action plan) at the 10 most delayed airports.

On September 14, 2000, we first cited the need for capacity benchmarks for the Nation's largest airports.⁵ Although development of these benchmarks took longer than was anticipated, FAA has now achieved an important milestone by issuing its report on capacity benchmarks last week. To FAA's credit, the benchmarks are more than just a set of two numbers (optimum arrival and departure rates based on good weather conditions and reduced rates based on adverse weather conditions) for some 31 airports, but also project the additional capacity gained through planned runway construction, installing new air traffic control equipment, and/or changing air traffic control procedures.

In analyzing FAA's capacity benchmarks, we found that nearly 70 percent of new capacity at these 31 airports will come from planned runway construction at 14 of them (as well as the recently completed runway at Phoenix), with the remainder achieved through new ATC equipment and procedural changes. We also found that some airports will gain 40 percent or more in capacity, while others anticipate little or no change from current levels. The following table lists the five airports with the highest and lowest increase in capacity based on FAA's benchmark data.

⁵ OIG statement before the Committee on Commerce, Science, and Transportation, United States Senate, September 14, 2000.

**Five Airports with the Highest and Lowest Projected Increase in Capacity
Under Good Weather Conditions**

Highest Increase

Rank	Airport	Percentage Capacity Increase
1	Seattle	57
2	Dulles	49
3	Houston	42
4	Phoenix	40
5	Atlanta	37

Lowest Increase

Rank	Airport	Percentage Capacity Increase
1	Baltimore	0
2	Las Vegas	0
3	San Francisco	0
4	Tampa	0
5	Kennedy	2

As part of the Airport Capacity Benchmark Report 2001, FAA included action plans for the eight most delayed airports.⁶ These plans include a summary of each airport’s delay statistics, projected future demand, and planned improvements—including any added capacity resulting from these improvements. Our examination of these plans, however, indicates that demand will exceed projected increases in capacity at seven of the eight airports—as illustrated by the following table.

⁶ In ranking the 31 airports by the percent of Operations Network (OPSNET) delays per 1,000 flight operations in 2000, FAA selected 3 percent as the cut off point for determining those airports for which action plans would be developed. These included LaGuardia (15.6%), Newark (8.1%), Chicago (6.3%), San Francisco (5.7%), Boston (4.8%), Philadelphia (4.4%), Kennedy (3.9%), and Atlanta (3.1%). Some of the airports not making the cut included: Houston (2.8%), Dallas/Ft. Worth (2.4%), Phoenix (2.2%) and Los Angeles (2.2%).

FAA's Projected Increases in Capacity and Operations⁷
At the Eight Most Delayed Airports (Next 10 Years)

No.	Airport	Percentage Change in Capacity	Percentage Change in Flight Operations	Net Difference
1	Atlanta	37	28	+9
2	Boston	4	6	-2
3	Kennedy	2	18	-16
4	LaGuardia	10	17	-7
5	Newark	10	20	-10
6	O'Hare	6	18	-12
7	Philadelphia	17	23	-6
8	San Francisco	0	18	-18

Barring new sources of capacity (e.g., new runways or technology) and/or reduced demand, additional actions may be needed to avoid future increases in flight delays at these seven airports. Such actions could include one or more of the various administrative and market-based options under consideration by DOT and Congress, including: peak-hour pricing, flat landing fees, slot auctions or lotteries, and granting anti-trust immunity to the airlines for scheduling purposes.

Done:

- FAA completed capacity benchmarks for 31 major airports.
- FAA developed action plans for the eight most delayed airports, which accounted for 75 percent of FAA-tracked delays in 2000.

⁷ Flight operations projections were derived from FAA's Terminal Area Forecast System.

Actions Needed:

- FAA, the airlines, and the airports need to ensure that milestones are established for the vital capacity enhancement projects at the eight most delayed airports are met.
- These eight airports, with the exception of Atlanta, project insufficient capacity growth to keep up with the projected growth in demand over the next 10 years; therefore, delays are apt to grow at these airports rather than decrease. FAA, the airlines, and the airports need to devise additional capacity-enhancing projects for these and other airports to avoid the need to employ demand management techniques.
- DOT and FAA need to determine what administrative and/or market-based options are appropriate and economically efficient for managing excess demand at those airports experiencing high levels of congestion and delays and for which capacity-enhancing projects are unlikely to satisfy current or projected demand (e.g., LaGuardia).

Commitment 3: Ensure air traffic control modernization efforts under Free Flight Phase 1 and 2 remain on schedule.

FAA's Free Flight Phase 1 (FFP1) initiative, with an estimated cost of over \$700 million, is composed of new information-exchange systems that link FAA and airline facilities, and new automated controller tools (software programs that help air traffic controllers manage the flow of airplanes in the system). FAA plans to have all of the systems in place by the end of 2002. FFP1 has passed the halfway point in terms of its planned budget and schedule, and FAA is currently spending about \$18 million per month on FFP1 initiatives. Much work remains in terms of software development, testing, and integration with other systems to complete FFP1 by the end of 2002 as planned.

FAA is in the process of developing a plan for Free Flight Phase 2 (FFP2), which includes the geographic expansion of select FFP1 initiatives, introduction of new technologies, such as Data Link, and continuation of a number of research efforts from 2003 through 2005. FAA estimates FFP2 to cost over \$700 million, excluding costs for Data Link, which are still being refined. At this time, the question is not whether to move forward, but rather at what pace to ensure the effort is manageable and sustainable.

Done:

- FAA has made progress in implementing elements of FFP1. New information-exchange systems (Collaborative Decision Making and Surface Movement Advisor) are largely in place, and new automated controller tools—User Request Evaluation Tool and Center-TRACON Automation System—are in use at a small number of air traffic control facilities.
- Preliminary results indicate that FFP1 will provide modest improvements in capacity, though the benefits will vary by location.

Actions Needed:

- FAA has significant work remaining to complete the development and deployment of the new automated controller tools, which account for over 80 percent of the FFP1 investment.
- FAA needs to complete the FFP2 plan, which includes conducting human factors assessments, completing research management plans, developing a risk mitigation strategy, and finalizing costs for Data Link.

Commitment 4: Reach agreement with airlines and airports on near-term, mid-term, and long-term plans for increasing capacity in the National Airspace System (NAS), as outlined in the National Operational Evolution Plan.

FAA's National Airspace System (NAS) Operational Evolution Plan represents an important step towards addressing capacity constraints at many of the Nation's busiest airports. The goals of this effort are to: (1) describe the operational evolution of the NAS as it relates to increasing capacity while maintaining safety, (2) devise a set of credible initiatives that focus the aviation community on solutions for the 2000 to 2010 timeframe, and (3) link these initiatives to a timetable and specific activities.

The plan calls for various near-term, mid-term, and long-term actions to increase capacity. For the near-term (2001), these actions include resolving remaining choke points and continuing collaboration and information sharing with the airlines (i.e., Spring 2001). For the mid-term (2002 to 2004), the plan calls for optimizing airspace design, widespread use of Free Flight Tools, reduced vertical separation, and enhanced navigation procedures. Finally, for the long-term (2005 to 2010), the plan cites data communications, satellite navigation, and enhanced surveillance systems.

Last week, senior FAA officials met with airline and airport representatives to go over the draft plan and receive comments on a proposed set of responsibilities and required actions to be completed by FAA, the airlines, and airports in the near-term, mid-term, and long-term. *Industry support is absolutely critical because many initiatives will require airspace users, principally large commercial airlines, to equip their aircraft with new avionics for navigation, surveillance, and communication functions.* At the meeting, FAA asked industry to provide comments by the end of this week and thereafter FAA intends to work with the airlines and airports to achieve agreement on a final plan by July 2001. FAA points out—and we agree—that the final Operational Evolution Plan will be a “living document” that will need to be updated periodically to reflect changing circumstances.

Done:

- FAA presented the draft Operational Evolution Plan on April 23, 2001 to airline and airport officials for their comment. Included in the plan was a summary of proposed responsibilities and required actions to be taken by the FAA, airlines, and airports in the near-term, mid-term, and long-term.

Actions Needed:

- Obtain and analyze the industry's comments on the draft Operational Evolution Plan.
- Reach agreement among all parties by July 2001 on specific activities and milestones to be included in the final plan.
- Implement and execute the plan and hold FAA managers accountable for meeting the plan's milestones in their performance standards.

Commitment 5: Streamline Federal, state, and local procedures for approving enhancements to airport capacity.

According to FAA, several initiatives are being implemented to help improve the timeliness of environmental reviews within its control. These include dedicating more FAA staff to environmental reviews, increasing the number of projects that are excluded from detailed environmental review because they have historically resulted in no significant environmental impacts, and reviewing ways to shorten and streamline environmental assessments with findings of no significant environmental impact.

Staffing. FAA has used a team of experts to expedite certain environmental impact statements (EIS) and is expanding this approach. FAA wants to form an EIS team for every large hub airport with a runway project and put airport staff and their consultants and FAA staff on each team. A number of airport proprietors have offered to provide funding for more dedicated and fully staffed teams, and FAA is in the process of developing a workable arrangement.

Processes. FAA is increasing the number of projects that are categorically excluded from detailed environmental review because they have historically resulted in no significant impacts. (Such projects include construction of aprons, re-construction of runways, and marking or grooving runways.) FAA is reviewing ways to shorten and streamline Environmental Assessments with findings of no significant impact and EISs to reduce paperwork and delays.

Studies. In accordance with AIR-21, FAA is conducting a study of Federal environmental requirements related to the planning and approval of airport improvement projects. FAA anticipates issuing its findings to Congress in May. FAA is also working on methods to improve Federal and state interagency coordination during environmental reviews and is planning to issue a guide on best practices for EIS management and preparation.

Done:

- FAA has begun implementing initiatives to improve timeliness of environmental reviews. These include increased staffing on expert teams to expedite certain EIS, improved Federal and state interagency coordination during environmental reviews, and increased use of categorical exclusions from detailed environmental reviews for projects that have historically resulted in no significant impacts. Such projects include construction of aprons, reconstruction of runways, and marking or grooving runways.

Actions Needed:

- Issue FAA's overdue report to Congress on Federal environmental requirements related to the planning and approval of airport improvement projects.
- Issue the best practices guide for EIS management and preparation and evaluate the effectiveness of the streamlining initiatives currently being put in place.

Commitment 6: Develop Standard DOT Definition for Tracking and Reporting Flight Delays.

On March 28, 2001, Administrator Jane Garvey announced before this Committee that FAA would adopt the Department's current definition of a delayed flight—as one arriving 15 minutes or more after the scheduled arrival time. Although delays will continue to be tracked throughout all segments of the flight (i.e., gate departure, taxi-out, en route, taxi-in, and gate arrival), causal codes will only be assigned to flights that arrive 15 minutes or more past their scheduled arrival times at the gate.

FAA and the Department have made progress by establishing a common definition for a delay. However, as we noted in our July 25, 2000 report, the evolving congestion and delays in the airspace system over the last decade have caused the airlines to adjust their flight schedules. The result is a confusing situation for air travelers whose flights may depart the gate late, sit on taxiways for long periods, and then arrive on time. Thus, we need to have another indicator to record and identify the causes for these inefficiencies if we are to fully improve our national airspace system.

Staff of the Department and FAA have begun discussions on developing one or more measures that will gauge the delay problem already built into existing

schedules. We are not asking air carriers to revise their schedules to eliminate this expected delay—air travelers need to know what the actual expected arrival time will be given the current conditions. Instead, such a measure would identify where improvements are needed in the system that will permit airlines to reduce scheduled flight times toward their ideal levels while achieving those schedules with high on-time arrival rates. We encourage the Department and FAA to continue these discussions and to set some near-term milestones so as to expedite this process.

BTS has developed a system for reporting the growth in schedule time for flights between the largest airports. BTS officials hope to make this information available to the public on their web site in the near future.

Done:

- DOT and FAA have agreed upon a standard definition for a flight delay.

Actions Needed:

- Set a deadline for publishing information on the growth in schedule times for flights between the largest airports on the BTS web site.

- Set a deadline for completing the work on a set of measures to gauge and track the inefficiencies of the air traffic system already built into airline schedules.

Mr. Chairman, this concludes my statement. I would be happy to answer any questions you might have.