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GOVERNMENT AND INDUSTRY-WIDE EFFORTS TO ADDRESS AIR TRAFFIC CONTROL DELAYS

HEARING

BEFORE THE

SUBCOMMITTEE ON AVIATION

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

MAY 10, 2001

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ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

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CONTENTS

	Page
Hearing held on May 10, 2001	1
Statement of Senator Burns	15
Statement of Senator Fitzgerald	13
Statement of Senator Hutchison	1
Statement of Senator Rockefeller	3
Prepared statement	4
Statement of Senator Snowe	18

WITNESSES

Carr, John, President, National Air Traffic Controllers Association	34
Prepared statement	37
Dillingham, Gerald L., Ph.D., Director of Civil Aviation Issues, General Accounting Office	25
Prepared statement	27
Garvey, Hon. Jane, Administrator, Federal Aviation Administration	5
Prepared statement	7
Merlis, Edward A., Senior Vice President, Legislative and International Affairs, Air Transport Association of America	46
Prepared statement	49
Vacar, Richard M., AAE, Director, Houston Airport System	41
Prepared statement	43

GOVERNMENT AND INDUSTRY-WIDE EFFORTS TO ADDRESS AIR TRAFFIC CONTROL DELAYS

THURSDAY, MAY 10, 2001

U.S. SENATE,
SUBCOMMITTEE ON AVIATION,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10:07 a.m. in room SR–253, Russell Senate Office Building, Hon. Kay Bailey Hutchison, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. KAY BAILEY HUTCHISON, U.S. SENATOR FROM TEXAS

Senator HUTCHISON. I am going to wait a couple of minutes to see if Senator Rockefeller comes. I have an unusual situation. Of course, I am Chairing this hearing and it is very important to me. I have been working on it for a long time. But a Texan, Gordon England, is being nominated for Secretary of the Navy and the hearing was supposed to be at 9:30. So I was all set to go there and come here, but Chairman Warner changed the time to 10 o'clock.

So I am going to open the hearing and turn it over to Senator Rockefeller or, if he is not here, to Senator Burns. I will come back. Administrator Garvey, if I miss part of your testimony, I am so pleased that we got a chance to have a good visit yesterday. I am pleased with the progress that you are making. I think we have a good understanding of what you are doing.

So I will be back just as soon as I can.

I am going to go ahead and start the hearing and hope that Senator Rockefeller is able to come very quickly.

Today the Aviation Subcommittee will examine the connection between the growing problem of flight delays and the air traffic control system. As you know, several weeks ago we had a hearing on the infrastructure improvements that are needed. I am convinced that weather is a large part of the delays in our country, but it is not the only part. There are things that we can control and we need to address those issues.

So we are going to look at streamlining environmental reviews for more runways to come on line more quickly, for more gate space, and I hope, more flexibility for the use of PFC funds for more gates, so that we at least can expand the ground infrastructure and expedite those additions.

Today we are going to talk about the air traffic control system, because, of course, part of the congestion is in the air and we need

to look at what can be done to have the very best in air traffic control equipment. For years we have heard charges that the FAA has been slow to deploy new technology and that the equipment used by air traffic controllers is unreliable and outdated. I personally do not believe that this is the whole truth and after our visit yesterday I see that there are some things that you are doing at the FAA that I believe will help that particular airspace congestion in certain areas.

The United States has the most complex airspace on earth and the FAA faces an incredible challenge to get 680 million annual passengers to their destinations safely. Clearly, they must be doing something right, since American airspace is also the safest.

The FAA's primary mission is and must always remain the safety of the traveling public. Nonetheless, the ATC system is not as efficient as it should be. The equipment in many of our facilities was designed in the 1950's. It was never meant to handle the volume of traffic that occurs every day. Equipment outages have caused chaotic nationwide delays and cancellations. Even new air traffic facilities, such as the tower at Reagan National Airport, have been outfitted with old computers and radar screens.

Modernization efforts are taking too long, cost too much, and they have done too little. Funding is always an issue. As both the Chairman of this Subcommittee and as an appropriator, I have fought many battles over transportation and budgetary priorities. But with the passage of AIR–21 Congress has prioritized aviation infrastructure. We will not back off that commitment, and the Chairman of the full Committee, Senator McCain, fully supports this commitment.

We have tried before. Between 1982 and 1999 the FAA spent $27 billion on air traffic control systems, facility upgrades and support equipment. This was the initial implementation of the FAA's ATC modernization program. The program was scheduled to be completed in 1993 at a cost of $12.6 billion. Today air traffic control modernization is not expected to be completed until 2012, at a cost several times the original projection.

Certainly a portion of this overrun is due to the burgeoning demand for air travel since deregulation in the 1970's. But conservative estimates place the amount of money wasted in this effort between $1.6 billion and $2.8 billion.

It is bad out there. Passengers are fed up with airline schedules that bear little or no relationship to the actual flight times. They are tired of wondering if their flight will not be one of the 2.6 million that are canceled or delayed. The airlines must provide their customers with accurate information and abandon the practice of overscheduling.

The Aviation Delay Prevention Act that will allow the airline to consult with one another to reduce overscheduling and coordinate operations during bad weather will be on the markup on the 24th. Senator Rockefeller, my distinguished ranking member, and Chairman McCain have joined me in co-sponsoring this bill and we have worked very hard to make the bill amenable to all of the different issues and concerns. It is my hope that we will get this bill out of Committee and be able to go to the floor very quickly.

The most important objective of the bill and the real answer to passenger frustration is to build more capacity. First and foremost, we need more runways and gates. However, these improvements will not have as great an impact unless they are accompanied by upgrades in the air traffic control system. The airline must partner with the FAA to deploy new technologies that will permit us to more efficiently use our airspace.

I want to say that I think, Ms. Garvey, you are working to have partnerships with the airlines, which is essential if we are going to solve this problem. They are the customers. They are the ones who are out there trying to do the job and doing something in a vacuum that they do not approve or agree will be helpful, would be counterproductive.

Improved instrumentation on the ground and on board the aircraft will enable planes to safely close the 5-minute gap and to fly through and around weather.

Today the Subcommittee will hear from Administrator Garvey as well as a range of perspectives from the aviation industry. Those will include: Dr. Gerald Dillingham, the Director of Civil Aviation Issues at the General Accounting Office; Mr. John Carr, the President of the National Air Traffic Controllers Association; Mr. Richard Vacar, the Director of the Houston Airport System; and Mr. Edward Merlis, the Senior Vice President of the Air Transport Association of America.

So let me say I welcome all of the witnesses. We want this record to be clear. I think Senator Rockefeller's and my bill on infrastructure improvements is a clear solution that will move the ball forward. Air traffic control is more technical. It must be correct. It should not be a political issue. It is a technical issue. So we are looking to the expertise to determine what is the best thing and then to give you the money and the support that you need to do this very important job.

With that, I had already mentioned, Senator Rockefeller, that I would be leaving and turning the Committee to you, to go and introduce the Secretary of the Navy, whose hearing is right now, and then I will return. But I have told Administrator Garvey that I have read her testimony and I believe that she is certainly on the right track.

So with that, I would like to call on you for an opening statement. Then if you will call on Senator Burns and Senator Fitzgerald, then I will be back as soon as I can.

STATEMENT OF HON. JOHN D. ROCKEFELLER IV, U.S. SENATOR FROM WEST VIRGINIA

Senator ROCKEFELLER. Madam Chair, I assume the Secretary of the Navy is from New Mexico?

Senator HUTCHISON. This is true.

Senator ROCKEFELLER. Okay.

Senator HUTCHISON. If he were from West Virginia, I would do it.

Senator ROCKEFELLER. Thank you very much, and we will await your coming back.

I am always conflicted because I look at Jane Garvey, and I am trying to think whether the Red Sox lost last night and I think they did, did they not?

Ms. GARVEY. It was not a good night.

Senator ROCKEFELLER. [presiding]. So you are not in a very good mood, and I am trying to figure whether to give my statement or not. It is a good statement, but I think I can get a lot of it out in questioning. That will put a little more pressure on my colleagues. We will see how they react to it. So I am going to put my statement in the record and then call upon Senator Fitzgerald.

[The prepared statement of Senator Rockefeller follows:]

PREPARED STATEMENT OF HON. JOHN D. ROCKEFELLER IV,
U.S. SENATOR FROM WEST VIRGINIA

We have a problem. Capacity of the ATC system has not kept up with demand, and it is only going to get worse. Passengers will not be happy this summer, during the peak thunderstorm season, and all of the "Passenger Rights" legislation in the world will not help them. Right now, passengers know their flights will be delayed or late. That is a given.

The FAA is working hard with the carriers to mitigate delays. They put in a "spring/summer" plan last year to better coordinate decision-making among the carriers and FAA, requiring conference calls beginning first thing in the morning. It appears to be working.

There is no one single answer to "solving" the capacity issue. Adding runways or more closely spacing aircraft are essentially the two options. Each change, or expansion, requires coordination among the entire industry—carriers may need to add expensive equipment that can take years to install, the FAA may need to design computers and software to more accurately depict and predict aircraft actions, and substantial dollars may be needed.

With respect to runways, the FAA expects runway projects to take 10 years to build. Expediting runways will be helpful, and should be done, but streamlining the process will not shave 5 years off of the time. (Airports begin planning for expansion when a runway reaches 60 percent of capacity. The FAA estimates traffic growth of about 3–4 percent per year, thus after 10 years, the runway is at full capacity a new one will open.)

We need to attack the issue from two perspectives—increasing capacity and managing demand in the short term.

Expanding capacity is a complex task, but essentially comes down to building more runways and using new technology. Expanding runway capacity can, at some airports, dramatically increase capacity—by up to 50 percent at some airports. At other airports, for example, Boston's Logan, if they build a new short runways—and I know there is a lot of opposition to that—it will cut down on delays, but add no new capacity.

New technology will produce benefits, but the increases are not going to be as dramatic as a new runway. Every increase helps, and the FAA and industry must work together. For example, getting better and more accurate weather forecasts—forecasts that can better predict more precisely weather conditions—will help carriers and the FAA plan operations every day.

According to the FAA's report on Airport Capacity Benchmarks, LaGuardia is the only airport, where even under good weather conditions, demand exceeds capacity and it occurs all day. This airport is subject to the FAA's slot controls. Congress is about to give the FAA and DOT authority to immunize carriers from the antitrust laws to talk about scheduling. For LaGuardia, we are going to have to make some hard choices. Either accept delays, or cut flights. There are different ways to do this, but no matter what, it will not be easy.

Right now, the FAA is considering some form of fee system to address delays. Talk of different types of fees really means pricing someone out of the system—those that can afford it get to stay. Congress, perhaps incorrectly, opened up LaGuardia to more flights as part of AIR–21. We will need to scale back flights. The FAA should use the carrier discussions to get them to reduce flights—particularly the number of frequencies between specific cities, where perhaps carriers can switch from smaller jets to larger ones, but fly one or two times less per day.

The FAA also should use its powers of persuasion to do the same thing—or accept the fact that delays at LaGuardia will continue and at some point the carriers will

take actions on their own. Interestingly, the FAA's own documents that discuss possible ways to address delays, talk of the need for carriers to look at their own schedules as one of the delay mitigation measures.

Finally, and most important: I want to say one thing about the FAA. Jane's term ends in August 2003. She has worked hard to keep this system moving forward under some difficult conditions. She has worked with the industry and Congress to try to make us all understand the depth of the problems and the needs of the FAA. Despite passage of AIR–21 last year and Jane's efforts, with dramatic increases in funding, we still may not meet the needs of the FAA. The recently issued Operational Evolution Plan—something that takes into account future needs—may "break the bank", but if we do not agree on a plan, and fund it, Congress will have failed in its responsibilities to Jane, to the carriers, and most importantly, to passengers.

Senator FITZGERALD. Are you calling on me now, Mr. Chairman?

Senator ROCKEFELLER. Yes, for your opening statement.

Senator FITZGERALD. Thank you. I do not have an opening statement and I will simply join you in questions. I welcome Ms. Garvey here. I have seen you on some flights to my beloved airport, O'Hare Airport in Chicago, which may come up in this hearing today. I will look forward to your testimony.

STATEMENT OF HON. JANE GARVEY, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION

Ms. GARVEY. Well, thank you very much, Mr. Rockefeller and also Mr. Fitzgerald. It is really a pleasure to be here this morning to address the issue of aviation delays and system capacity.

As the Chairman mentioned, we have an extremely complex system and an extremely safe system as well. We manage 50 percent of the world's aviation traffic. The number of passengers using our system has doubled in the last decade. Our airspace system is highly interconnected. It is interrelated. Certainly, as you all know and as many of you have mentioned, it relies on each sector of airspace operating both safely and efficiently.

We know that delays at any one of our busiest airports have a rippling effect throughout the entire aviation system. For example, in 1 day in December delays at LaGuardia caused delays at 73 airports. So there is definitely a rippling effect.

As Members of this Subcommittee have mentioned, and as Secretary Mineta has mentioned many times, it really is going to take all sectors of the industry—airlines, airports, and government to reduce airline delays. Each of us really share a responsibility for action. What I would like to do this morning very briefly is to highlight both the tactical, the short term measures that we at the FAA are taking, and also comment a bit on our strategic long-term plans.

First let me say—and I really mean this and I want to underscore this, I think we have an unprecedented level of cooperation between the FAA, the airlines, the pilots, the controllers in managing the system. I think you will hear this from other members who will be following me on the following panel. There is a sense that we are in this together.

As Senator Rockefeller knows because he has visited Herndon, every day just before 5 a.m. in the morning at the FAA command center in Herndon, planning begins with the airlines. It continues every 2 hours throughout the day. It is real-time decisionmaking,

real-time collaboration. We arrive at a plan that we want to implement together.

Last fall, in preparation for this summer's travel season, we conducted a joint evaluation of the plan with the airlines. We looked at the spring-summer program of 2000 and we essentially said, what can we do better? FAA has adopted all of the recommendations that came out of that review.

In my opinion, one of the most important recommendations was the joint training that we have done with the airlines. By March of this year, we had trained more than 3,000 controllers, supervisors, and airline dispatchers. By May 15th we will have trained the controllers at each of our facilities, and the airlines are undertaking similar activities.

We have also focused, with the airlines, on what is really our toughest, most complex area, and that is that challenging triangle between Chicago, Boston, and Washington, D.C. We have identified 21 initiatives to really relieve those choke points within the triangle. We said, let us focus our energies on the worst area. The initiatives really focus on changes to gain greater efficiency in the National Airspace System (NAS). We are doing this by changing air traffic procedures, by establishing new airspace sectors, and by creating new routes. We have completed work on 11 of 21 initiatives. These specifically address the congested airspace around New York and New Jersey. As a result, the westbound and northbound traffic out of the New York area are experiencing fewer delays.

Just last week we opened three new sectors in the Cleveland center, which is really our busiest center in the country. We are currently testing new routes between 300 city pairs which will allow aircraft between those points to fly at lower altitudes. We think by separating the flights in that way we can achieve far greater efficiency in the System.

In addition, we have unprecedented cooperation with Nav Canada. They now participate in the conference calls with the command center every day. They have also opened up, through a memorandum of agreement with us, some of their airspace. We are finding that airspace extraordinarily helpful, particularly in bad weather.

We also know, as we examine the airspace to achieve greater efficiency, that we need to expand the capacity on the ground. Last month, we issued a report on the capacity benchmarks for 31 of the busiest airports in the country. In fact, we first talked about it at a hearing last fall. We took a look at two numbers. One is the number of hourly takeoffs and landings that can be accommodated safely in good weather. The second number is the number of operations that can be accommodated in reduced visibility or poor weather.

We believe the benchmarks are a good starting point. It is valuable data. It is not the only data that should be looked at, but it is very valuable data to use as we fashion the right set of solutions. That is really our focus now. We have taken a cut at potential solutions for each one of the top eight airports that are experiencing the worst delays. The actions include new technology, air traffic procedural changes, and in some instances new runways. We are very eager to work with the airports and with the airlines to fashion the right action plan.

When new runways are an option, we are looking at how we can build them more quickly. Again, those were issues that were raised at this hearing last fall.

AIR–21 required the FAA to report on the environmental review process. I am pleased to say our report is essentially complete, and we want to get and expect to get it to Congress very shortly.

We also know we need a 10-year view of where we are headed, and that is where the National Air Space Operational Evolution Plan comes in. It lays out a 10-year commitment. What is important about this is that it is a 10-year commitment for the FAA, for the airlines, and for the airports. It includes new runways, new technology and procedural improvements. I think, simply put, the plan really sets forth the blueprint we are taking with industry to move to satellite navigation. We are working very hard with the industry now to reach agreement and we hope to reach that agreement by June of this year.

Just one last note, too, on some of the technology points that the chairman raised. As we are developing this 10-year plan I want to underscore the fact that we are also very aggressively pursuing modernization. During the last 3 years, we have been able to get all new hardware in each of our 20 centers. So the hardware in our 20 centers is no more than 5 years old.

The replacement of the computers and software equipment has been completed in just about 140 of our TRACONs. We are now focused on the towers. That is very challenging, very complicated airspace area, but that is our focus now. Free Flight Phase 1 and Phase 2, is on schedule and we have met every one of the benchmarks we have set for ourselves.

I certainly do not want to leave anyone with the impression that modernization is complete. It certainly is not. It is a continuing process for us with some enormous challenges. Thanks to the increased funding for AIR–21, we were able to attack the computer software for the Host computers, which is going to be a very big help for us.

So I will just end by simply saying that I want to assure the Committee that you have my personal commitment and certainly the commitment of the agency to do everything that we can to be part of the solution in solving airline delays and increasing the capacity of what is an extraordinary system.

Thank you very much.

[The prepared statement of Ms. Garvey follows:]

PREPARED STATEMENT OF HON. JANE GARVEY,
ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION

Chairman Hutchison, Senator Rockefeller, Members of the Subcommittee, it is a pleasure to appear before you today to discuss the topic of airline delays and capacity. Throughout the past two years the Federal Aviation Administration (FAA) has been working to improve the efficiency of the air traffic system, while at the same time, maintain the highest standards of safety. That safety is, and should remain, of paramount importance is clearly supported by every member of the aviation community. I am very pleased to share with you the role we at the FAA are taking to lead the effort to provide a safe and reliable air traffic system.

Delays have significant financial, scheduling, service, and competition consequences for airlines and result in understandable frustration for their passengers. The issue of delays is very complex. There are many conditions that can cause delays: bad weather, inoperable runways, airport capacity limitations, aircraft

equipment problems, airline maintenance and flight crew problems, and air traffic equipment outages. Because of the varied causes for delays, we know that they will never be totally eliminated. Nevertheless, it is the job of the FAA, the airlines, and airports to strive to minimize delays to the greatest extent possible, without compromising safety.

In light of the flight delays our nation experienced in 1999, we recognized that we needed to establish a collaborative planning process between the FAA and users of the National Airspace System (NAS). We created the Spring/Summer 2000 plan, a collaborative effort developed by industry, labor, and government. The plan maximized the use of available airspace, improved communications between the FAA and aviation system users, and expanded the use of new technology. All of this was designed to improve predictability for airlines operations during severe weather.

The Spring/Summer plan was designed as a delay management plan because, as I've stated, we know we can never eliminate delays. However, it was hoped that the plan would assist us do a better job of collaborative decision-making to better manage the airspace so that the flying public has some expectation of predictability. We know that centralized decision-making, unprecedented collaboration, common weather information—what we refer to as the playbook—is absolutely the right approach. While delays did increase in 2000 from the previous year, along with the number of flights and airline passengers, we do know that our collaborative approach did make a difference. Some airlines informed me that even with the increase in severe weather days in 2000, our collaborative efforts enabled them to better plan and execute operations as well as to inform passengers in advance of severe weather. This is the key to our Spring/Summer plan efforts in 2001, which includes training over 3,000 controllers, supervisors, and airline dispatchers. In addition, I am happy to report that Nav Canada now participates in our conference calls with the airlines and has worked to develop routes that will accommodate approximately 400 additional flights per day. I am hopeful that this, in addition to access to additional military airspace off the east coast, will assist us in achieving greater air traffic efficiencies this spring and summer.

What the past few years have demonstrated is that, right now, supply and demand for capacity are out of balance, and result in delays. How this gap is managed is very complex and cannot be solved by government alone, but the FAA is committed to lead this effort. In order to do so, we knew we needed better information specific to the root causes of the problem, and could tell us how capacity enhancements at key airports would affect the entire NAS.

Toward that end, the FAA recently released its report on Capacity Benchmarks. The report provides data for 31 airports across the country. This report provides valuable data that we hope will be used to assist the FAA, airports, airlines, and other system users in making informed decisions and investments that can ultimately help better manage the ever increasing demand for capacity, while at the same time minimize unavoidable delays. The report documents what Members of Congress, as frequent fliers of the system, know intuitively; that there are a handful of airports at which demand exceeds capacity and where, in adverse conditions, the resulting delays have impacts throughout the NAS.

While the report on Capacity Benchmarks provides us with valuable data upon which important decisions can be made, we have other, tactical and strategic measures underway to improve efficiency of the air traffic control system. In addition to the Spring/Summer 2001 plan, we have identified other tactical measures. For example, we have identified seven choke points centered in the congested airspace between the "triangle" of Boston, Chicago, and Washington, D.C. We are implementing 21 action items to address these choke points. Eleven of these initiatives have been completed and continue to be measured for effectiveness. For example, departures going west out of New York airports have experienced 25 percent fewer unplanned departure stops. (An unplanned departure stop occurs when the departure radar controller directs the towers to stop all departures due to weather, workload and/or complexity issues.) We have also reduced congestion for flights flowing north out of New York airports, thus reducing departure stops by 37 percent.

Five additional action items are mid-term initiatives with expected completion dates between June and December of this year. Five more are long-term actions requiring either phased in implementation, future funding, equipment, or international agreements. Our goal is to complete these remaining items by the summer of 2002.

On April 30, 2001, we opened three new sectors at Cleveland Center, the most congested Air Traffic Control Center in the nation. We are working to establish a total of 14 new sectors by the end of the year, seven of which have been opened, to ease congestion and speed traffic flows in the Great Lakes corridor and into New York. New routes have been developed throughout the "triangle" to improve the

traffic flows. The System Command Center, in consultation with users, tactically restricts certain flights through this area to improve sector capacity. As a result, we can accommodate more flights and, overall, aircraft fly more efficiently. We have identified a total of 19 new sectors which will make significant differences in traffic flows for flights in Boston, Chicago, Washington, D.C., and New York, as well as other northeast airports by the Summer of 2002.

The FAA is also working to determine where our operating, capital, and research investments should be best distributed to meet our strategic goals, including those pertaining to system efficiency. A better understanding of how these three resources enable us to achieve goals will help us make more effective decisions for the near and long term.

For the first time, the FAA has, with the cooperation with the aviation industry, developed a far-reaching 10 year National Airspace System Operational Evolution Plan (OEP). This involved a coordinated effort within the FAA and systematic collaboration with the airlines, airports, and other members of the aviation community. This plan directly addresses the passenger delays identified in our capacity benchmarks study.

The plan calls for changes in how aircraft operate to better match available capacity to meet demand; a redesign of the airspace to accommodate greater numbers of aircraft while maintaining safety; deployment of new technology to increase flexibility; construction of new runways; and new procedures to improve management of delays.

This is a fundamental change in the manner in which we conduct business. The OEP is about commitment, accountability, and deliverability. While we at the FAA are making certain commitments, the OEP will require our partners, particularly the airlines, to make significant investments in avionics equipment and pilot training for this effort in expanding system capacity. That is why we have worked so diligently in getting industry support for the OEP. We have had two industry days and have posted the OEP on our web site so that we can get comments from a broad range of system users. We are reviewing comments as they are received and plan to issue a final OEP in June.

More strategically, we are redesigning our nation's airspace and air traffic control automation. The National Airspace Redesign will be completed for the entire country in 2006, but we are starting in the New York and mid-Atlantic areas where we expect tangible benefits within four years. The most congested and complicated airspace is east of the Mississippi River. Because this airspace poses the most challenges, it is the initial focus of our redesign. Our goal is to establish comprehensive processes and procedures to ensure adaptable and flexible airspace that meet future demands.

In conclusion, I would like to say that the entire FAA, from my air traffic management team, to my modernization team, to our airport folks, the FAA recognizes our dual responsibilities of safety and efficiency when it comes to reducing aviation delays. I am fortunate to have a highly dedicated workforce—our controllers, our technicians, and our headquarters staff—and we are all working aggressively and cooperatively with airlines and airports to meet these challenges.

Madam Chairman, I will be happy to answer your questions at this time.

Senator ROCKEFELLER. Thank you, Jane Garvey.

Senator Burns, Senator Snowe, do you have any comments that you want to make?

Senator SNOWE. I will wait.

Senator BURNS. I will wait. I know you would like for me to ask a question, but I will not.

Senator ROCKEFELLER. Ms. Garvey, the technology—well, let me ask two other questions first. It is interesting that you reached an MOU with Canada. That means, I take it, that you can use some of their provincial space to route airplanes?

Ms. GARVEY. Yes, that is correct, Senator.

Senator ROCKEFELLER. To get around weather or to help with delays, etcetera. Was that a hard thing to achieve? I mean, did national prerogatives suddenly get involved or overcome or what?

Ms. GARVEY. Let me say, I think it is always more challenging than you think it is going to be when you start out. There were some issues. But we worked hard at it. Just to give you an example

of how beneficial it can be, on one particularly bad day a couple of weeks ago I think we were able to accommodate about 300 aircraft in the Canadian airspace that might otherwise have stayed on the ground much longer than we would have liked. So we think it is going to be very helpful.

Senator ROCKEFELLER. In the process of building up to this MOU, were they territorial about it or were they sort of open from the beginning?

Ms. GARVEY. I think they were very open from the beginning. I think there were always issues about whether they would need additional staffing, incur expenses associated with it, and so forth. But we worked all of those issues out. I think there are always ways that we can help Nav Canada, too, in some of their air traffic issues. So we are, I think, working very collaboratively and cooperatively.

Senator ROCKEFELLER. It is just fascinating to me because it is the best possible technology, is it not?

Ms. GARVEY. It certainly is.

Senator ROCKEFELLER. You can use southern Saskatchewan, Manitoba, and other places to overcome problems, and that makes up for all kinds of technology deficiencies.

Ms. GARVEY. That is right.

Again, I think those are the short-term initiatives that we can do as we are pursuing the technology. By the way, the Department of Defense has been equally as helpful. They have worked with us in a marvelous fashion in the last year to help us identify some of their restricted airspace, so that we can use it when it is not being used by them.

Senator ROCKEFELLER. Kay Bailey Hutchison when she was giving her statement pointed out that there were old computers put into the new Reagan National Airport. Was that because it happened before the AIR–21, etcetera?

Ms. GARVEY. That is exactly right, Senator.

Senator ROCKEFELLER. How old are those computers?

Ms. GARVEY. Well, I am happy to say that those have now been updated and replaced. I do not remember the year because I think it was a little bit before I arrived.

Senator ROCKEFELLER. How often do those computers have to be changed, looking over the next 10 or 15 years, in order to in fact be up to date, if you have got the money?

Ms. GARVEY. It really varies. What has been fascinating to me is to look at some of the software, for example for the Host computers. We made a decision 3 years ago. We said what is really failing is the hardware. Ideally, of course, you would do everything at once, but we said the hardware is what is failing, so let us replace that first. Remember, we wanted to do this before Y2K. The software, which is old but has been very, very sustaining, if you will, it has served us well. It has been reliable.

So we made the decision at that point to replace the hardware and to defer the software, with the additional money from AIR–21. I cannot underscore how important that is. That additional $150 million that we got in the Facilities and Equipment account allows us, though, to pursue software replacement for the Host in a way that we could not otherwise.

Senator ROCKEFELLER. But in fact, of the need that you project over the 3-year life of the bill for technology, air traffic control technology, etcetera, that $150 million represents what percentage of what you actually need to be able to do?

Ms. GARVEY. I actually think for us the AIR–21 numbers are very solid for the next 3 years as we lay out that operation plan and what we have done. It is a 10-year plan and clearly the out years are the real challenge, but in the short term I think the AIR–21 numbers are very, very solid.

Senator ROCKEFELLER. Good, good.

Obviously, the technology is key to a lot of this, as are runways. In some ways technology, in most ways technology, if you have the money, is obviously a lot easier than runways, and then just keeping the whole system modernized. It is not static; it moves.

You mentioned when I went out to Herndon which is highly sophisticated—it is like a war room, it is so impressive. But I assume that that kind of thing changes, the software, the hardware.

Ms. GARVEY. It does, and there are always updates.

Senator ROCKEFELLER. It is constantly in motion, is it not?

Ms. GARVEY. There are always updates, that is right.

Senator ROCKEFELLER. Now, you have a number of promising technologies that are being tested. Some are even under employment. The hope is that they offer significant improvements for air traffic control, and the improvements will then allow, presumably, more takeoffs, more landings.

Ms. GARVEY. That is correct, yes.

Senator ROCKEFELLER. Potentially closer planes or not closer planes. Can you tell us, about these programs, programs like the Free Flight programs, how they are proceeding in deploying, and what differences do you think they make? What other kinds of technologies might there be, better forecasting of weather information, that kind of thing, and what kind of difference will they in fact make, and will they make it in time?

Ms. GARVEY. Well, let me start with Free Flight Phase 1 and Phase 2. That was first and foremost an agreement with the industry to really come up with and arrive at technologies that we could agree on together. So when you look at Free Flight Phase 1 and Free Flight Phase 2, they really are an agreement both with the airlines and also with the air traffic controllers and the technicians who operate and use that system.

Free Flight Phase 1, a series of automation tools for the controllers, is on schedule. We have a very simple, straightforward agreement with industry, which is that we will deploy the tools, which we have done on schedule, and industry tell us how well it is working. Are the benefits what they should be? We are beginning to see the benefits and get feedback from the customers themselves.

So if you look at some of the conflict probe tools, for example, you will find that it has increased the arrival and departure rates at places——

Senator ROCKEFELLER. I missed what you said. The which tools?

Ms. GARVEY. The conflict probe.

Senator ROCKEFELLER. Okay.

Ms. GARVEY. Thank you. Do not ask me to explain that any more, will you?

Senator ROCKEFELLER. I just did not hear.

Ms. GARVEY. I know the controllers can who are following me.

But in any case, they have increased the arrival rates in a place like Dallas-Fort Worth by about five or so an hour. If you look at some of the other tools, the collaborative decisionmaking——

Senator ROCKEFELLER. How do they do that? Are you the wrong person to ask?

Ms. GARVEY. I am probably the wrong person to ask. I am going to defer that to John Carr, who I know is going to have that answer.

Senator ROCKEFELLER. We will ask him when he comes, Okay.

Ms. GARVEY. All right, good. You get a head start, John, on that.

But in any case, I can tell you very simply, because the technology is so precise, it allows the planes to travel closer together because they can navigate with a precision that they have not been able to in the past. By the way, I think that is the hope with the weather technology that you talked about and saw some of it at Herndon. Some of the weather technology is going to be so precise in predicting where those weather patterns are that it will allow us much more flexibility with respect to moving aircraft faster than we could in the past.

So I think the weather technology is a great hope for the future, not just for efficiency, but obviously, even more importantly, for safety, as well as the Free Flight tools. I think the challenge is going to be first of all, as you have indicated, to get them out in time. We have been successful with Free Flight Phase 1, keeping that momentum, and so, frankly, keeping the consensus with industry. It makes all the difference in the world when we are coming up to Congress together and saying, this is what we need as an industry. This is what we need to get our job done. That is my hope, that we can continue to keep that consensus.

Senator ROCKEFELLER. Are there any instances—and this will be my final question, Mr. Chairman—are there any instances—and this, obviously it is so important that it almost gets overlooked—where you want to deploy technology, and let us say that means the planes can land more closely, and airlines take a different view, either because of traditional ways of thinking or because they may not agree? Do you run into that kind of thing, or is there sort of an instinct on the part of both the FAA and the airlines, air traffic control, to do all of this without much argument?

Ms. GARVEY. Well, I think the instinct to increase capacity is there for all of us. I think sometimes, where there may be differences is determining the right tools to use, and places to put our resources to increase that capacity and improve safety. That is why again I think for us—and Secretary Mineta I think has really spoken about this quite eloquently, the need for all of us to come around the National Airspace System Operational Evolution Plan, because that really does lay out the tools and resources necessary to address delays, and it is a serious commitment.

When you look at the plan—and we have had an opportunity to brief some of the staff members—it is not just us, the FAA, that is signing up for commitments, but it is the airlines saying, we will equip our aircraft in this time line, too, which can be very expen-

sive for the airlines. And airports as well: we will sign up to do what we need to do.

So it is a major commitment for all of us, not something to be taken lightly. And it does mean compromise in some cases. It does mean that perhaps individual airlines that may favor one technology for the good of the plan may say: we will hold back on that and focus our energies here. I think that is the right approach.

Senator ROCKEFELLER. Thank you, Ms. Garvey.

Ms. GARVEY. Thank you, Senator.

Senator ROCKEFELLER. Thank you, Madam Chair.

Senator HUTCHISON. [presiding]. Thank you.

Senator Fitzgerald.

STATEMENT OF HON. PETER G. FITZGERALD, U.S. SENATOR FROM ILLINOIS

Senator FITZGERALD. Thank you, Madam Chairman.

Ms. Garvey, all the talk about including improving weather technology and computers and building new runways and new airports, that is really a long-term track that we have to work on, and you would agree, I am sure, that we need some short-term relief, too, because all those things may well help us years down the road, but they will not help us this summer, for example.

Is not our problem really with delays that our demand exceeds capacity?

Ms. GARVEY. Well, I think in some airports. Again, I will go to the benchmarks, which I think is a wonderful source of good data for us all to take a look at. What it does say is that in about eight airports, which is a handful of airports, we certainly have situations where demand is either at capacity or exceeds capacity at certain times of the day. LaGuardia is always, of course, the most extreme case that is mentioned.

But you are right. At a handful of airports there are issues. I will say, and you may hear this from Mr. Merlis, I give the airlines a lot of credit for, in some of those cases, taking a hard look at their scheduling and asking, what they can do to smooth out the scheduling. Delta, American, Continental and United, are undertaking the same effort. So, voluntarily they have looked at some of their scheduling and asked whether they can smooth those peaks out.

Senator FITZGERALD. I think your benchmark study showed that O'Hare had in good weather a capacity of about 203 operations an hour, something along those lines.

Ms. GARVEY. I am not remembering the exact number, but that sounds right.

Senator FITZGERALD. Now, what happens if the airlines schedule 250 flights in an hour?

Ms. GARVEY. Well, from the air traffic control perspective, as you know, in a deregulated environment they can do that. But in the case of air traffic control, from our perspective our mission is safety. So, that is when you often have the delays, because we really have to keep them——

Senator FITZGERALD. So when the airlines are scheduling more flights than the appropriate has capacity to take off, you get these delays.

Ms. GARVEY. That is exactly what happens.

Senator FITZGERALD. Now, going back a couple years ago, the FAA had authority to put delay controls on certain airports in the country, such as LaGuardia and O'Hare; is that not correct?

Ms. GARVEY. That is correct, Senator. That has not changed. We still have ground delay programs. If the weather is such that we feel that safety is at all an issue, then of course we would leave——

Senator FITZGERALD. But that is only when the weather is—I mean, you do not have authority to limit how many—those delay controls are being completely removed this summer, is that not correct, at O'Hare?

Ms. GARVEY. No, not really, Senator. The collaboration that I spoke about means that——

Senator FITZGERALD. Well, time out for a second. From 1969 when O'Hare reached capacity until 2 years ago there were delay controls in effect at O'Hare.

Ms. GARVEY. Oh, I am sorry, Senator. You are referring to slots. I am sorry.

Senator FITZGERALD. Slot rules.

Ms. GARVEY. You are talking about the slot rules.

Senator FITZGERALD. But that was a delay control mechanism. I mean, it was meant to prevent delays.

Ms. GARVEY. Yes.

Senator FITZGERALD. They had slots and there could only be so many slots in an hour, and we were lifting those delay controls in stages, first lifting the slots for, is it, international or regional jets, and that happened last year. Then this summer we are going to remove the rest of the delay controls.

Ms. GARVEY. I believe, Senator, it is phased in over a little bit longer period of time.

Senator FITZGERALD. 2002? Okay.

Ms. GARVEY. 2002, I believe.

Senator FITZGERALD. Now, is that going to help the delays, to lift all those delay controls or slot controls, as you call it?

Ms. GARVEY. Well, from a delay perspective, from simply a delay perspective, obviously when you look at the numbers at Chicago it is an area of concern for us. I am only speaking from the FAA's perspective, where safety is our primary mission. We have obviously committed to take a hard look at it with the airport and with the airlines. I think we have got a little bit of time to hopefully, as you suggest, put some initiatives in place to manage that transition.

Congress put it in place in AIR–21, as you have indicated. Our challenge between now and 2002 is to make sure if there are any additional choke point initiatives that we can put in place, any changes to air traffic control procedures, that we do everything that we can, and also, by the way, encourage the airlines to do as they have done in some instances, take a hard look at their schedule. We all should want and I think we all do want it to be managed efficiently and managed well.

Senator FITZGERALD. Well, I guess what I am getting at now—instead of proceeding with more questions, I would just like to make a comment. 2 years ago, I thought it was very unwise for Congress to lift the delay controls, or some people call them the slot controls, at O'Hare, because I had internal FAA studies that

showed if you lifted those delay controls delays would go up exponentially.

I had those charts on the Senate floor and I felt like Cassandra, destined to prophecy the truth and not be believed, because as soon as those delay controls were lifted the airlines just started way overbooking flights. There was no check on overscheduling of flights. Our newspapers in Chicago started doing investigative reports about how it was commonly at, let us say, 8:45 in the morning 25 flights would be scheduled to take off from O'Hare, when the airport could only take 3 flights off.

So I just wonder if it would not be wise to give you the authority, until we have all these new runways, new airports, new technology, new weather equipment that is going to be years down the road. In the mean time, people are sitting on tarmacs waiting because there is nobody playing referee on the overscheduling of flights at these airports. I just wonder if you should not have the authority restored like you used to have. You have had it for 30 years at O'Hare. We have been at capacity for 30 years, but we did not used to have those delays until those delay controls came off.

So I am wondering if giving you the authority to prevent those delays might help again.

Ms. GARVEY. Well, again, Senator, I will say that, at least from our perspective, we have got AIR–21 and those are the rules we are living by right now. We will focus very hard between now and 2002. We are certainly willing to work with Congress in whatever way we can. But we will focus and I think we should focus on working with the airlines and with the airport to put any measures that we can in place to manage it as best we can.

Senator FITZGERALD. Thank you very much, Mrs. Garvey.

Ms. GARVEY. Thank you, Senator.

Senator HUTCHISON. Senator Burns.

STATEMENT OF HON. CONRAD BURNS, U.S. SENATOR FROM MONTANA

Senator BURNS. Mrs. Garvey, I was just looking through this GAO report. This is not a great report here.

Ms. GARVEY. Which report is that, Senator? I am sorry.

Senator BURNS. It is the "Air Traffic Control Role of FAA's Modernization Program in Reducing Delays and Congestion."

We have been talking about new technology and new equipment and modernization. We have been waiting for our radar system in a couple places in Montana for I do not know how long. We ain't got it yet. But as I read through this report, there is one thing that just absolutely pops out at me in the FAA. Nobody seems to be accountable to anybody. The Chairman just reiterated here before this Committee the overruns in expenses and the delays in the deployment of the equipment, even though well-devised and well-engineered. We cannot get it in place. It is sitting around in crates at every airport in America almost, and nobody is accountable.

I think you have got a cultural problem in the FAA, that they just do not give a damn. I really hate to say that, because we ask the same questions and we get the same results every year since I have been in the U.S. Senate.

If you read through this report, basically if there is one thread of commonality it is that nobody is responsible to anybody about getting things done on time and on budget. Now, I can imagine that some overruns I can see we can have some problems.

You say you go into a 10-year program here. 10 years do not mean nothing if you cannot get it deployed, if you do not have people out there that is dedicated to getting it done.

I talked to some people that is in your control center here in Virginia. I happen to know some people that we have sort of the same interests and meet them at different occasions and, I do not know, there is just a lack of dedication, of trying to address this problem. I really hate to say that. It is just not your problem. It goes back years.

I am just sorry to say that. But there is one common thing in here in this GAO report, is the lack of cooperation even among the people in your own agency, and the overruns and the dedication of getting it done. I do not know how to address that. I think there is a cultural thing in the FAA, and I have heard people talk about that for years and I really did not believe it for a while. But boy, I do now.

It is just like I say, we have got a couple of dark spots in Montana.

Senator HUTCHISON. What do you mean, cultural thing?

Senator BURNS. Well, I think it is a cultural thing where they just do not care. I really do. I think it is a lack of commitment from the FAA to really get these systems in place. And there is nobody accountable. Nobody says, why is it not in place? Well, we only work until 4:30 in the afternoon and everybody goes home.

I just think it is—FAA has had problems deploying other equipment and technologies, weather, convergence. It just goes through this whole report. If you will read the report, that basically is what they are saying. I know a lot of good people in the FAA, but I will tell you, nobody is accountable. They come up with these excuses why we cannot get it installed, or why this is.

I still say that we have got new technologies such as the GPS system. You know, what is it, they say right now 85 percent of the commercial traffic only takes up 5 percent of the airspace. The old system, we are still trying to use part of the old system because somebody in the FAA: I have been here 18 years and that is the way we have done it and that is the way we are going to continue to do it.

That is just not going to get it done. It is not acceptable today. Now, I agree that the airlines take advantage sometimes when there is just too many flights and too few slots in the capacity of the airport, and then you get a little weather and then you are really in a bug. I go through this all the time. I mean, it is a crapshoot when I go from here to Billings, Montana, I will tell you that right now.

I still say that I can go through Denver or Minneapolis or Salt Lake with three different airlines, and I will guarantee you I will pick the wrong one. But the other day in Minneapolis, same thing. A rain shower goes through there—and that weather did not look any different than it looked when I worked for the airlines 100 years ago. Well, it was not 100, but it is almost. It seems like that

many. But I do not think we had the delays then that we have now. Of course, we did not have as many airplanes, but nonetheless.

But I just go through this thing every time I go home. Now, it ain't much to you folks that live on the East Coast, but to us who have to spend 6 and 7 hours to get home and 6 to 7 hours to get back. Then you run into these problems like Minneapolis, like Denver, and like Salt Lake. It is a crapshoot.

Ms. GARVEY. Senator——

Senator HUTCHISON. I would like to ask Ms. Garvey to respond.

Ms. GARVEY. Thank you very much. First of all, I want to really say how very seriously I take that comment about accountability. I think when I came to the FAA I heard a lot about that issue. Certainly, Secretary Mineta has talked about it as well. I think it is absolutely critical that we hold people accountable. I am trying very, very hard to do that.

We lost a lot of time in the eighties and I think the Chairman really talked about that in her opening statement. You referred to that as well. What I can only do is focus on the 3½ years that I have been there. I think if you look at all of our major programs, you are going to see new program managers, people who are approaching it very differently. If you meet somebody like Charlie Keegan, who is heading Free Flight Phase 1 and Phase 2, you will hear and you will see a manager who is holding people accountable.

There are some technologies which are extraordinarily difficult. We are the first ones to do it. WAAS is one of those. I always know that there is more to do. But please understand I am taking that issue very seriously. If you do look at some of those programs we have put in place over the last couple of years, I think you do see a different attitude. I certainly hope you do.

I will always say that there is more that we need to do and we can never take that too seriously. But you certainly have my commitment to that. I am going to go back and look at those radars in Montana that you just spoke about.

Senator BURNS. Well, I tell you what. If I held my breath until we get those things, it would just be something.

Ms. GARVEY. I do not know that issue well enough.

Senator BURNS. But if there is one thing, if there is one common thread that runs through this report——

Ms. GARVEY. It has been a while since I have looked at that one in particular, but I know I have talked to Mr. Dillingham, too, and I think they would acknowledge that we have made some progress in the last 3 years. I know they have great concern about AAS and the efforts in the eighties, and that is something that I would fully acknowledge and agree with.

But again, thanks to Congress, with a 5-year term I think I am there a little longer than others have been and that does give you a little more opportunity to really stay the course.

Senator BURNS. Well, you know, I am still a good friend of the previous director before you and we talk about this. We talk about this a lot. it is just one of those things. I think if we cannot get a handle on it, then I think Congress is going to have to step in and do something, reorganize, or we are going to have to do it dif-

ferently. I would just kind of shoot that little shot across the bow, because I know you have got some good people.

Ms. GARVEY. We do, very good people.

Senator BURNS. You have probably got more good people than you have got people who drag their feet. But them foot-draggers have got to go, they have just got to go. How you get rid of them I do not know, but we will find a way.

Thank you, Madam Chairman.

Senator HUTCHISON. Senator Snowe.

STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

Senator SNOWE. Thank you, Madam Chairman.

Welcome, Ms. Garvey. Just to followup on some of the issues Senator Burns raised, as the GAO report indicated, I think the year 2000 was the worst year on record—more delays, 90 percent increase in delays, 104 percent increase in cancellations compared to 5 years ago. Obviously, we see no end in sight, with the demands increasing, the number of airlines, and so on and so forth.

The modernization program has not been completed that was originally intended for 1993, far before your tenure. Now it is more than double the cost, and not expected to be completed by somewhere around 2012.

So obviously it does raise a lot of concerns about how much worse does it get before it begins to get better. I notice in the GAO report it indicated, in reference to what Senator Burns was raising about the climate and the culture in the agency, that a new chief operating officer has been hired. How long——

Ms. GARVEY. Actually, has not yet been hired.

Senator SNOWE. Has not yet.

Ms. GARVEY. But Congress gave us wonderful flexibility to hire a chief operating officer, as well as to put in place an oversight board. We have got a search firm working hard on it. But I have to tell you, it has been a real challenge. It is difficult to recruit, in part because of the salary. I know the Secretary has mentioned that. I know the bill that you all are contemplating does suggest raising that salary, which I think is a help.

Senator HUTCHISON. Senator Snowe, just to inject here, the bill that we are going to mark up next week will have the ability to take the cap off that salary, to try to get the very best person, because I agree with you that is the key on that subject.

Senator SNOWE. Well, that is very, very important. As the report indicates, should greatly help to improve the climate and moving forward on the modernization program and pulling it all together and consolidating the effort. So we want to be able to help in that regard. So hopefully we can move that along so that you can do what you need to do to hire the right person.

In response to some of the issues raised concerning Logan Airport, and I know we have talked and my office has spoken with you as well, as you know there has been some discussions and reports about Logan in response to their environmental report on expansion of a runway suggesting that somehow there may be a peak pricing proposal. There is no question that would certainly have an

adverse impact on small communities in my state that really do wholly depend on Logan to get to other destinations.

In fact, from Presque Isle, Maine, in order to get there you have to go through Boston. Bangor and Portland as well are very important on going through Logan. So obviously this could have some serious consequences for the smaller communities in Maine if we go to peak pricing, because obviously what we are talking about here now, if there are higher prices imposing different pricing at peak hours, then obviously it is going to affect these flights with smaller airplanes and connecting to major destinations.

Has there been any analysis on peak pricing?

Ms. GARVEY. Senator, actually we have done a fair amount, not specifically at Logan, but we have done some analysis of peak hour. In addition, the Inspector General is also looking at the whole issue of demand management. I believe he is expected to issue a report some time this summer.

Just to go to Logan very specifically, while they have put it in the environmental document, they have not yet come forward with fleshed out any kind of proposal. You have hit on what I think is one of the greatest challenges with any of the demand management strategies.

LaGuardia is going through some of the similar issues. That is, if you take on something like demand management strategies, how do you also meet and deal with the very important public policy questions that Congress has raised great concerns about?

Low-cost carriers, startup carriers, is one. Certainly access to small communities is another. As we have talked about it internally, and again, we have not seen anything formal from Logan Airport, we have certainly sent the message that any kind of policy change or any kind of initiative that they would like to propose has to, in some way, deal with those two very important public policy questions.

It does not leave the purest, if you will, economic strategy in place, but that is all right. In our view we have other public policy issues that are equally as important.

Senator SNOWE. So how would that come about on the peak pricing? Ultimately, would it be the Mass Port Authority that would make the final decision?

Ms. GARVEY. Well, that is very interesting because we are actually having that discussion right now just in a broader sense. We believe it is much more a federal prerogative, and in fact I think we have had pretty extensive discussions with Members of this Committee's staff. I think the Committee Members have expressed the concern as well, that we make sure to hang onto our federal prerogative, if you will.

So while they might propose something, they would certainly be working very closely with us and we would ultimately be the ones who would either issue a notice of proposed rulemaking or whatever. We have been very clear that we are extraordinarily concerned with the public policy issues that were laid out in AIR–21 and that this Congress has talked extensively about.

Senator SNOWE. I appreciate that, because it really does get back to the question of how we are going to incorporate the roles of regional jets and turboprops and smaller aircraft.

Ms. GARVEY. Absolutely.

Senator SNOWE. Otherwise, I think the smaller communities are affected on both ends. Either they do not have any service or they have smaller aircraft, but yet they cannot get to the locations and destinations at the appropriate times in order to get to where they are going. So this is really a huge problem and one I think ultimately is going to have to be determined by us in terms of what kind of role are we going to carve out for regional jets and smaller aircraft for smaller communities.

They have to have their place, because they will never be able to compete with the larger communities and larger aircraft. So it is going to continue to be a major problem unless we decide how best we want to address that issue to ensure that they do have a place in our aviation policy. Otherwise they are always going to get the short end of the stick.

Ms. GARVEY. I appreciate those comments and we will certainly stay very close to your staff on these issues as we hear more from Logan.

Senator SNOWE. Thank you. One other question. You mentioned your spring-summer 2000 plan, which was a joint effort by the Department of Transportation, the FAA, Labor, and the airlines. To what extent were you able to increase capacity as a result of that plan? Were you able to do that?

Ms. GARVEY. I am not sure I can give you an actual percentage about how much we were able to increase capacity. The goal going in was to manage the system more efficiently and to do it in a much more collaborative fashion. Clearly, the raw delay numbers, went up.

I mentioned in my opening statement, that collaboration begins every morning at 5 a.m. We have the first phone call with all of the airlines. They hook in to Herndon. We update our plan every couple of hours. That is particularly critical on bad weather days. On a day like today, those are very quick conference calls.

We are developing the plans together, deciding where and when the ground stops have to be put in, and it is done in a much more collaborative fashion. We learned a lot from last spring and summer. We have implemented all of the recommendations that came out of the review.

So I think that is still the right approach and should be the approach as we move forward. By the way, we are doing this now 24 hours a day. We are really working this issue really around the clock with the airlines.

Senator SNOWE. Thank you very much. Thank you for your hard work.

Ms. GARVEY. Thank you, Senator.

Senator HUTCHISON. Let me ask a couple of questions. I waited until the end, but I do have a couple of questions that I think have not been addressed.

One of the areas in which the FAA has invested heavily is to harness satellite navigation for commercial aviation. In the past year or so, the $2.9 billion Wide Area Augmentation System, WAAS, has suffered significant technical problems. Nevertheless, an independent review board found the underlying WAAS concept to be sound.

What are you doing to ensure that the scheduled arrival dates will be met, and do you think WAAS is reliable enough, or is satellite technology reliable enough, that it is going to be a major component of our future air traffic control system?

Ms. GARVEY. Senator, I will start with the last part. I think it is going to be a major component of our future system. It is I think going to help enormously, not just in the area of safety, which again is so critical, but also in the area of efficiency and accuracy.

You are absolutely right. I think it is one of the most technologically challenging initiatives. There is no one else doing this. You mentioned the independent review board. It was extraordinarily helpful to have them do the review. I might add, we are keeping them on board to continue to work with us as we move forward with this program.

We have a very clear schedule set out with Raytheon. It is a challenging schedule. I am going to be visiting Raytheon on Monday with the express purpose of really talking about WAAS and some of the other programs we have with Raytheon. So I think it is important that we really stay the course together and that we honor the schedule that we have agreed to jointly. I think that is going to be very challenging as we move forward.

We have got about five or six folks within the FAA that really are the WAAS experts. We rely on them. They are working very, very hard. Raytheon has a core group as well. I think the key is going to be staying the course on the schedule. The help we have received from Congress in the past will be again increasingly important as we move forward.

One of our dilemmas has been that sometimes the funding has dipped. So staying the course on the funding will be very important as well.

Senator HUTCHISON. If the satellite system is going to be reliable and you can prove it, you will have the funding from Congress to do the job and do it right.

But, the FAA has probably lost the confidence of the appropriations Committees, through missed deadlines and cost overruns.

Ms. GARVEY. I think you are absolutely right. We have certainly acknowledged that internally, too. We have said we cannot ask you for the funding unless we can commit to you that we are going to stay on schedule and do everything we can to keep Raytheon on schedule as well.

I will mention that GAO and the Inspector General have also focused on this program with us, and I think that has been helpful and will continue to be helpful. We will turn to their validation as well as we move forward.

Senator HUTCHISON. Ms. Garvey, you spoke in your opening statement briefly about the choke points. There are seven so-called choke points throughout America which affect the whole system. You get over Chicago or LaGuardia or Boston and you get into the delays, which then go all the way to the West Coast. Tell me what you are doing to reduce the congestion at the major choke points?

I think it is going to be very important as we try to solve these delay issues that we do the long-term things, that we expedite the reviews for new runways, that we get new gates, that we are more creative in the spending that can create new gates. We want to

control that ground congestion. We are looking now at the air traffic control system for the air congestion because that is a major factor.

But that is long term. Everything we are talking about is 5 to 10 years out and we want to do that and we want to do it right, but in the mean time we have a lot of angry and frustrated passengers. I am one of them. Senator Rockefeller is one of them. Senator Burns is one of them. We are in this system every week and we are frustrated.

So is there some short-term action that you can take, such as alleviating this congestion at the choke points and other measures? Talk to me about what you are doing for the short term.

Ms. GARVEY. Thank you, Senator. Again, you have said it I think extraordinarily well. That is, we really do need to look at those short-term initiatives, and they are often the kinds of initiatives that do not necessarily involve technology, but are things that we can do in collaboration with the airline and with the controllers.

You spoke about the seven choke points. You are right, they are in that triangle between Chicago, Boston and Washington. In each one of those areas, we really focus primarily on some of the procedural changes that we could make or opening up new sectors.

We focused the first 11 initiatives in the New York-New Jersey area because, that really is a problem. We have been able to change the procedures in and out of the westbound and the northbound to the New York-New Jersey area. That has produced about a 25 percent reduction in unplanned departure stops for northbound and westbound. That is very positive.

Senator HUTCHISON. You are seeing that now?

Ms. GARVEY. We are seeing that now. We have had those initiatives in place for several months.

Last week we opened up three new sectors, which essentially provide a work area for the controllers in the Cleveland center, one of our busiest areas. That is going to be a help.

By the way, a tremendous amount of credit is due to the controllers, who have been very much part of this with us and have in some cases even taken on some additional responsibilities. They have done this extraordinarily well.

So we are opening up those new sectors. I spoke a little bit earlier about the memorandum of understanding we have with Canada, which opens up some of the Canadian airspace, which on bad weather days can accommodate up to 300 or 400 aircraft. That is very good news.

The Department of Defense as well has worked with us to open up some of the restricted military airspace. So those are some of the short-term initiatives that we can take. That, coupled with some of the steps that the airlines are taking in terms of smoothing out some of their scheduling practices, I think are helpful in the short term.

Senator HUTCHISON. Do you feel that the airlines are fully cooperating with you? Are you able to coordinate with them easily, and is that making a difference?

Ms. GARVEY. I think the relationship with the airlines is better now than it has ever been. I really do not rely just on my own observations because I certainly have not been around forever, al-

though it seems like forever. But people have told me that it is better than it has been. There are always going to be differences and there are different approaches. But I will tell you, I have hooked into those conference calls in the morning, and heard the operations folks really talking directly to each other about what can we do to solve this problem.

These are very action-oriented people on all parts of this industry. Those conference calls are very encouraging in terms of the kind of collaboration.

Senator HUTCHISON. Thank you so much for spending your time with us this morning. It has been very helpful.

Senator Rockefeller, I am sorry. We certainly have a second round.

Senator ROCKEFELLER. No, I just want to ask one question because I have to leave, and I want to ask it to you. Here it says eight airports account for 75 percent of the delays. LaGuardia, no plans for a new runway. They had the highest delay rate in the country last year. This kind of thing just drives me crazy.

So they say, well, Okay—I mean, this is my view—put in two new runways at LaGuardia. The Port Authority goes crazy: Cannot do that, shipping lanes. You know, at some point all of these games can be played out, and I do not know how important shipping is and I do not know how wide the lanes are, but I grew up in that city and I have landed at that airport a thousand times and there is lots of water around. I have never steered a ship, but I do know that LaGuardia is responsible for a lot of what is going on that is bad in this country in terms of air delays.

They are a big state. They have powerful people and all that kind of stuff. I do not really care. The point is they have a responsibility to contribute their part to the solution of this thing, because they are mucking up—Conrad Burns was saying you folks do not have this in the East. Hogwash. We have enormous problems of delays, etcetera, in the East.

A lot of it stems out of LaGuardia and other places. There is a reason that Teterboro has more airplanes flying in and out of it than LaGuardia, because LaGuardia is underfunded. Every time I drive to that old what is now the Delta Shuttle thing, which used to be when I was growing up the entire airport, I think, you know, things really have not changed that much. Of course they have, but they have changed nowhere near what is required.

So we are asking all kinds of people to make sacrifices, people to have teleconference calls every morning and every 2 hours and discuss all of this and that, but LaGuardia does not want to make any changes, no runways: I am sorry, we are not going to do it. I just find that unsatisfactory.

Their Port Authority is not a big part of my life, never will be. Maybe that started with that powerful guy that used to be the chairman of the Port Authority, who they wrote a book about, that I am afraid my Uncle Nelson appointed to that position.

But no more runways is an unacceptable answer. If you go to the public, the public concern versus shipping transport concern, I cannot imagine it would be—it would be 99 to 1. So I would just like some kind of—I want you to have a first, second, third, and fourth term, so I do not want to get you in trouble. But how do you re-

spond to that? Why is LaGuardia so sacred that they cannot do anything to help the rest of the nation?

Ms. GARVEY. I think when you look at the benchmarks you are exactly right. When we did the benchmarks, we also put in what do these airports have planned. So we did not put down any sort of wish list. We said what is real, because otherwise if you start saying what is possible or what do we think is going to happen, then it may sort of really underplay the problem.

At LaGuardia they have been very, very straightforward about saying they believe from an environmental point of view they cannot build a new runway. I have to say the environmental hurdles are huge. So we have told them, all right, here is what we know is coming your way in terms of procedures and in terms of technology, but it is still not going to give us enough. Now, that is the starting point with LaGuardia. That is the starting point with the airport directors. We have got the lottery in place, which has helped. But I think everyone hopes that the lottery is not long term. Whether or not it has to be may be a question for another day. But we have taken a cut at what we know will be the issues.

I do have to say I think at LaGuardia the environmental issues around a runway would be pretty extraordinary. But you know, if we are all willing to take that on——

Senator ROCKEFELLER. Well, I am sure they would be. They are pretty extraordinary, what comes out of the tailpipes of sport utility vehicles and all kinds of things, but that is one of the reasons that there probably is going to be a change on what those folks get to do in terms of their low mileage. People have to make sacrifices.

Madam Chairman, I am not going to go on and on with this, but to have New York, the perceived center of all financial power and decisionmaking—this is not acceptable. It kills us in West Virginia, those delays. I remember what was it, Alexandria or Arlington: No, they could not have any more slots. Well, I guess I have got friends, or did have friends, in Alexandria or Arlington. But that did not stop; we did not do 24, we did 12. People have to make an adjustment, or else they cannot complain. Obviously, people are going to complain, and they have a right to complain.

But that means that every single part of this country, not just rural America at the end of the food chain, has to give up their flights and their future and their economy and their people staying in the state so that LaGuardia and a couple of other places can retain their liquid sanctity.

Senator HUTCHISON. Thank you very much. We appreciate the time you have given us today. This will help us monitor the progress that is being made, and we look forward to having some final proposals on the full system, because we want to understand how and why other countries have done better than the United States in managing air traffic. So we will look forward to working with you on some final conclusions so that our passengers will continue to want to use the airways. This is very important for us.

Thank you.

Ms. GARVEY. Thank you very much. Thank you, Senator.

Senator HUTCHISON. Now I would like to call our second panel: Dr. Gerald Dillingham, Mr. John Carr, Mr. Richard Vacar, and Mr. Edward Merlis.

[Pause.]

Thank you all very much for patiently waiting. Let me start with Dr. Dillingham. Obviously, the GAO reports are getting a lot of notice here, and I would like to ask you to tell us about those reports and what you think we ought to be doing.

STATEMENT OF GERALD L. DILLINGHAM, PH.D., DIRECTOR OF CIVIL AVIATION ISSUES, GENERAL ACCOUNTING OFFICE

Dr. DILLINGHAM. Thank you, Madam Chairman. We appreciate the opportunity to be here today to talk about GAO's perspective on ATC modernization. We want to try to cover a little bit of the past, present, and what we think the future holds for ATC modernization, particularly as it relates to the congestion crisis.

As you know, until relatively recently there was an ongoing debate in the aviation community as to the cause of the crisis. More recently, the aviation community in concert with the Congress, has moved from attribution to cooperative and comprehensive initiatives for problem solution.

ATC modernization is an example of an initiative that has been under way in one form or another for 20 years. The bottom line is that efforts to modernize the air traffic control system have not kept pace either with the emergence of new technologies or the growing demand for air travel. What started out in 1981 as a 10-year, $12 billion program now has a budget of around $44 billion through 2005, with no end in sight.

In most of the hearings at which GAO has testified about the status of ATC modernization, our message has been pretty constant. The message was that most of the projects were significantly behind schedule, over budget, and would not be able to deliver the capabilities that were originally thought that they could do. Because of these circumstances, in 1995, we designated the modernization program as a high-risk program and it remains on the GAO high-risk list as of today.

We also identified what we believe to be the root causes of the modernization problem and we made over 30 recommendations over the years to address these root causes. In summing up the past, I think it is accurate to say that a significant proportion of FAA's investment in modernization to date has not been directed at enhancing system capacity or efficiency, but toward establishing platforms for capacity or efficiency enhancements to come later.

The Display System Replacement, or DSR, which is oftentimes cited as a success, is an example of platform development. This is a program where FAA has replaced the air traffic controllers' black and white radar screens with color screens. This was done as a precursor to obtaining more up-to-date software that will eventually contribute to greater system efficiency. This is similar to your upgrading your personal computer monitor so that you can use the new, more complex software.

Shifting our focus from the past to the present, to its credit we say that FAA has been responsive to the recommendations that others and we have made and they have initiated numerous activities that address the problems identified. Probably most significant, the agency shifted to what is called spiral development. This

is sometimes also referred to as "build a little, test a little, deploy a little philosophy," rather than the all at once, big bang approach to project implementation.

Additionally, the Congress has provided the FAA with procurement and personnel flexibility and additional funding resources. There are still challenges to be met. It is still the case that several of the major modernization projects are behind schedule, over budget, and may not be able to provide the services they were originally intended.

With regard to the future of ATC modernization, I think the plan for the Free Flight program provides a good illustration of what we might expect in the future. The goal for ATC modernization is to move from the current ground-based system to a satellite-based system that would, among other things, allow pilots to select their routes rather than follow the highways in the sky. This concept is called Free Flight.

The FAA has divided the effort into three phases, with a principal objective of getting some of the program benefits to the users as soon as possible. At the request of Senator Rockefeller and this Committee, we are currently doing an examination of the status of the Free Flight program. However, our preliminary findings are suggesting that there are still some significant challenges associated with this program.

We are really concerned whether the program will happen on time and, again, within budget, and will it be able to perform as it was advertised. We are also finding that, as in other areas of the agency, there has been a lot of good planning, but somewhere along the implementation path something happens to prevent implementation from matching the plan.

In the final analysis, our work further confirms that the causes of the congestion crisis are multifaceted and interdependent and will require multifaceted and interdependent approaches for solutions. For example, it is true that the best way to gain the greatest amount of capacity is by increasing infrastructure, particularly runways. But the construction of runways is by no means a standalone solution. The capacity increase associated with runways will be significantly diminished if the appropriate navigational aids, procedures, and enabling technologies generally associated with ATC modernization are not also in place.

Similarly, as solutions are being proposed for modernizing ATC, there are potentially serious human capital questions, such as whether there will be enough qualified air traffic controllers available to use the new technology and handle the increase in traffic, will there be enough qualified aviation mechanics to maintain the expected growth in the number of aircraft.

As has been said many times before, there is no silver bullet solution. Our ongoing work for this Committee shows that there are more than 50 different initiatives planned or under way by various segments of the aviation community to address the capacity challenge. There are initiatives for the short term, mid-term, and long term. In other words, there is no shortage of initiatives or proposed solutions.

What we found to be the Achilles heel of the agency is implementation and accountability for results. We are hopeful that the posi-

tion of chief operating officer will soon be filled and in turn will provide the core of accountability and desirable appropriate levels of accountability to the executives in FAA and the organization as a whole.

We are also hopeful that one of the chief operating officer's top priorities will be to oversee the implementation of FAA's recently released operational evolution plan, the 10-year plan.

Foremost, it is critical that this Committee and other committees of the Congress continue its close oversight to ensure implementation and accountability.

Thank you, Madam Chairman.

[The prepared statement of Dr. Dillingham follows:]

PREPARED STATEMENT OF GERALD L. DILLINGHAM, PH.D., DIRECTOR OF CIVIL AVIATION ISSUES, GENERAL ACCOUNTING OFFICE

Madam Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss the Federal Aviation Administration's (FAA) modernization of the nation's air traffic control (ATC) system and its relationship to the initiatives under way to address the escalating crisis of insufficient capacity facing the aviation industry. During the past two summers, major delays and congestion at our nation's airports have focused attention on the increasing gap between the demand for and the capacity of the national airspace system (NAS). The NAS includes the airports, other facilities, equipment, and people involved in providing air transportation services. The ATC system is the major component of the NAS and primarily refers to the equipment, technologies, and people responsible for keeping aircraft safely separated. Reducing delays and congestion in the NAS is a major challenge because the causes as well as the solutions are numerous and interconnected.

As policymakers assess potential options for increasing the capacity of the NAS, it is important to understand FAA's past efforts to modernize the ATC system and its ongoing initiatives to deploy new technologies. Our testimony today, based largely on work that we have done on FAA's modernization over the past decade, will highlight (1) the extent of the delay and congestion problems and the contribution of the ATC system to them, (2) the progress and problems encountered in FAA's ATC modernization program, and (3) the importance of a continued focus on delivering ATC equipment and on human capital issues as policymakers seek to address delays and congestion. In summary:

- The NAS is facing significant capacity problems. Last year, more than 1 out of every 4 flights nationwide was canceled, delayed, or diverted. These actions affected 163 million passengers, who, on average, were delayed almost an hour. Demand is still growing; FAA forecasts nearly a 59-percent increase in passenger enplanements from 1999 to 2011. Inefficiencies in the ATC system contribute to the delays and congestion. Other factors, such as an insufficient number of runways at some airports and bad weather, aggravate these problems. Modernizing equipment, along with other changes in the ATC system, is expected to help increase the capacity of the NAS by between 5 and 15 percent. In addition to this effort, FAA and the aviation industry have over 50 initiatives in various stages of implementation to address delays and congestion.
- Twenty years ago, FAA anticipated significant increases in the nation's air traffic and embarked on an ambitious modernization program to help improve the efficiency of the ATC system and expand the capacity of our nation's airspace. Although air traffic has greatly increased, the improvements expected from this modernization program have fallen short. While FAA has installed new equipment to provide the necessary platform for fielding modern technologies to improve efficiency, this effort has experienced cost, schedule, and performance problems. As part of this program, FAA has begun to deploy new technologies to achieve free flight, which will enable pilots and controllers, under certain circumstances, to select optimal flight paths, thereby lowering costs and helping to accommodate more flights in our nation's airspace. However, FAA faces challenges in implementing these technologies. These include integrating the technologies with each other and other ATC systems to achieve the synergies anticipated, as well as determining the impact of using the free flight technologies on users, including controllers and technicians. Other major modernization

projects being developed to help increase the capacity of the NAS are also experiencing cost, schedule, and performance problems.

- FAA and the aviation industry recognize the interdependence of the various components of the NAS—the people, equipment, and procedures—and the need for cooperation and coordination to effectively implement solutions. In the future, FAA's modernization program will continue to be an important part of the solution; therefore, FAA needs to avoid repeating the past mistakes that have plagued its program. Although FAA has taken steps to help ensure that it can deploy new equipment and technologies as planned, it has yet to fully institute a performanceoriented culture, which is essential to establishing a climate of accountability and coordination throughout the agency. The new chief operating officer, who will be responsible for improving the delivery of air traffic services, should greatly help the agency establish this climate. FAA and the aviation industry will also need to address human capital issues related to the retirement, expected within the decade, of many aviation industry professionals, such as FAA controllers and airline mechanics.

Background

The National Airspace System (NAS) is a complex collection of systems, procedures, facilities, aircraft, and people. Because these components are interconnected and interdependent, they must work together as one system to ensure safe operations. The principal component of the NAS is the air traffic control (ATC) system—a vast network of radars; automated data processing, navigation, and communications equipment; and traffic control facilities.[1] Through this system, FAA provides such services as controlling takeoffs and landings and managing the flow of traffic between airports.

Faced with a rapidly growing volume of air traffic and aging equipment to control it, FAA initiated an ambitious program in 1981 to modernize its ATC system. Over the past two decades, FAA's modernization projects have experienced substantial cost overruns, lengthy delays, and significant performance shortfalls. Because of the size, complexity, cost, and problem-plagued past of FAA's modernization program, we have designated it a high-risk information technology investment since 1995.[2]

In 1998, in collaboration with the aviation industry, FAA revised its approach to NAS modernization to move from its traditional system of air traffic control, with heavy reliance on procedures, to a more collaborative system of air traffic management. FAA has begun testing some of the technologies—or tools—under this new environment, known as free flight, which are intended to help improve safety and increase the efficiency of the NAS. Despite some unresolved challenges, FAA has been moving aggressively to complete the initial deployment of these technologies by 2002.

Measuring the capacity of the NAS and achieving its most efficient use are both difficult challenges because they depend on a number of interrelated factors. The capacity of the NAS is affected by such factors as the number and type of aircraft seeking access, weather conditions, flight schedules, and airports' infrastructure. Achieving the most efficient use of the NAS is largely contingent on the procedures FAA uses to manage traffic, how well its equipment performs, and the proficiency of the controllers to efficiently use this equipment to manage traffic. Under the best of circumstances, capacity usually meets the demands for service. But, as we have experienced all too often, whenever any factors diminish capacity, congestion and delays result.

The National Airspace System Is Experiencing Significant Capacity Problems

The growing demand for air travel has fully taxed the capacity of the NAS, including the ATC system. Airline passengers are experiencing increasing flight delays and cancellations from the growing imbalance between their demands and the abil-

[1] FAA uses three types of facilities to control traffic. Airport towers direct traffic on the ground, before landing, and after takeoff within 5 nautical miles from the airport and about 3,000 feet above the airport. Terminal radar approach control facilities sequence and separate aircraft as they approach and leave airports, beginning about 5 nautical miles and ending about 50 nautical miles from the airport and generally up to 10,000 feet above the ground. Air route traffic control centers, called en route centers, control planes in transit and during approaches to some airports. The airspace that most en route centers control extends above 18,000 feet for commercial aircraft.

[2] FAA's modernization program is one of four high-risk system development and modernization efforts. See *High-Risk Series: An Overview* (GAO/HR–95–1, Feb. 1995), *High-Risk Series: Information Management and Technology* (GAO/HR–97–9, Feb. 1997), *High-Risk Series: An Update* (GAO/HR–99–1, Jan. 1999), and High-Risk Series: An Update (GAO–01–253, Jan. 2001).

ity of the NAS to handle air traffic. Last year, more than 1 out of every 4 flights nationwide was canceled, delayed, or diverted. These actions affected 163 million passengers, who, on average, were delayed almost an hour. FAA reported that 1.9 million passengers moved through the system daily, and it forecasts a 59-percent increase in the number of enplanements between 1999 and 2011. Delays and cancellations are also increasing. In 2000, which was the worst year on record, FAA reported a 90-percent increase in delays and a 104-percent increase in cancellations compared with 5 years ago. The imbalance between demand and capacity is most pronounced during peak flying periods at the major airports through which major airlines route their flights, commonly referred to as hub airports.

Inefficiencies in the ATC system, along with the lack of adequate airport infrastructure, airline scheduling practices, and bad weather are among the many factors contributing to delays and congestion. Some in the aviation industry have also attributed delays to antiquated ATC equipment. They expect the use of modern equipment to vastly expand the capacity of the NAS.

While acknowledging inefficiencies in the ATC system, particularly in moving traffic in and out of the congested airspace around airports, FAA disagrees with the assertion that aging equipment is to blame for delays. The agency maintains that in recent years, it has replaced the majority of the equipment at many of its air traffic control facilities. While it is true that much of the equipment, especially in the en route centers is modern, this equipment was expected to be in place much earlier. As for the expectation that ATC modernization will bring major gains in capacity, FAA estimates that new equipment, coupled with changes in design and operating procedures for the airspace, will increase the number of flights nationwide that can be handled safely between 5 and 15 percent. FAA estimates that the biggest gain in capacity—between 50 and 55 percent—will come from adding new runways. While gains attributable to modernization are not as great as some may have expected, the agency nevertheless acknowledges that they are important and that it must take action to achieve them.

In this regard, in April 2001, FAA announced a set of initiatives in its *Operational Evolution Plan,* which is designed to increase capacity in the NAS. The agency, in cooperation with the aviation industry, is planning improvements in designing airspace and aircraft routes and deploying new technologies, among other actions, to permit more efficient movements and eventually allow more aircraft to move safely in the NAS. This plan complements the April 2001 benchmarks of capacity for the nation's 31 busiest airports. Since over 70 percent of the passengers move through these airports, the benchmarks allow policymakers to target short- and long-term solutions at these airports, thereby achieving the biggest increases in capacity. The aviation industry has also taken steps to address the capacity crisis. For example, a few of the major airlines have individually adjusted their flight schedules to even out peaks and have adjusted flight times throughout their system to more accurately reflect gate-to-gate departure and arrival times. Collectively, FAA and the aviation industry have over 50 initiatives to help improve the capacity of the NAS in various stages of implementation. We are reviewing the status of these initiatives and expect to report on them in the fall of 2001.

FAA Has Fielded Some New Equipment and Technologies, but Several Key Efforts Still Face Problems

Over the past two decades, FAA has encountered numerous problems in its ambitious ATC modernization program to acquire new facilities, replace old equipment, and introduce new technologies. Although FAA replaced the hardware for the HOST computer system[3] as scheduled in 1999 to preclude potential Year 2000 problems, many major modernization projects are years behind schedule and cost more than anticipated. Others have met with eventual success after FAA restructured them and modified their requirements. More recently, FAA has taken a number of steps to overcome past problems with its modernization efforts.

ATC Modernization Is an Ambitious Undertaking

ATC modernization, which was announced in 1981 as a 10-year, $12 billion program, has expanded and is now expected to cost more than $44 billion through fiscal year 2005.[4] Of this amount, the Congress appropriated over $32 billion for fiscal years 1982 through 2001. The agency expects that approximately $12 billion will be

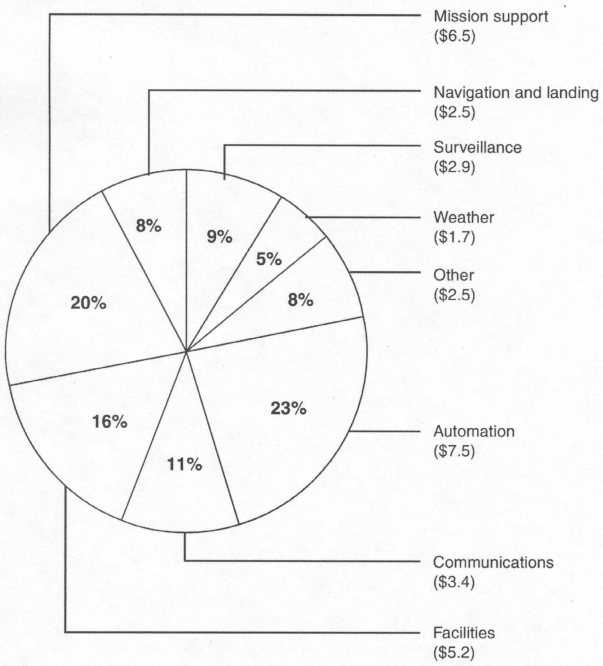
[3] HOST is the en route centers' system for processing flight and radar data that is displayed on the controllers' workstations.

[4] The total cost of modernization includes appropriations for all actual and projected facilities and equipment from fiscal year 1982 through fiscal year 2005 for projects in FAA's financial plan.

provided for fiscal years 2002 through 2005. See figure 1 for an illustration of how FAA's appropriation was divided among seven functional areas.

Figure 1: Air Traffic Control Modernization: Funding by Functional Areas, Fiscal Years 1982-2001

Dollars in billions



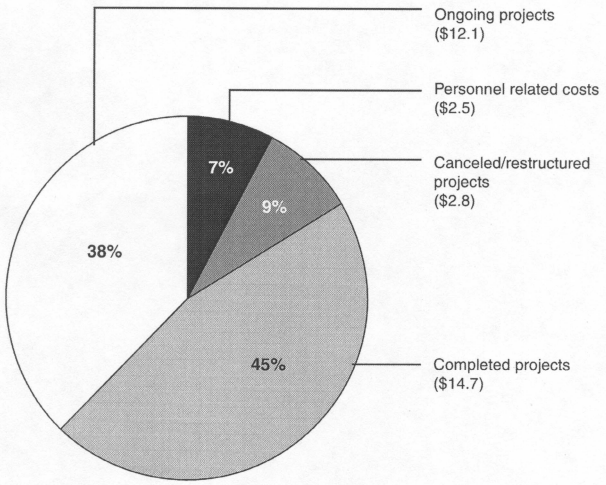
Source: FAA.

Figure 2 illustrates how FAA's appropriation was divided by project status—completed projects, ongoing projects, canceled or restructured projects, and personnel-related costs.

Figure 2: Air Traffic Control Modernization: Funding by Project Status, Fiscal Years 1982-2001

Dollars in billions

(Percentages may not add due to rounding.)



Source: FAA.

FAA Has Had Mixed Success in Deploying Key Automation Projects Essential to Free Flight

A key part of FAA's modernization program is replacing old equipment that processes radar and other data and displays this information on controllers' workstations. This new equipment forms a platform that is essential for FAA to deploy the new technologies that automate many of the controllers' functions. Eventually, the synergies of these technologies will enable FAA to transition from air traffic control to air traffic management, which will allow more aircraft to safely use the NAS. The agency estimates that this new equipment and related technologies will help achieve an increase of between 5 and 15 percent nationwide in the number of flights that can be safely handled when coupled with changes in the design and operating procedures for the NAS.

After restructuring the Advanced Automation System—the centerpiece of its original modernization program—and modifying its requirements, FAA deployed the Display System Replacement (DSR) project to all 20 en route centers in 2000.[5] However, another project from the restructured centerpiece that will deploy similar equipment in terminal facilities has encountered major cost, schedule, and performance problems. As a result, while FAA has not established a new schedule to deploy this equipment—the Standard Terminal Automation Replacement System (STARS)—it has indicated that the project's development cost will increase by nearly $500 million over its original 1994 estimate of $940 million.

To help mitigate problems with the modernization program, in 1998, FAA began a phased approach, known as free flight and has begun to deploy some new technologies. FAA has been demonstrating and measuring the operational effectiveness

[5] The Advance Automation System was designed to provide, among other things, new workstations for controllers and related hardware and software. In 1994, FAA restructured the project after the estimated cost had tripled, capabilities were shown to be significantly less than promised, and delays were expected to run nearly a decade. DSR is the en route workstation that graphically displays, on the controller's screen, the flight plan and radar data processed by the HOST computer.

of five technologies in phase 1 of free flight.[6] To date, the surface movement advisor and collaborative decision making tools have been successfully completed. With regard to the remaining three, demonstrations have shown that two of these—URET and TMA—have the potential to provide benefits despite some technical challenges. Because the third tool—pFast—has encountered significant technical challenges and FAA is still developing STARS—the infrastructure that provides the platform for this tool—the agency decided not to extend deployment of this tool to additional facilities in phase 2.

In 1998, as FAA and industry were planning for the deployment of free flight technologies, we found that FAA faced many challenges in implementing them.[7] Among these challenges were the need for FAA to address outstanding issues related to technology development and deployment, such as addressing the impact of modernization on users, principally controllers, and integrating various technologies that will be used under free flight operations with one another as well as with other ATC systems. Our preliminary findings and those of others indicate that FAA still has not fully addressed these and other challenges.

With respect to determining the impact of free flight tools on controllers, FAA has not established a clear plan for conducting these assessments. We agree with FAA, NASA, and air traffic controllers that using free flight tools will change the roles and responsibilities of controllers—necessitating a major cultural change. For example, using the TMA tool will require controllers to move from a common method of separating traffic according to distance, which relies more on controllers' judgment, to a method using time, which is more dependent on automated technology. The traditional method results in less efficient use of the airspace because controllers often add distance between planes to increase the margin of safety. Under the newer method of separating traffic, computers will help controllers balance the arrival flow into terminal airspace by assigning a certain time for an aircraft to reach a predetermined point. FAA acknowledges that transitioning to the new method will take time, but has yet to develop a strategy, including detailed training, to help ensure its success.

To allow FAA and users to fully exploit the capabilities of free flight technologies and achieve expected improvements in safety, capacity, and efficiency, FAA needs to integrate the technologies with one another and with other major ATC systems. Free flight technologies are expected to improve the efficiency of operations at high altitudes, close to the terminal, and on the ground. While these technologies are generally designed to operate independently of one another during phase 1, FAA plans to begin integrating them during phase 2 to achieve their collective synergies. However, FAA still needs to integrate URET with other major ATC systems, including FAA's HOST, DSR, and local communications networks. This integration is key to fully realizing increases in controllers' productivity. Compounding the complexity of integration, FAA has been simultaneously upgrading the HOST and DSR software to increase their capabilities. How well URET will work with these systems is unknown because FAA has yet to fully test this tool with them. FAA has developed some of the software needed for integration and has begun testing the URET software. By the end of August 2001, FAA expects to complete full testing of URET software in conjunction with major ATC systems. Testing may uncover the need for additional software modifications, which could increase costs and could cause the agency to defer planned capabilities.

FAA Has Also Had Problems in Deploying Other Equipment and Technologies

FAA recognizes the importance of projects in three other functional areas—communications, navigation and landing, and weather—to increase the capacity of the NAS without compromising safety. After major delays, the agency has deployed equipment in these areas. For example, FAA has replaced the voice system used by controllers in the en route centers to communicate with other controllers and with pilots. The agency has also installed a weather radar that alerts aircraft in the terminal area of hazardous weather conditions, such as microbursts, gust fronts, and precipitation. However, projects in these three areas, which have been under development since the 1980s, have continued to experience numerous technical problems.

In communications, FAA has been developing a way to transition from voice to data link communications to keep pace with the demand for ATC services, improve

[6] The five tools being demonstrated in phase 1 (1998–2002) are collaborative decision making, surface movement advisor, passive final approach spacing tool (pFAST), traffic management advisor (TMA), and user request evaluation tool (URET). Under phase 2 (2003–2005), FAA will deploy certain tools to other locations.

[7] See National Airspace System: FAA Has *Implemented Some Free Flight Initiatives, but Challenges Remain* (GAO/RCED–98–246, Sept. 28, 1998).

controllers' productivity, and reduce errors in voice communications. The agency has not finalized the cost for the data link project but estimates that it will be at least 2003 before it will provide limited capability in this area. To improve navigation, FAA has been developing a way to transition from a ground-based to a satellite-based navigation system using the Department of Defense's Global Positioning System. Originally, FAA intended to have the initial system operational by 1997; now FAA estimates that this system will be available by 2003, but with less capability. To reduce en route air traffic delays caused by severe weather, FAA has been developing a system to consolidate weather data from several sources and provide this information at a single, integrated workstation. Although FAA had planned to complete a similar project by 1991, FAA now estimates that it will complete the initial deployment of this project by the end of 2002.

Because of the critical link of the projects noted above to current and planned efforts to safely expand the capacity of the NAS, future delays could have a negative impact on these efforts. For example the Automatic Dependent Surveillance Broadcast, a technology that is intended to provide pilots with precise information about the location of other aircraft in the NAS, depends on FAA's satellite-based navigation system to assure them that the position information they receive from satellites is accurate. This satellite-based system also has the potential to help pilots and controllers prevent accidents on the ground at airports. Continued delays in FAA's satellite navigation program could place deployment of important features of this new surveillance technology in jeopardy.

A Continued Focus on ATC Modernization and Human Capital Issues Is Important for the Aviation Community to Expand NAS Capacity

Because of the interconnection and interdependence of key components of the NAS, assessing solutions to the capacity problem is complex. FAA and aviation industry leaders recognize that most proposed solutions cannot be implemented in isolation and therefore must be carefully coordinated to help ensure successful implementation as well as mitigate the risks of potential unintended consequences. While not the sole solution to the delay and congestion problem, FAA's modernization program is nonetheless an important part of the solution. Its success affects future projects and the deployment of new technologies to expand the capacity of the NAS. Furthermore, as policymakers assess options, it is important to consider whether human capital needs, such as succession planning, are being adequately addressed.

FAA Has Taken Steps to Address Modernization Problems, but Must Hold Individuals Accountable and Ensure That They Coordinate Their Actions

Despite efforts to address its modernization problems, FAA still faces problems in instituting an organizational culture that is accountable for outcomes and encourages individuals to work together as coordinated teams to achieve them. Over the past couple of years, FAA's increased collaboration with the aviation industry and its phased approach to modernization have been positive developments and have allowed FAA and the industry to target specific problems and together develop initiatives to solve them. However, according to our work and that of others, FAA has not fully instituted the performance-oriented culture that is a key to the success of modernization and other agencywide efforts.

The Congress and the aviation community have noted that FAA lacks accountability for delivering key modernization projects. Recently, the FAA Administrator has taken steps to assign specific accountability to individuals who head major offices and to develop agreements to link these individuals' performance to outcomes. Most likely, the accountability and expectations for achieving outcomes will be pushed to managers at lower levels within FAA to increase the likelihood that these employees will collaborate as teams to achieve outcomes. Such action would be in contrast to the current situation where major offices still tend to function in stovepipes that inhibit an integrated team approach to developing and delivering systems. FAA has identified this integrated team approach as key to the agency's efforts to deploy systems that meet performance goals.

To increase accountability for delivering air traffic services, in 2000, the Congress created the position of chief operating officer.[8] This individual will be responsible for ATC modernization as well as other agencywide activities and services related to air traffic. Subsequently, in December 2000, the administration directed FAA to establish a performance-based organization that would encompass all of FAA's functions related to air traffic. FAA is in the process of establishing this organization, to be headed by the chief operating officer. This increased attention to account-

[8] Wendell H. Ford Aviation Investment and Reform Act for the 21st Century—P.L. 106–181, sec. 303.

ability, coupled with changes under way in the performance management system to link pay to performance, are very positive signs for FAA and should go a long way toward establishing a climate in which individuals throughout the agency are held accountable for specific outcomes.

FAA and the Aviation Industry Will Need to Take Steps to Ensure an Adequate Supply of Well-Trained Aviation Professionals

If steps are not taken now to plan for succession, the retirement of critical personnel responsible for the safe and efficient operation of the NAS in the coming decade could negatively affect the ability of FAA and others to meet future demands for air service. Many of the controllers hired after the 1981 strike are approaching retirement eligibility. While estimates of retirements vary, it is generally agreed that by 2010, at least 40 percent of the current controller workforce will be eligible to retire. The retirement of large numbers of controllers in a relatively short time frame raises a number of issues. For example, FAA will need to determine (1) how many controllers will be needed in the future to control traffic, given increased demand and improved equipment; (2) how many controllers will be leaving and when; and (3) the source to supply new controllers. Addressing these issues cannot be deferred because hiring and training new controllers to be fully proficient with the latest procedures and technologies takes a significant amount of time. For example, at some of the busiest air traffic control facilities, it takes up to 5 years for a new controller to go through the training process and become "fully certified." Therefore, to ensure that it maintains an adequately staffed, well-trained controller workforce, FAA must plan well in advance for these retirements.

Likewise, FAA and the airlines face similar challenges with maintenance technicians and aircraft mechanics, respectively, who maintain equipment used throughout the NAS. Given the critical responsibilities that these professionals fulfill, it is vital that FAA and the industry address these challenges. GAO has reviews under way to address the human capital issues surrounding succession planning for these aviation professionals.

FAA's management of the key initiatives that it has underway, supported by industry input, will be critical to safely expanding the capacity of the NAS. Continued congressional oversight is also important to ensure that FAA meets the challenges presented by the increasing demand for air travel.

Madam Chairman, this concludes my statement. We will be happy to answer any questions from you or any Member of the Subcommittee.

Senator HUTCHISON. Thank you, Dr. Dillingham.

Mr. John Carr, the President of the National Air Traffic Controllers Association. Thank you.

STATEMENT OF JOHN CARR, PRESIDENT, NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION

Mr. CARR. Good morning, Madam Chairman. My name is John Carr and I am the President of the National Air Traffic Controllers Association. I represent over 15,000 air traffic controllers, engineers, and other safety-related professionals, and I would like to thank you for the opportunity to testify before you here this morning.

Airline delays and cancellations, capacity and access constraints, and traffic congestion continue to plague the National Airspace System. Passenger frustration is over the top and customers are unhappy. That is the bad news.

The good news is that the aviation community has stepped up to the plate. The National Air Traffic Controllers Association, along with the FAA, the pilots, the airlines, the airports, and others, are working collaboratively to develop and implement concrete solutions.

The delay problem that we face is much like a three-legged stool. First there are capacity enhancements in the form of new technology and air traffic control procedures. The FAA under the leadership of Administrator Garvey has made significant progress in

modernizing the air traffic control system. Over the past 3 years, the FAA has replaced or upgraded most of the major components of the air traffic control system in terms of hardware.

Can the system be improved? Absolutely, and we are working with the FAA day and night to move new technologies into the workplace as quickly, safely, and efficiently as possible. NATCA is now involved in every project from its inception and we currently have representatives on over 65 technical projects.

Air traffic control modernization is evolutionary, it is not revolutionary, and there really is never going to be an end date or an end state to air traffic control modernization. When you modernize these safety-sensitive systems, it is an evolution. However, we will continue to lead both the agency and the industry into the twenty first century.

Yet, while continuing these upgrades and new technological advances which are necessary to ensure safe, efficient travel into the future, they alone will not solve the problem of airline delays. As a matter of fact, improvements in technology will enhance system capacity by 5 to 15 percent at best.

This is where the second leg of the stool comes into play. There is no question that increased airport capacity will have a significant impact on reducing airline delays. As a matter of fact, we are honored that even the President of the United States, President George Bush, agrees with NATCA's position when he says "We need to build more runways."

We believe that 50 miles of concrete poured at our nation's 25 busiest airports will solve most of our aviation delays. A new runway can allow for 30 to 40 additional operations per hour. The problem is that it takes years for a project to be both approved and completed.

We believe that is why prudent capacity management is the third leg ofthat stool. An airport's capacity to handle traffic is a function of its size, the layout of its runways, the air traffic patterns, and the timeframe in which the large surges of traffic must be handled. Our system is built to allow for unfettered discretion in adding demand. However, you cannot add limitless demand to a finite system.

A case in point is New York's LaGuardia Airport last summer, when airlines filed for 600 slot exemptions within a week. The market forces failed to limit that demand and the FAA and the Port Authority stepped in. Responsible scheduling of flights within capacity limits goes a long way toward alleviating delays, and I believe you will probably hear something about that from the next witness.

Meanwhile, there is unused capacity in the system. All anyone has to do is look at the success that has been enjoyed by Southwest Airlines in servicing regional airports, as well as the success that has been enjoyed by Federal Express, who absolutely positively has to fly there overnight, to understand that there is unused capacity in the system. The dilemma comes in matching capacity to demand where and when the public wants it. The answer does not lie in artificially reducing demand. The answer lies in taking concrete steps to increase capacity.

It might also be possible to find unused capacity through a closer examination of the requirements for actually separating aircraft. While air traffic controllers are using 1970's radar, 1980's radios, 1990's scopes, we are using 1950's separation techniques. Any marginal or fractional decrease in separation standards could instantaneously free up unused capacity in the system. However, any decrease in these standards must be measured against the very basic litmus test of safety.

Regardless of whether capacity is increased through new runways, new technologies, or new procedures such as National Airspace Redesign, additional air traffic controllers will be needed. We will need to ensure that there are enough qualified and trained air traffic controllers to handle the increased traffic, the opening of new sectors and airways, and to prepare for, as the previous witness described, the impending retirement crunch. A controller shortage would only exacerbate the current delay crisis.

One thing is clear, however. Creating an air traffic monopoly through corporatization, commercialization, or privatization of the air traffic control system has no place in the discussion of aviation delays. It only detracts from the important tasks that lie ahead. Privatization will not improve safety, it will not increase capacity, and it will not reduce costs. It is radical, it has been a proven failure, and it is a threat to everyone that flies.

Privatization puts profits before safety, even in countries that tout the not-for-profit mantra. Safety is our business and business is very good. On the other hand, a quick look around the world where profit-driven or not-for-profit-driven corporations have been put in charge of aviation safety and you will see that business is not so good. New Zealand went private in 1987. The very next year they slashed standards for airport rescue fire services. Just a few weeks ago, and I am sure you might have seen this in the media, over 20 flights were left circling Auckland while the tower went unmanned due to staffing shortages.

In Australia, safety takes a back seat to liability. A confidential Air Services Australia memo indicated that they would have to reevaluate their handling of emergency aircraft due to liability concerns. Controllers are getting ready for those limits on the amount of assistance that they can give to aircraft in distress.

Nav Canada recently closed about a dozen small airports for the sake of their bottom line, leaving people in small markets without any convenient access to air travel. In addition, the company chose to reduce air navigation fees to the airlines and to give the airlines rebates instead of investing that excess surplus revenue in new technology or modernization efforts. As a matter of fact, people tout the Canadian system as the model. Quite frankly, it is the model of something that has failed. The Canadian air traffic control system is still sitting in warehouses 5 years after its inception and they admit that, when enacted, functionality will probably be decreased by about 40 percent.

As a professional who has worked airplanes for over 20 years, and I have worked airplanes everywhere from the Gulf of Oman to Chicago O'Hare, I can tell you that you simply do not cut back on safety.

We believe that the provision of air traffic control services is so intrinsically linked with the public safety and the public interest as to mandate its performance by federal employees. Air traffic control is an inherently governmental function and it is a job that the federal government, even on its worst day, does very, very well. Our air traffic control system is not only the biggest in the world, it is also the safest and it is the envy of every nation.

I personally have the honor and the privilege of representing the absolute finest aviation professionals in all of public service and we look forward to working with this Subcommittee, with the FAA, with the airlines and the pilots, the airports, and other interested groups to develop and implement concrete solutions to our delay and our capacity dilemma.

Madam Chair, thank you for the opportunity to testify.

[The prepared statement of Mr. Carr follows:]

PREPARED STATEMENT OF JOHN CARR, PRESIDENT, NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION

Good morning Madam Chairwoman, Senator Rockefeller, and Members of the Subcommittee. I want to thank you for this opportunity to appear before the Subcommittee to discuss the problem of airline delays and proposed solutions. I am John Carr, President of the National Air Traffic Controllers Association.

NATCA is the exclusive representative of over 15,000 air traffic controllers serving the FAA, Department of Defense and private sector. In addition, NATCA represents approximately 1,200 FAA engineers, over 600 traffic management coordinators, agency operational support staff, regional personnel from FAA's logistics, budget, finance and computer specialist divisions, and agency occupational health specialists, nurses and medical program specialists.

Airline delays and cancellations, capacity and access constraints, and traffic congestion continue to plague our National Airspace System. Passenger frustration is over the top and customers are unhappy. That's the bad new. The good news is that the aviation community has stepped up to the plate. NATCA, the FAA, the pilots, the airlines, the airports, and others are working together to develop and implement concrete solutions.

Aviation delays are a multi-faceted problem and just as there is not one cause, there is also no blanket solution or quick fix to the problem. Today, I would like to discuss a number of topics—capacity enhancements, airport capacity, capacity management, separation standards, operational errors, National Airspace Redesign, air traffic controller staffing and retirements, and privatization—that seem to surface in the capacity dilemma.

First, there are capacity enhancements in the form of new technology and air traffic procedures. The FAA, under the leadership of Administrator Garvey, has made significant progress in modernizing the air traffic control system. Our system can no longer be characterized as "outdated and antiquated." NATCA is a firm supporter and partner in Administrator Garvey's evolution not revolution strategy of "build a little, test a little, deploy a little," and we will remain an advocate of this throughout the modernization effort.

Over the past 3 years, the FAA has replaced or upgraded most of the major components of the air traffic control system. The radar displays (Display System Replacement) and the Host hardware in the 20 en route centers have been replaced. One hundred and thirty-one automation systems have been modernized (ARTS IIE) at low-to-medium density facilities, new hardware color displays (ACD) have been installed at five large facilities, the automation and hardware systems have been upgraded at higher demand facilities in Atlanta and Northern California, and automation systems (ARTS IIIE) are being fielded at St. Louis and Minneapolis to meet Free Flight Initiatives. In addition, the Standard Terminal Automated Replacement System has moved from development to deployment with initial versions operational in Syracuse, NY and El Paso, TX. All of these activities are essential to meeting the present and future demands of our air traffic control system.

Can the air traffic control system be improved? Absolutely, and NATCA is working day and night with the FAA to move new technologies into the workplace as quickly, efficiently and safely as possible. FAA modernization is an ongoing process and NATCA is directly involved in every technology project from its inception. This

collaboration and teamwork has been instrumental in ensuring the success of modernization projects such as DSR and STARS. NATCA currently has representatives on over 65 technical projects, and we will continue to lead both the agency and the industry into the 21st Century.

While continuing upgrades and new technological advances are necessary to ensure safe, efficient travel in the future, they will not solve the problem of delays. According to the FAA and MITRE Corporation, improvements in air traffic control technology will enhance system capacity by 5 to 15 percent at best. While newer equipment will greatly increase reliability, it will not change the number of aircraft that can land or depart at any given time.

There is no question that increased airport capacity will have a significant impact on reducing airline delays. Part of the reason we are here today is that airport construction—terminals, taxiways, runaways, gates—has not kept pace with passenger growth. According to the July 25, 2000 DOT Inspector General Audit Report, only nine new runways were opened at the country's 100 largest airports between 1995 and 1999. And, only three of these nine runways were built at the nation's 28 largest airports.

Capacity can be increased through construction, and AIR–21 provides the necessary financial resources. Fifty miles of concrete poured at our nation's 25 busiest airports will solve most of our aviation delays. A new runway can allow 30 to 40 more operations per hour. The problem, however, is that any airport construction or expansion plan faces a number of obstacles including political hurdles, space limitations, community opposition, noise restrictions and environmental concerns. It can take years for a project to be approved. Meanwhile, we are fast approaching a crisis situation with respect to aviation gridlock.

This is where capacity management comes into play. An airport's capacity to handle air traffic is a function of its size, the layout of its runways, the air traffic patterns, both arriving and departing, and the time frame in which a surge of traffic must be dealt with due to airline scheduling. Our system is built to allow for unfettered discretion in adding demand. However, you can not add limitless demand to a finite system. Case in point is what happened at New York's LaGuardia Airport last summer when airlines filed for 600 slot exemptions within about a week. Market forces failed to limit the number of flights at LaGuardia, so the FAA and the New York/New Jersey Port Authority had to step in.

Delays occur every day at every major U.S. airport. Schedules are made to reduce operating costs and maximize revenue without regard for other airlines, terminal airspace or airport capacity. At "peak" times, dozens of planes are simultaneously taxiing for take-off or queuing above the airport in a finite amount of terminal airspace. This is where the laws of physics kick in. Given runway capacity, only certain number of flights can depart and arrive within a specified time period. Therefore, scheduling during peak hours contributes to delays at busy airports even in good weather. All scheduled flights will not be able to arrive on time. Responsible scheduling of flights within airport capacity limits will go a long way toward alleviating delays.

There is unused capacity in the system. All one has to do is look at the success enjoyed by Southwest Airlines to see proof of this. The DOT Inspector General notes in the July 25, 2000 Audit Report, "Air Carrier Flight Delays and Cancellations" that the majority of the increase in flight operations and passenger enplanements over the next 15 years will occur at the nation's 28 largest airports. While most of these airports and the surrounding airspace have already exceeded existing capacity, regional airports are being underused and ignored. A close examination of the use of our nation's existing airports is needed. NATCA believes that certain city airports are better suited for originating and/or terminating flights than associated hub airports. Increased usage of these airports by passengers and airlines will alleviate congestion and delays at the hubs.

It may also be possible to find unused capacity through a close examination of the requirements for separating aircraft. Separation standards are designed to ensure the safety of aircraft and its passengers from other aircraft. The FAA separation standards, which date back to the 1950s, require 5 miles laterally in the enroute environment, 3 miles laterally in the terminal airspace, and 1,000 to 2,000 feet vertical depending on altitude. Attempts to determine the origin and basis for the current separation standards have revealed that they were apparently the result of qualitative judgements. There are no documents that explain how the three and five mile standards were derived. It is, however, generally accepted that the standards are the result of a number of factors including practices used by the military, radar equipment limitations, pilot acceptance, and to provide for a practical time and distance buffer.

Today, we have the scientific methods and computer simulation tools needed to examine the separation standards. NATCA is willing to join with the NTSB, NASA, the pilots, the FAA and other interested parties to carefully examine the possibility of reducing the separation standards. In April, I met with Professor John Hansman from the Massachusetts Institute of Technology International Center for Air Transportation, Department of Aeronautics and Astronautics. Professor Hansman is researching the dynamics of the emerging capacity crisis in our country and is evaluating the current separation standards. Professor Hansman's data shows that while separation standards have remained unchanged radar performance has improved five-fold.

While air traffic controllers are using 1970s radar with 1980s radios and 1990s scopes, they are using 1950s separation standards. Any marginal or fractional decrease in separation standards could instantaneously free up unused capacity in the system. However, any decrease must also be measured against the litmus test of safety.

While we are on the subject of safety margins, I would like to mention the progress that NATCA has made with the FAA on operational errors. We are working to minimize the number of errors while developing a better understanding of the chain of events that can lead to a loss of minimum separation. Historically, an operational error has been counted the same whether separation between aircraft was reduced to one mile or 4.9 miles. Now, a new way of categorizing errors has been established to reflect the impact on safety using a high, moderate or low risk factor formula. Point values are assessed using a formula that takes into account altitude, speed and direction. NATCA is pleased that an environment of learning and investigation has replaced the former punitive approach toward controllers who had an operational error.

While we are working to reduce operational errors, it is important to keep the issue in perspective. According to the Department of Transportation, the rate of errors last year was .68 for every 100,000 operations. This equates to one operational error every 147,000 operations. In addition, only six percent of the current air traffic controller workforce has had an operational error in the last two and a half years. Of that group, only twenty percent had more than one.

While safety is the responsibility of all participants in the nation's air transportation system, the FAA's air traffic controller workforce serves on the front line, managing thousands of commercial, military, and general aviation operations on a daily basis. The 15,000 professional air traffic controllers are essential to the seamless, safe and efficient movement of these aircraft at airports, approach control centers, and enroute centers. We need to ensure that there are enough qualified and trained air traffic controllers to handle the increased traffic growth, the opening of new sectors and airways, and to prepare for the impending retirement crunch.

The five-year agreement between the FAA and NATCA, signed in 1998, calls for a "baseline" of 15,000 air traffic controllers for the first three years. The agreement calls for 15,300 full-time equivalents in 2002, and 15,606 in 2003. The Administration's FY2002 budget request, which provides for the hiring of 600 more air traffic controllers, is consistent with this. NATCA does not support reopening our contract. However, we do have a fundamental disagreement with the agency over the terminology used in the contract. NATCA believes that term "baseline" refers to a floor, and therefore the 15,000 figure represents the minimum number of air traffic controllers.

It is quite simple. If we continue to add new sectors to accommodate the traffic growth, we need to add more air traffic controllers. This is especially true when looking at the National Airspace Redesign (NAR) project which will review, redesign and restructure our national airspace to efficiently and effectively meet the needs of all customers and service providers while maintaining the high standards of safety. The short-term focus is on optimization of the present structure concentrating on projects such as the choke point initiatives to strengthening the current system and technology. Then, the longer-term airspace redesign projects will incorporate technological and conceptual enhancements.

NATCA has been involved in NAR since its inception in April 1998. We have one full-time liaison, eleven regional representatives, and about 350 controllers nationwide who are involved in NAR. In March, NATCA and the FAA signed a Memorandum of Understanding which states that changes to the National Airspace System should be based on increasing safety, efficiency and capacity, and any modifications are to be made in the best interest of the users of the system and the flying. The goals of NAR are clear: maintain system safety; decrease system delays; increase system flexibility and predictability; and increase user access.

In addition, this August marks the 20th anniversary of the PATCO strike when approximately 11,350 air traffic controllers were fired. The FAA spent most of the

1980s hiring and training a replacement workforce. By 1992, the controller workforce was restored to pre-strike levels, and hiring was halted. Now, after two decades, the air traffic controller workforce and the country are about to feel the aftershock of the PATCO event.

The thousands of controllers hired during the post strike recovery period will reach retirement eligibility in just a short period of time. Retirements will dramatically increase until 2007, when they will peak at 8.4 percent of the workforce. By 2010, cumulative retirements will exceed 50 percent of the workforce.

Mandatory overtime, six-day work weeks and understaffed shifts are what air traffic controllers will be facing if the government does not do something now to prepare for this crisis. Currently, there are not enough controllers to fill the gap, and it takes anywhere from 2 to 4 years to become a full performance level controller. We believe that the FAA must immediately begin hiring and training the next generation of air traffic controllers.

Senator Max Cleland will be introducing legislation to lessen the impact of the retirement crunch. The current annuity computation for air traffic controllers under the Civil Service Retirement System actually encourages early retirement because it contains a disincentive to defer retirement beyond the point in service when the guaranteed level is reached. There are approximately 5,000 air traffic controllers under CSRS.

Senator Cleland's bill would change the CSRS annuity computation to give air traffic controllers the same annuity that is afforded to both federal firefighters and law enforcement personnel. This will provide the necessary incentive for these individuals to continue to work beyond their date of retirement eligibility. While the FAA will still need to hire new air traffic controllers, the changed annuity option will lessen the impact of the retirement crunch, and provide the necessary time for the new hires to receive the training they need to become full performance level air traffic controllers.

One thing is clear, privatization has no place in the discussion of aviation delays. It only detracts from the important tasks that lie ahead. Privatization will not increase airport capacity, or build more runways or airports. It is simply a business-oriented solution being offered by so-called think tank experts and others who stand to make a profit. Proponents argue that competition in the private sector allows companies to provide services more efficiently while reducing costs. It is foolish to think that a change in ownership will improve safety, increase capacity and reduce costs. Private companies will constantly balance their bottom line against my bottom line: the safety of the travelling public. Some things should not be reduced to dollars and cents.

Proponents often point to Canada's privatized system as the solution. However, Nav Canada is the perfect example of a not-for-profit air navigation corporation with a single-minded focus on saving money. The system is financed by fees charged to passengers and collected by the airlines to cover the costs incurred by Nav Canada in providing air traffic control, flight information, and other services. However, instead of investing surplus revenue in new technology, modernization efforts, staffing or infrastructure projects, Nav Canada has chosen to reduce air navigation fees charged to airlines, and to give the airlines fee rebates. Profits are being put before safety.

Let the words of Mike Murphy, an Ottawa based aviation safety consultant and former head of air traffic control in central Canada, speak for themselves. "The motive is to save money and make it more efficient but efficiency often works at the expense of effectiveness," Murphy said. "In our business, effectiveness is otherwise known as safety."

According to Murphy, the Canadian Automated Air Traffic System, or CATS, has been, "wound down over the years to the point where it's probably going to deliver 40 percent of what was promised and the cost is double or triple what it was supposed to be." The CATS system, five years overdue, has yet to be installed in Canada.

According to the Canadian Press, the Transportation Safety Board of Canada has repeatedly cited Nav Canada for overworking its employees, pointing to excessive overtime, understaffing and fatigue as problems in the air traffic system. In September Canada's board blamed the fact a Winnipeg controller had worked 198 hours in 32 days—43 hours more than his contract stipulated—for circumstances leading to a near collision between two Boeing 767s.

Air traffic control is an inherently governmental function. The U.S. system is a national treasure that demands thoughtful, proactive decision-making that will result in real, lasting improvements in procedures, processes and infrastructure. Privatization of this system will never be the answer because the safety of air travelers is not for sale.

NATCA looks forward to working with the Subcommittee, the FAA, the pilots, airlines, airports, and other interested groups to develop and implement concrete solutions. We want to be part of the solution. Given the important tasks and challenges facing the aviation industry, we believe that it is imperative that the remaining seats on the Management Advisory Council (MAC), especially the labor seat, be filled before any further business is conducted.

Currently, the MAC consists of seven members. The Council has held six meetings, has elected a Chairman and has begun to move forward in its mission. However, there is no labor participation on the MAC. NATCA is the logical choice to represent the unions of "air traffic control system employees." It would be a privilege to serve as a member of the Council. I have submitted my name to the White House and the Secretary of Transportation, and I would appreciate your support of my candidacy.

Madam Chairwoman, that concludes my testimony. I will be happy to answer any questions.

Senator HUTCHISON. Thank you, Mr. Carr.

A vote has just been called and I am calling the cloakroom to see how long we have, because I would like the go ahead and get both of the other panelists in the record so that we will not have to have a delay. So I am trying to hold as long as I can.

I am very pleased to welcome a fellow Texan, Mr. Richard Vacar. I know and have used both of your wonderful airports many, many times. Thank you for being here.

STATEMENT OF RICHARD M. VACAR, AAE, DIRECTOR, HOUSTON AIRPORT SYSTEM

Mr. VACAR. Madam Chairman, thank you. I am Richard Vacar, Director of Aviation at the Houston Airport System. I would like to congratulate you as well for becoming the Committee Chairman.

One only needs to read a newspaper or watch television news from time to time to know that the lack of airport airway capacity and resulting airline delays are the biggest problems facing the aviation industry, and that is why we are here today. The fact is we have an airport and airway system that in many instances simply has not kept pace with the popular demand for travel.

We first need to emphasize that the aviation capacity problem is not a shortfall simply in one part of the system. The airports, air traffic control, and airlines have all struggled to try to keep up with demand and all have had their problems.

While I am now an airport manager, I have previous experiences working for the FAA and as a pilot. I have seen the system from every perspective. The key fact is that every element of the aviation network depends on each of the other elements. Airlines, air traffic control, and airports each must live with the demands and the limitations imposed by the others. No part of the system is a land unto itself.

Delays are not caused simply by inadequate airport capacity or by inadequate air traffic control capacity or by airline practices, and they cannot be solved by addressing only one or two of those problems. We have airports that serve as bottlenecks and create delays in the ATC system. We have ATC capacity problems, including en route centers, where bottlenecks are unrelated to scheduling or capacity in any particular airport, but the result is ground holds at many airports. And we have airlines that are both the victims of all this congestion and sometimes guilty of not doing everything they could and should do to keep passengers informed when there

are flight problems. We all have to recognize that solving the delay problem will require that we solve all parts of the problem.

Turning to the airport part of the system, capacity benchmarks developed by the FAA will help us plan for the future. What these benchmarks make clear, however, is that we need a concerted effort to get some more capacity into the system. We need to make better use of the capacity we now have in the airspace and airports. We need to make the air traffic control system work better and, perhaps most significantly, we need to build more runways, especially at the most congested airports, and do it quickly.

The George Bush Intercontinental Airport, IH, in Houston, is a good example of the substantial increase in capacity that can be achieved by building additional runways. The airport is the thirteenth busiest commercial airport in the United States and has been experiencing strong growth, well above the national average, for more than a decade. In part due to Congressional support for the airport improvement program, the FAA was able last year to make a multiyear commitment for $193 million in AIP grants toward our $1.7 billion expansion at Intercontinental, including widening and lengthening of an existing runway and construction of a new runway on the north side of the airport. Benchmarks show that construction of this new capacity at IH will ensure that IH can accommodate the passenger and cargo growth that the airport has been experiencing.

Although any successful long-term plan to reduce airline delays at IH and most other congested airports throughout the country must include a commitment to increasing airport capacity by building these new runways, there are other actions that could help reduce airline delays and cancellations. Improving air traffic control is key to better operations at airports, just as increasing airport capacity is key to better ATC operations. Benchmarks show that, while most airports can accommodate the demand they now have in clear visibility conditions, when visual separation is not possible capacity at the airport often drops as much as 40 percent. This then creates the backups throughout much of the rest of the system. Any technology that creates more precise control of aircraft on approach reduces this capacity gap between clear visibility and the overcast conditions.

In the en route portion of the ATC system, the Free Flight program could also improve overall capacity substantially. Redesign of sectors and routes, which FAA is doing constantly, also adds to capacity. Extending thousand-foot flight levels, which we now use up to 29,000 feet, above 29,000 feet would significantly increase en route capacity, and this is something that we already have the technology to do and is in fact being done in Europe.

With respect to airports, Congress and the administration need to make it possible for congested airports to build capacity where they can as quickly as possible. What is now clear is that the current process for approving runway projects is broken, a conclusion evidenced by the fact that the timeframe for completion of runways and other projects is often measured in decades. That is why the ACINA and AAAE have proposed a streamlining initiative to help expedite the construction of airport capacity infrastructure by im-

proving the process of project approval, environmental analysis, and then permitting.

In conclusion, while the shortfall we have in the airport and airway capacity is very real and is presenting genuine hardships and inefficiencies to the users of the aviation system, including that airlines, passengers, shippers, we are not helpless in the face of these problems. There are specific steps we can and in many cases are taking to provide more ATC capacity, to build more airport capacity, and to make the different elements of the system work better together. I have spelled out in my testimony many of those specifics.

I believe that there is ultimately one solution to the system capacity that is insufficient to meet popular demand and that is to provide the missing capacity. I believe that with a constructive and cooperative airport we can do that both on the airways side and on the airport side.

Thank you for inviting me to participate in today's hearing and I would be available for any questions, of course.

[The prepared statement of Mr. Vacar follows:]

PREPARED STATEMENT OF RICHARD M. VACAR, AAE,
DIRECTOR, HOUSTON AIRPORT SYSTEM

Chairman Hutchison, Ranking Member Rockefeller, and Members of the Senate Commerce Subcommittee on Aviation, thank you for inviting me to participate in today's hearing on air traffic control delays. I am Richard M. Vacar, the Director of Aviation at the Houston Airport System in Houston, Texas. I also serve as the First Vice Chairman of the Airports Council International-North America (ACI–NA) and as a member of the American Association of Airport Executives' (AAAE) Policy Review Commission.

I would like begin by thanking all of you who served on the Senate Commerce Committee and the Subcommittee on Aviation last year for your help in passing the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR–21). By authorizing record-level funding for the airport improvement program and allowing airports to increase much-needed capacity, Congress has already taken the first steps towards reducing the flight delays and cancellations that are negatively impacting our aviation system.

I would also like to congratulate Senator Kay Bailey Hutchison on becoming the new Chairman of the Subcommittee on Aviation. Senator Hutchison is known throughout Texas as someone who is dedicated to improving the transportation system in this country. All of us at the Houston Airport System are grateful that she has taken such a keen interest in transportation issues during her distinguished career.

One only needs to read a newspaper or watch television news from time to time to know that the lack of airport and airway capacity and the resulting airline delays are the biggest problems facing the aviation industry and its customers today. Stories of passengers demanding better customer service and fed up with delayed and cancelled flights seem to appear on a daily basis. Unfortunately, flight delays and cancellations are expected to rise with the busy summer months just around the corner and with the overall number of passengers using the aviation system expected to grow to more than a billion per year by the end of the decade.

The fact is we have an airport and airway system that in many instances simply has not kept pace with the popular demand for air travel. A key part of that problem is that many of the nation's busiest airports simply don't have the capacity to accommodate today's traffic let alone the crush of activity projected for the immediate future. In its 1998 Aviation Capacity Enhancement Plan FAA cited twenty-seven airports that are seriously congested, experiencing more than 20,000 hours of delay annually. FAA forecasts indicate that unless airport capacity investments are made, the number of seriously congested airports will grow to thirty-one by 2007. We are not headed in the right direction.

We first need to emphasize that the aviation capacity problem is not a shortfall simply in one part of the system. Airports, air traffic control, and airlines have all struggled to try to keep up with demand—and all have had their shortfalls. While

I am now an airport manager, I have previous experience as an air traffic controller and as a pilot. I have seen the system from every perspective. The key fact is that every element of the aviation network depends on each of the other elements. Airlines, air traffic control, and airports—each must live with the demands and the limitations imposed by the others. Airplanes delayed at the most congested airports cannot reliably serve other communities. Airlines that schedule aircraft, ostensibly to accommodate passenger preferences, must accept the constraints of airspace managers and of airports. Limitations of the air traffic control system can create delays at airports even where those airports have provided adequate runway capacity. No part of the system is an island unto itself.

Delays are caused not simply by inadequate airport capacity, or by inadequate air traffic control capacity, or by airline practices—and they cannot be solved by addressing only one or two of those problems. We have airports that serve as bottlenecks and create delays in the ATC system. We have ATC capacity problems, including in the enroute centers where bottlenecks are unrelated to scheduling or capacity at any particular airport, but the result is ground holds at many airports. And we have airlines that are both the victims of all this congestion and sometimes guilty of not doing everything they could and should do to keep passengers informed when there are flight problems.

We all have to recognize that solving the delay problem will require that we solve all parts of the problem.

Turning to the airport part of the system, the capacity benchmarks developed by the FAA will help us plan for the future. FAA Administrator Jane Garvey and her staff deserve credit for providing all of us with these capacity benchmarks and informing airports about how the agency reached its calculations. This is a planning tool that will help all of us—airports, airlines, ATC managers, and Congress—to better understand our aviation system.

The benchmarks are intended as rough estimates of runway capacity. That capacity in practice varies significantly depending on visibility, wind direction, precipitation, noise procedures, and other factors. The benchmarks should therefor not be taken as exact or absolute. Nevertheless, they do give us the ability to make useful comparisons of airport capacity, and to judge the impact of projects we have underway.

It should be noted, however, that the benchmarks estimate the capacity of runways only. They do not take into account bottlenecks in the ATC system, or on the ramp, or in the terminal, or at any other part of the passenger's journey.

What these benchmarks make clear, however, is that we need a concerted effort to get some more capacity into the system. We need to make better use of the capacity we now have in the airspace and the airports. We need to make the air traffic control system work better and, perhaps most significantly, we need to build more runways, especially at the most congested airports; and we need to do it quickly.

The George Bush Intercontinental Airport (IAH) in Houston is a good example of the substantial increase in capacity that can be achieved by building additional runways. The airport is the 13th busiest commercial airport in the United States and has been experiencing strong growth—well above the national average, for nearly a decade. Although IAH has four runways already, the airport desperately needs more capacity to keep up with increased demand. In part due to Congressional support for the Airport Improvement Program, the FAA was able last year to make a multi-year commitment for $193 million in AIP grants toward our $1.7 billion expansion project at IAH, including the widening and lengthening of an existing runway and the construction of a new runway on the north side of the airport.

The capacity benchmarks released by the FAA indicate that IAH can currently accommodate 120–123 take-offs and landings per hour under clear visibility conditions. Once the fifth runway is built, however, IAH will be able to accommodate 162–165 take-offs and landings per hour. With other planned improvements, those numbers will increase even further to 170–173 take-offs and landings per hour, according to the FAA benchmarks.

The construction of a new runway at IAH and other improvements will ensure that IAH can accommodate the passenger and cargo growth that the airport has been experiencing. The FAA's capacity benchmarks prove what many of us in the airport community have been saying for a long time—the best way to substantially increase airport capacity and reduce airport-related delays is to build more runways.

Although any successful long-term plan to reduce airline delays at IAH and most other congested airports throughout the country must include a commitment to increasing airport capacity by building new runways, there are other actions that could be help reduce airline delays and cancellations in the short- and medium-terms.

Improving air traffic control is key to better operations at airports, just as increasing airport capacity is key to better ATC operations. Modernizing the National Aviation System and making structural improvements in air traffic control are critical to enhancing efficiency and capacity throughout the aviation system. Demonstrations at several airports have confirmed the benefit of early deployment of the Aircraft Vortex Spacing System (AVOSS), the Local Area Augmentation System (LAAS), and the Automatic Dependent Surveillance-Broadcast (ADS–B). The benchmarks show that while most airports can accommodate the demand they now have in clear visibility conditions, when visual separation is not possible, capacity of airports often drops as much as 40 percent. This then creates backups throughout much of the rest of the system. Any technology that creates more precise control of aircraft on approach reduces this capacity gap between clear visibility and overcast conditions. LAAS will be particularly important in this regard.

In the enroute portion of the ATC system, the Free Flight Phase 1 and Phase 2 programs could also improve overall system capacity substantially. Redesign of sectors and routes, which FAA is doing constantly, also adds to capacity. And extending 1000 foot flight levels, which we now use up to 29,000 feet, above 29,000 feet, would significantly increase enroute capacity. This is something we already have the technology to do, and in fact Europe has already done it. With continued support from this Subcommittee, I hope the FAA will expedite the deployment of these and other technology initiatives that will improve system capacity.

We all need to work smarter to solve these problems, and to better understand the interrelationship between airport and airway capacity.

For example, we in Houston had worked with FAA for years on the new main runway project we now have under construction. And I am pleased to report that we had a lot of support in that effort both from FAA and the airlines. But last summer, when we were just about to get final go-ahead for construction, we got a last minute word from FAA that, while they were pleased that we were doing our part to solve the capacity problem by building a new runway, they would not request any ATC equipment to make that runway useable! We were looking at the prospect of completing a new runway and not being able to use it because FAA had not provided any ATC for it. And this was despite a personal effort several months earlier by Administrator Garvey to get the various parts of FAA to work together on this project.

Fortunately, Congress stepped in and directed FAA to provide the missing ATC equipment, but it should not have taken that kind of external effort to make the obvious happen. I am pleased to report, however, that this year FAA has corrected the problem and has included the normal ATC work to prepare for this new runway in its annual budget. But this was an example of the different parts of the system, in this case the different parts of FAA, not working together as they should have.

With respect to airports, Congress and the Administration need to make it possible for congested airports to build capacity where they can, as quickly as possible.

What is now clear is that the current process for approving runway projects is broken, a conclusion evidenced by the fact that the timeframe for completion is often measured in decades. That's why ACI–NA and AAAE have proposed a streamlining initiative to help expedite the construction of critical airport capacity infrastructure by improving the process of project approval, environmental analysis, and permitting.

Developing the legislative initiative was a long and involved process. Over the course of the past six months, ACI–NA and AAAE held literally dozens of meetings with our members, environmental airport planning and development officials; key FAA and congressional staff; and environmental and aviation law experts, to find solutions that balance the need for continued environmental stewardship with the need to expedite the process by which airport operators, federal and state regulators, and environmental agencies review and approve critical airport projects. That painstaking but successful process produced the Expedited Airport System Enhancement (EASE) initiative.

In summary, the EASE initiative would give priority to critical airport capacity projects, within the scope of existing environmental laws, and better integrate application of those laws into the process for approving such projects. EASE also seeks to improve procedures at FAA and elsewhere in the federal government to make sure that these critical projects receive prompt and informed attention.

Key provisions of the EASE proposal include:

- Declaration of "Critical National Airport Capacity" Projects, which would eliminate the need for the lengthy off-airport "alternatives" process for such projects;
- Priority processing by involved agencies of Critical Airport Capacity Projects;

- Establishment of an Airspace System Capacity Enhancement Council or Czar;
- Airport funding of project-specific FAA staff or consultants for expedited review of Critical Airport Capacity Projects;
- Expansion of categorical exclusions;
- Facilitation of agreements with local governments to allow additional mitigation for Critical Airport Capacity Projects;
- Requirement of realistic state air quality implementation plans; and
- Elimination of the duplicative Governor's Certificate.

We have now been working to distribute it far and wide, in numerous meetings with decision-makers, in Washington and throughout the country.

In addition, a number of individual airports have now joined with several major airlines and other key travel industry players in building a coalition focused on bringing national attention to the need for additional runways. The group, called "Runways: A National Coalition," has already been very successful in shining a spotlight on the need to build runways at key airports.

I would also note that, with ATC delays reaching record levels in 2000, good information to passengers about the status of their flights is more valuable than ever before, and is also more of a challenge to provide than ever before. This is an area where, it seems to me, we can and should do better. Airlines, airports, and the FAA have created a task force which is working out ways to get information on delays and cancellations to airport monitors and therefore to passengers in a more timely and accurate way. Fixing system capacity, and thereby reducing delays, remains the preferred solution, but we also need to recognize that the problem is severe enough that we need to find ways for passengers to cope with it until capacity enhancements can reduce the size of the problem.

In conclusion, while the shortfall we have in airport and airway capacity is very real, and is presenting genuine hardships and inefficiencies to the users of the aviation system, including airlines, passengers, and shippers, we are not helpless in the face of these problems. There are specific steps we can, and in many cases are, taking to provide more ATC capacity, to build more airport capacity, and to make the different elements of the system work better together. I have spelled out here many of those specifics. I believe that there is ultimately only one solution to system capacity that is insufficient to meet popular demand, and that is to provide the missing capacity. I believe that with constructive and cooperative effort, we can do that, both on the airway side and on the airport side. We are not competitors—the fact is that neither the airport nor the airway side succeeds until we both succeed. I would hope we could all work in a way designed to bring the day when we all succeed a little closer.

Chairman Hutchison, Ranking Member Rockefeller, and Members of the Senate Commerce Subcommittee on Aviation, thank you again for inviting me to participate in today's hearing on air traffic control delays. On behalf of the Houston Airport System, I look forward to working with you during the 107th Congress as you consider ways to reduce airline delays and increase airport capacity, and I would be pleased to try to answer any questions you might have.

Senator HUTCHISON. Thank you very much.

Mr. Merlis, Mr. Edward Merlis, who is the Senior Vice President for Legislative and International Affairs at Air Transport Association. Mr. Merlis.

STATEMENT OF EDWARD A. MERLIS, SENIOR VICE PRESIDENT, LEGISLATIVE AND INTERNATIONAL AFFAIRS, AIR TRANSPORT ASSOCIATION OF AMERICA

Mr. MERLIS. Thank you. Good morning, Madam Chairman. I am Edward Merlis, Senior Vice President of the Air Transport Association. I appreciate the opportunity to appear before you to discuss government and industrywide efforts to address air traffic control delays.

It is through a shared commitment to identifying and understanding the interrelated causes of delays that we can solve this escalating problem. Simply stated, our nation's aviation system's

three components of capacity—the airlines, air traffic control, and airports—are out of sync and consequently are not meeting the needs of the traveling and shipping public. Each is under the control of very different forces. Yet all of the components must work together harmoniously if we are going to have a smoothly functioning aviation system.

Before addressing the collaborative efforts between the industry and the FAA, I would like to address a number of unilateral airline-specific actions that have been taken to mitigate delays. While carriers are always adjusting their scheduling practices, the substantial increase in delays over the past few years has intensified the urgency to take such action. Thus a number of specific initiatives have been undertaken in this regard.

For example, last summer American Airlines identified the cascading effect of O'Hare-related flight delays. As you know, an aircraft departing from a city generally travels through a number of other cities in the airline's system before returning to the originating city. Unfortunately, this practice can exacerbate delays in cities unrelated to the initial departure point on a day with adverse weather. In order to minimize these consequences, American has isolated aircraft used for service at O'Hare. As a result, it is anticipated that American's delays arising from O'Hare will not cascade to subsequent cities in its system.

Similar aircraft isolation initiatives to reduce this domino effect of the initial delay have been undertaken by a number of airlines, including Delta, United, and US Airways.

Another action carriers can and have taken concerns smoothing out scheduling peaks. During the course of the day, particularly at a hub, an air carrier clusters flights in order to maximize connectivity among city pairs. Carriers have examined these schedule peaks and taken a number of actions that hold promise. For example, American has smoothed out its peaks at Dallas-Fort Worth.

Continental is engaged in a similar de-peaking exercise that has already borne fruit. During the first quarter of 2001, delays at Newark International Airport, one of the nation's most delay-plagued airports, have been decreased by 20 percent over the previous year, in large measure due to Continental's efforts.

Delta has taken a significant delay mitigation step by increasing the number of connecting complexes or banks at Atlanta Hartsfield International Airport, increasing the number of these banks from 10 to 12 and reducing the maximum number of flights in any bank from 90 to 75. By spreading these flights out over a greater portion of the day, delays arising from peaks have been significantly reduced.

Another action designed to reduce delays has to do with choosing airports. While it is essential that an airline fly where its customers want to go, in certain circumstances there is a measure of passenger flexibility. For example, many are familiar with Southwest's practice of using regional airports such as Midway instead of O'Hare, Islip instead of the three New York-Newark airports, Fort Lauderdale instead of Miami, and Providence and Manchester instead of Boston. Similar efforts of this type include Northwest's increasing service levels at Manchester, New Hampshire, and Portland, Maine, and Southwest's recent transfer of all

of its service at San Francisco International to Oakland in order to increase schedule reliability.

Airlines, however, can only use alternative airports if the infrastructure is available, the costs are not excessive, restrictions on the use of the airport are nonexistent, and, most importantly, there is a market to be served.

Additionally, carriers are also evaluating the gauge of the aircraft they use on particular routes. Delta, for example, has recently announced that it will begin using wide-body 767's on at least one LaGuardia city pair, which, while I may not reduce delays substantially, will increase the passenger throughput through the airport.

There continue to be a number of collaborative efforts between the FAA and the decision to address the capacity and air traffic control system, to accommodate the demands placed on it. Since the summer of 1999, ATA and the FAA have been searching for mechanisms to handle near-term capacity shortages that arise on days with particularly adverse weather. As a result of evaluations of the spring-summer 2000 plan, a number of modifications were made to the spring-summer 2001 program whose operations commenced on April 1st. FAA Administrator Garvey went into those in some detail, so I will not, in light of the fact that I already heard the five bells. But suffice it to say we have already seen improvements during the first month that that program has been operating.

I would like to note that these daily conference calls provide a great opportunity to use the authority contained in S. 633, your bill, so that we can manage the reduction in service in order to accommodate as many passengers as possible. But this collaboration and cooperation between the industry and the FAA is not unusual. There is a long history of it, and we have found other ways of using it as we go forward in developing new technologies.

The Free Flight Phase 1 Program Office appears to be another success along these lines. It reports to the Deputy Administrator, it involves the industry, and has great promise. Another FAA-industry cooperative initiative is Safe Flight 21, in which the industry and the FAA are moving closer to Free Flight, including the development of ADSB, an important tool to combat the problem of runway incursions and surface collisions.

Mention was made earlier of the LAAS and WAAS programs, and the controller-pilot datalink communications system is another collaborative effort. Additionally, the release 2 weeks ago of the NAS operational evolution plan and FAA's continuing consultation with the industry on the plan has a high potential for success. So there are many areas where industry and FAA work well to develop these tools and those are only some of the ones that I have identified.

Last, I would be remiss if I did not acknowledge the contributions of the air traffic controllers. So while my testimony is focused on the institutional relationships between airlines and the FAA, it is the day-in and day-out business of the air traffic controllers that deserves our respect, our admiration, and our appreciation.

I would be happy to respond to any questions.

[The prepared statement of Mr. Merlis follows:]

PREPARED STATEMENT OF EDWARD A. MERLIS, SENIOR VICE PRESIDENT, LEGISLATIVE AND INTERNATIONAL AFFAIRS, AIR TRANSPORT ASSOCIATION OF AMERICA

Good morning, Madam Chairman and Members of the subcommittee. I am Edward Merlis, Senior Vice President of the Air Transport Association of America (ATA).[1] I appreciate the opportunity to appear before you to discuss government and industry-wide efforts to address air traffic control delays. It is through a shared commitment to solving the interrelated causes of delays that we can find our way out of an escalating problem.

Simply stated, our aviation system's three components of capacity—airlines, air traffic control, and airports—are out of synch and consequently are not meeting the needs of the traveling and shipping public. Each is under the control of very different forces. Yet, at the end of the day, all of the components must work together harmoniously if we are to have a smoothly functioning aviation system.

When I appeared before the subcommittee on March 29, I addressed (and endorsed) the legislation that you and Senator Rockefeller introduced—S. 633, the Aviation Delay Prevention Act. At that hearing, I noted that the bill addresses both near-term and long-term issues, e.g. so-called over-scheduling at certain delay-plagued airports and expansion of our airport infrastructure. Today, I would like to review both activities related to the airport capacity conundrum as well as discuss systems and procedures we can utilize to expand air traffic control capacity and minimize delays. Some of these are short-term; a number are long-term.

Airline-specific Actions

Even prior to FAA's issuing the capacity benchmarks; carriers began taking unilateral scheduling actions at certain airports to mitigate delays. For example, last summer American Airlines identified the cascading effect of O'Hare-related flight delays attributable to aircraft utilization patterns. As you know, an aircraft departing from a city generally travels through a number of other cities in the airline's system before returning to the originating city. Depending on the aircraft, routing, and mission, this may take several days or even weeks. Unfortunately, that same practice can exacerbate delays in cities unrelated to the initial departure point on a day with adverse weather. In order to minimize these consequences, American has isolated, to the maximum extent practicable, aircraft used for service at O'Hare. As a result, it is anticipated that delays arising from O'Hare will not cascade to subsequent cities in its system.

Similar aircraft isolation initiatives to reduce the domino effect of the initial delay have been undertaken by Delta, United, and US Airways.

Another action carriers can and have taken concerns smoothing out scheduling peaks. During the course of the day, particularly at a hub, an air carrier bunches flights in order to maximize connectivity among city pairs. Examining these schedule peaks has resulted in a number of important decisions that hold promise. For example:

- American has smoothed out its peaks at Dallas-Ft. Worth International Airport.
- Continental has engaged in a similar de-peaking exercise that has already borne fruit. During the first quarter of 2001, delays at Newark International Airport, one of the nation's most delay-plagued airports, decreased by 20 percent from the previous year.
- Delta has taken a significant delay mitigation step by increasing the number of connecting complexes or "banks" at Atlanta Hartsfield International Airport from 10 to 12 while reducing the maximum number of flights in any bank from 90 to 75. By spreading these flights over a greater portion of the day, delays arising from peaks are being significantly reduced.

Another action designed to reduce delays has to do with choosing airports. While it is essential for an airline to ascertain where its customers want to fly, in certain circumstances there is a measure of passenger flexibility. For example, many are familiar with Southwest's practice often resulting in its use of alternative airports to the main airport in a particular city. Southwest has done this by using Midway instead of O'Hare, Islip instead of the three New York-Newark airports, Ft. Lauderdale instead of Miami, and Providence, RI and Manchester, NH instead of Boston

[1] ATA member airlines include: Alaska Airlines, Aloha Airlines, America West Airlines, American Airlines, American Trans Air, Continental Airlines, Delta Air Lines, DHL Airways, Emery Worldwide, Evergreen International Airlines, Federal Express, Hawaiian Airlines, Midwest Express Airlines, Northwest Airlines, Polar Air Cargo, Southwest Airlines, Trans World Airlines, United Airlines, United Parcel Service, and US Airways. Associate members include: Aerovias De Mexico, Air Canada, KLM Royal Dutch Airlines, and Mexicana De Aviacion.

Logan. Similar efforts of this type include Northwest's increasing service levels at Manchester, NH and Portland, ME and Southwest's recent elimination of all service at San Francisco International Airport in order to increase schedule reliability. In addition to passenger flexibility, however, airlines can only use alternative airports if the infrastructure is available and the cost is not excessive

One other limitation on expansion of this practice is a set of long-standing, grandfathered airport use restrictions. Thus, carriers seeking to expand to Westchester County Airport in lieu of the congested New York-Newark airports, or Long Beach and John Wayne Airport in lieu of Los Angeles International Airport, or San Jose instead of San Francisco, find that there are local limitations on the use of these airports unrelated to capacity. Efforts to lessen these restrictions may bear fruit in our efforts to expand airport capacity in the national system.

Air Traffic Control

There continue to be a number of collaborative efforts between the FAA and the airline industry to address the capacity of the air traffic control system to accommodate the demands placed upon it. First, I would like to address a short-term venture that has grown out of the necessity created by the spiraling increase in delays during the past few years.

Since the summer of 1999, ATA and FAA have been searching for mechanisms to handle near term capacity shortages that arise on days with particularly adverse weather conditions. As a result of evaluations of the spring/summer 2000 plan, a number of modifications were made to the spring/summer 2001 program, whose operations commenced April 1st.

In preparation for that initiative, approximately 3,100 airline and FAA employees went through a joint airline—FAA training process and have now been trained in the goals and methods of the program, the requirements for communications, and the decision making process. Each morning, the air carriers conduct a separate industry-only weather briefing conference call to see if agreement can be reached as to the impact of the daily weather forecast. Subsequently, every two hours during the day, joint conference calls are held between the air carriers' operations centers, FAA's command center, and FAA's field facilities to provide additional information concerning changes in weather, to agree on the plan of operation, to determine how the program for the day is working, and to identify modifications that need to be made.[2]

The program has been in effect for a month, but I think it is safe to say that it is working better than it did last year. There is a greater commitment to its success by both FAA and our carriers. More air carriers are participating and more air carrier employees are involved.

This cooperation and collaboration is not unusual. There is a long history of industry—FAA cooperation in developing and expediting technological advances in the air traffic management, navigation and aircraft operations arenas that we seek to foster.

One of the best examples of FAA-industry collaboration was the effort undertaken to address the Year 2000 computer bug. The Y2K Program has been heralded by many within FAA and the industry as a model for future FAA program management because of the partnership internally at FAA as well as with industry. These partnerships were set out at the beginning of the program and continued through the successful rollover on January 1, 2000.

FAA's Year 2000 Program Office structure can be instructive and useful in developing a set of recommendations for future FAA programs. Our assessment is that FAA's Y2K success is attributable, in large measure, to an accountability structure that included firm deadlines, direct communication with the Administrator, access to funds when needed, and by a collaborative and consultative initiative that engaged all of the affected parties throughout the program's life.

In this same vein, the Free Flight Phase One Program Office is another qualified success in that it reports directly to the Deputy Administrator and is, for all intents and purposes, running on schedule. Another FAA—industry cooperative initiative is "Safe Flight 21," a program that will be instrumental in the development of technologies that move the industry closer to free flight, including the development of Automatic Dependent Surveillance—Broadcast (ADS-B) as an important tool to combat the problem of runway incursions and surface collisions.

FAA—industry cooperative efforts also extend to the Local Area Augmentation System (LAAS) and Wide Area Augmentation System (with the WAAS Integrity and

[2] The authority to coordinate schedules during periods of inclement weather, as provided in proposed section 41722 (b)(1) of Title 49, as amended by S. 633, might prove to be particularly useful if incorporated into the process described herein.

Performance Panel), both working on standards and implementation of Global Positioning Satellites in aircraft navigation. The Free Flight Steering and Select Committees are working on improvements in the routings and handling of aircraft in flight. There is an effort underway to expedite the testing and implementation of Controller-Pilot Data Link Communication (CPDLC), which will provide great improvements in the provision of information back and forth between airliners and controllers.

Lastly, the release two weeks ago of the NAS Operational Evolution Plan—and FAA's continuing consultation with industry on that plan—has a high potential for success.

We appreciate the opportunity that has been afforded the industry to work with FAA on this essential long-term plan. FAA has responded positively to many of the industry's suggestions, particularly those concerning accountability. We feel that the NAS Operational Evolution Plan is an important living document that charts a course to increased air traffic capacity.

There are many areas where industry and FAA work well together to develop various tools—and these are only some of the more formalized working arrangements that exist. There are others that are simply government-industry work groups with no formal titles or mandates other than to confer, compare notes, and collaborate on progress. While progress is not always easy, we believe that these efforts are very worthwhile, and we are constantly seeking new areas in which to cooperate.

Let us not leave out of this discussion the work of the air traffic controllers. While I have focused on the institutional relationships between the airline industry and FAA, it is important to recognize the contribution to this process made by our air traffic controllers. These hard working men and women deserve our respect, our admiration, and our appreciation.

Airport Capacity Benchmarks

We anticipate that passage of the antitrust immunity provision in S. 633 may provide some additional near-term relief. However, we should not set our expectations too high. FAA's OPSNET data consistently demonstrates that about 11 percent of delays are related to "terminal volume" or airline scheduling. Looking at FAA's recent capacity benchmarks thus provides us with an excellent opportunity to quantify how much of that "volume" is related to scheduling. While a number of carriers have been able to smooth out the scheduling peaks at airports where they have the most traffic, it is at airports with large numbers of competitors that the antitrust immunity is necessary to facilitate carrier scheduling coordination to levels below the benchmarks.

We looked at FAA's capacity benchmarks compared to schedules excluding LaGuardia (LGA) and Phoenix (PHX).[3] The results were telling. Adjusting schedules will not provide the dramatic improvement in on-time performance we all seek. The chart attached to my testimony—entitled *Good Weather Analysis of OAG Schedules vs. Airport Capacity Benchmarks* explains this phenomenon.

Let me use an example. It has been well publicized that at Chicago O'Hare (ORD) schedules exceed capacity for three hours of every day. However, in examining the total number of scheduled flights that exceed capacity during those three hours, we find only 66 or 2.7 percent of all (2416) flights scheduled at ORD between the busiest hours of 7 AM and 10 PM.

Madam Chairman, if you look at the second chart entitled *Delays vs. Scheduling*, you will find some particularly revealing information which suggests that the remedy for our delay problem must not be limited to scheduling. The chart shows that there are substantial delays occurring at a number of airports operating at or below the ostensible capacity as reported by FAA. Moreover, it shows that there are minimal delays at several airports operating substantially above the capacity benchmarks. Just to use extremes, at no hour of the day does Detroit operate above the benchmark, yet it has average delays per flight in excess of those at airports such as Dallas-Ft. Worth, Seattle-Tacoma and San Diego, each of which operates above the benchmark.

This finding confirms the FAA Administrator's admonition when the benchmarks were released—that the data was an interesting data set that could provide some useful information to deal with airport capacity issues. When coupled with our analysis of the number of flights exceeding the benchmarks (556 out of 32,030 at the

[3] FAA collected data in September 2000. Due to the interim rules implemented at LGA in January, the relevance of the LGA schedule cannot be determined. Although LGA is included in the charts accompanying the testimony, it is not included in our analysis and computations. PHX has been left out of both the charts and the computations due to errors contained in the schedule data.

29 airports), it clearly indicates that only a small portion of delays (1.7 percent) can be addressed by near-term efforts related to scheduling. Thus, we join with you, Madam Chairman, in focusing on increasing airport capacity in order to keep pace with anticipated demands.

Congestion Pricing and Other Demand Management Schemes

Some have suggested that limits be put on our national economy's demand for air transportation. This is wrong. Throttling back the economy is not a solution. Increasing capacity is the only appropriate response to the public's needs—and in the long run, the only response that the public will accept. Moreover, the more efforts are directed at demand management, the more likely we are to lose focus on the real problems and the more we will fail to provide what the American people want—safe, fast, frequent, efficient air transportation at fair prices.

Congestion or peak hour pricing has been suggested by some as a means to ration airport capacity. Our concern with congestion or peak hour pricing is that these regimes focus on demand management rather than capacity management. In our view implementation of such a scheme is an admission of failure to meet the public's transportation needs—and the demands of our economy.

In an economically ideal world, congestion pricing is a measure of value that should be reflected in the costs paid by the air carriers and their customers. But we do not live in an economically ideal world. Based on conversations with members and staff of this and other congressional committees, we believe that there is a certainty that Congress would require any congestion pricing regime implemented to waive congestion pricing for some classes of users, (particularly those that disproportionately use the air traffic control system in relations to the number of passenger transported) thus undermining any potential congestion mitigation for all and altering the economic underpinnings of such a system.

FAA has indicated that it will soon embark on rule-making proceedings to address congestion pricing, both broadly as well as at LGA. Based upon conversations which ATA has had with FAA staff, it is apparent to us that FAA is inclined to exempt from the congestion pricing regime a set number of slots per day for four special categories: general aviation, service to small communities, new entrants, and international flights. These four categories utilize approximately 30 percent of LGA's daily slots.

Economists we have consulted suggest that for a congestion pricing regime to work at LGA, landing fees need to be increased at least 500 percent. But if 30 percent of LGA's slots are exempted and the remaining 70 percent are subject to the increased fees, we anticipate that there will be no reduction in delays, albeit substantial numbers of passengers will be required to pay roughly $50 per ticket more for the privilege.

Further, the resolution of complex legal, economic, and most importantly, safety issues necessitated by such a scheme will inevitably detract from efforts to address the more critical long-term issues. We are also concerned that fees raised during peak hours to limit demand will not be devoted to commensurate investment in capacity anywhere in the system, let alone at the facility in question. When that happens, congestion pricing is inconsistent with the goal of building and maintaining a safe, healthy, vibrant, and competitive national air transportation system.

Among our other concerns with congestion pricing are the following questions which should be carefully analyzed:

- To what extent will air traffic controllers, both on approach and en route, shuffle aircraft for which congestion-pricing premiums have been levied on passengers?
- How will congestion pricing be established and who will be responsible for setting it?
- Will congestion pricing serve as an excuse not to expand capacity to meet unmet and growing demand?
- How will traffic from small and midsize communities be able to bear the incremental costs arising from peak hour pricing? To what extent would such a system disenfranchise residents of these communities from the national network? Alternatively, pushing service to these communities outside of the peak hours may necessitate residents of those communities adding an additional overnight to a trip, at significant costs that need to be computed.
- To what extent will public policy exemptions—small communities, new entrants, business jets, or government aircraft to name just a few—result in just as much congestion but at higher prices for those not exempted?

- Should a congestion-pricing scheme be revenue-neutral, so as not to build up tempting surpluses that local officials will inevitably seek to siphon off the airport?
- Even if a congestion pricing system is revenue-neutral, should the terms by which grand-fathered airports operate (49 U.S.C 47107(b)(2)) be changed to preclude them from using these funds for non-aviation purposes?
- How will congestion pricing affect feeder traffic flow from small planes and communities that may not be able to afford the peak hour surcharge? Without that feeder traffic and with fewer passengers on the connecting long haul over which the surcharges are spread, to what extent will the scheme have the potential to further increase prices on tickets elsewhere in the network?

Conclusion

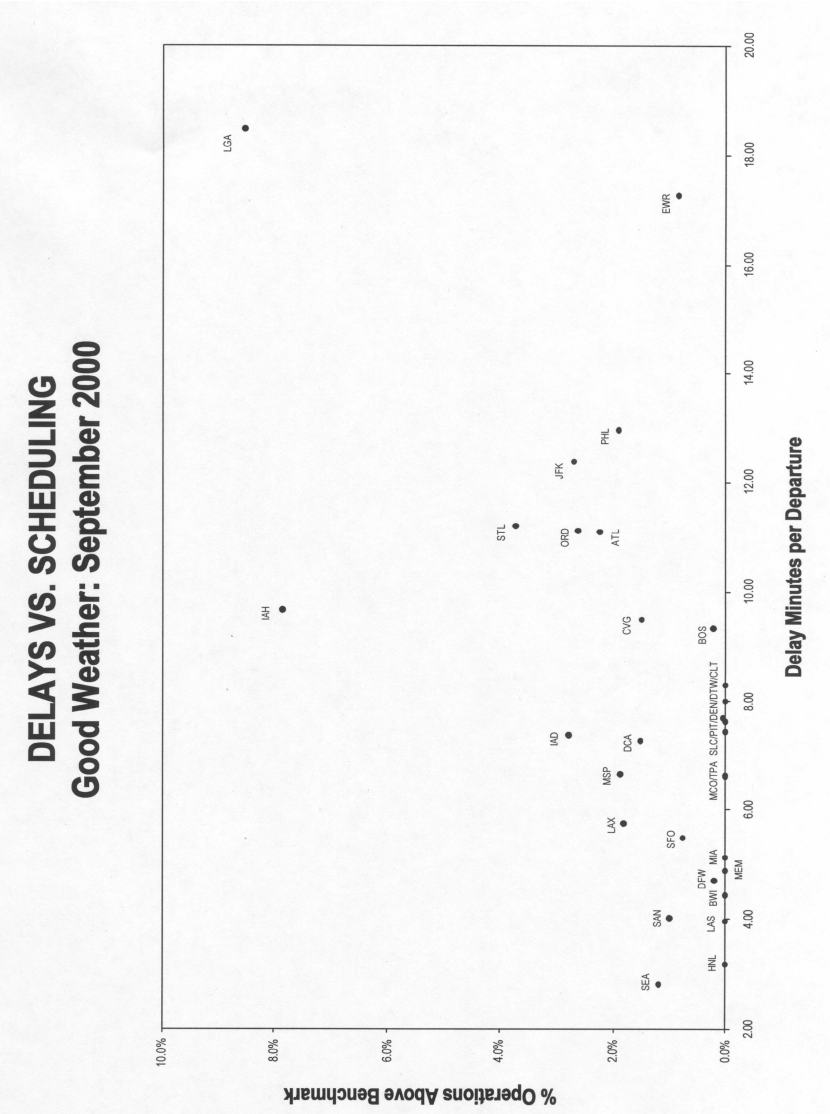
In the long run, the safe and efficient operation of our aviation system is a collaboration of many partners. Where that collaboration operates with common understanding and respect, it holds the greatest promise for long-term success in air traffic control enhancements. We must expand and enhance our infrastructure if we wish to accommodate the growing demand for air travel on U.S. airlines forecast by FAA to reach one billion passengers annually by 2012.

Thank you for the opportunity to present this statement. We look forward to responding to the subcommittee's questions and continuing to work with you on your efforts to reduce delays through airport and air traffic control capacity expansion.

Good-Weather Analysis of OAG Schedules vs. Airport Capacity Benchmarks at 31 Most Delayed Airports (excl. PHX)
(using delay mins. from ATA; all other data from FAA Benchmark Report, based on 0700 to 2200 for days in Sep-00)

	Delays	Hourly Capacity		Hourly	15-Min. Periods > Bench		Daily* Scheduled Flights Exceeding Benchmark						Daily Capacity*		Daily	Daily Hours > Bench	
	Mins./Dept.	Low	High	Sched. Ops.	# > Low	# > High	# > Low	% > Low	# > High	% > High	# > Mid	% > Mid	Low	High	Sched. Ops.	# > Low	# > High
ATL	11.10	185	200	144	11	6	64.0	3.0%	32.0	1.5%	48.0	2.2%	2775	3000	2167	2.75	1.50
BOS	9.34	118	126	86	2	1	4.0	0.3%	1.5	0.1%	2.8	0.2%	1770	1890	1292	0.50	0.25
BWI	4.44	111	120	46	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1665	1800	683	0.00	0.00
CLT	8.29	130	140	70	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1950	2100	1057	0.00	0.00
CVG	9.50	123	125	72	4	4	18.0	1.7%	14.0	1.3%	16.0	1.5%	1845	1875	1074	1.00	1.00
DCA	7.27	76	80	49	4	4	13.0	1.8%	9.0	1.2%	11.0	1.5%	1140	1200	733	1.00	1.00
DEN	7.70	204	218	88	1	0	1.0	0.1%	0.0	0.0%	0.5	0.0%	3060	3270	1322	0.25	0.00
DFW	4.70	261	270	142	2	1	5.5	0.3%	2.5	0.1%	4.0	0.2%	3915	4050	2132	0.50	0.25
DTW	7.99	143	146	82	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	2145	2190	1227	0.00	0.00
EWR	17.27	92	108	73	9	0	18.0	1.6%	0.0	0.0%	9.0	0.8%	1380	1620	1091	2.25	0.00
HNL	3.19	120	126	33	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1800	1890	491	0.00	0.00
IAD	7.37	120	121	70	5	5	30.0	2.9%	28.0	2.7%	29.0	2.8%	1800	1815	1043	1.25	1.25
IAH	9.67	120	123	84	13	13	104.0	8.3%	93.0	7.4%	98.5	7.9%	1800	1845	1254	3.25	3.25
JFK	12.38	88	98	61	6	5	32.0	3.5%	17.5	1.9%	24.8	2.7%	1320	1470	919	1.50	1.25
LAS	3.96	84	85	46	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1260	1275	695	0.00	0.00
LAX	5.74	148	150	125	9	9	36.0	1.9%	31.5	1.7%	33.8	1.8%	2220	2250	1882	2.25	2.25
LGA	18.47	80	81	78	28	28	103.0	8.8%	96.0	8.2%	99.5	8.5%	1200	1215	1167	7.00	7.00
MCO	6.62	144	145	52	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	2160	2175	777	0.00	0.00
MEM	4.88	150	152	42	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	2250	2280	623	0.00	0.00
MIA	5.12	124	134	62	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1860	2010	923	0.00	0.00
MSP	6.65	115	120	79	9	6	26.3	2.2%	18.0	1.5%	22.2	1.9%	1725	1800	1187	2.25	1.50
ORD	11.13	200	202	161	12	12	66.0	2.7%	60.0	2.5%	63.0	2.6%	3000	3030	2416	3.00	3.00
PHL	12.97	100	110	74	11	6	31.0	2.8%	11.0	1.0%	21.0	1.9%	1500	1650	1106	2.75	1.50
PIT	7.63	140	160	73	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	2100	2400	1102	0.00	0.00
SAN	4.03	43	57	32	10	0	9.5	2.0%	0.0	0.0%	4.8	1.0%	645	855	483	2.50	0.00
SEA	2.82	90	91	69	6	6	13.0	1.2%	11.5	1.1%	12.3	1.2%	1350	1365	1042	1.50	1.50
SFO	5.49	95	99	64	4	2	9.0	0.9%	5.5	0.6%	7.3	0.8%	1425	1485	959	1.00	0.50
SLC	7.44	130	132	42	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1950	1980	623	0.00	0.00
STL	11.21	104	112	81	20	9	63.0	5.2%	27.0	2.2%	45.0	3.7%	1560	1680	1214	5.00	2.25
TPA	6.63	110	119	34	0	0	0.0	0.0%	0.0	0.0%	0.0	0.0%	1650	1785	513	0.00	0.00

*Daily defined as the 15 hours between 0700 and 2200



Senator HUTCHISON. Thank you.

They are holding the vote open for me, so I must leave. I do not want to ask you to wait for me to come back, so I am not going to ask questions. I do want to thank all of you. We have your testimony. I think it crosses the lines of all of the interested parties to this and it has been very, very helpful. I thank you and we look forward to working with all of you to get the congestion out of the skies, off the ground, and get our air traffic control system in complete control of our aviation system.

Thank you very much.

[Whereupon, at 11:48 a.m., the Subcommittee was adjourned.]

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