



Air Traffic Control: Symposium on Organizational Reform Options

DETAILS

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**MEETING
SUMMARY**

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Air Traffic Control: Symposium on Organizational Reform Options

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Air Traffic Control: Symposium on Organizational Reform Options was held at the National Academy of Sciences Building in Washington, D.C., on July 7, 2015. Organized by the Transportation Research Board (TRB) of the National Academy of Sciences, Engineering, and Medicine, the symposium featured a keynote presentation and five panel sessions. The symposium began with a keynote presentation on the impetus for reforming the organizational structure of air traffic control (ATC) in the United States and previous efforts at restructuring. The panel sessions addressed examples of the ATC organizational structures and funding options used in other countries, factors to consider in possible changes in the United States, and stakeholder perspectives.

This summary presents key elements from the symposium. Highlights from the keynote speaker are presented first, followed by summaries of the two panel sessions on international experiences with ATC reorganization. Comments from speakers in a session that focused on possible ATC options in the United States and a session on current funding mechanisms are reported next. The summary con-

cludes with comments from the stakeholder panel and the wrap-up by the chair of the symposium planning group. The video recordings of this symposium are available at <http://www.trb.org/Policy-Studies/Blank6.aspx>.

In his opening comments, **Neil Pedersen**, TRB Executive Director, noted that the symposium was sponsored by the TRB Executive Committee in recognition of the timeliness and importance of recent proposals by the ATC organization of the Federal Aviation Administration (FAA) to improve the performance of the ATC system. Pedersen commented that organizational reform proposals have been discussed for decades, during which time most other industrial nations reorganized their ATC operations into air navigation service providers (ANSPs) that, to varying degrees, operate independently of governmental budgeting and management while still being subject to government safety regulations. He stressed that, as with all matters involving the Academies, the symposium provided a balance of perspectives. Pedersen noted that representatives from the U.S. Department of Transportation (DOT) were expected to speak on behalf of FAA but were unable to attend because of a conflict that emerged at the last minute.

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IMPETUS FOR REFORM AND REFLECTIONS ON PAST EFFORTS

Jeffrey Shane, General Counsel for the International Air Transport Association and former Undersecretary for Policy, U.S. DOT, suggested that the opportunity existed to transform the air traffic management system in the United States to dramatically enhance its efficiency, reliability, and sustainability. He remarked that those enhancements would benefit air transportation providers and their customers and observed that the current situation represented a rare moment in public policy making: the moment when, after decades of study and numerous reports and testimony, the potential for action may be present.

Shane commented that U.S. policy on the structure and governance of the ATC system was stuck in a time warp. He noted that of the networks the country depends on for prosperity and economic growth, only ATC requires annual appropriations from Congress for ongoing operations. He remarked that owing to the lack of a federal capital budget, FAA is unable to fund improvements through debt financing, which is used by other nonfederal public agencies to develop and maintain critical infrastructure.

Although the U.S. ATC system is not broken, Shane commented, its structure and governance have become an anomaly. He suggested that the U.S. ATC system is a capital-intensive, technology-driven system linked to an unpredictable political process and that there are better ATC models and compelling reasons for change.

Shane reviewed the numerous studies of air traffic management options conducted since the 1980s. A common element of these studies, he noted, is the observation that the annual appropriations process and federal procurement requirements are increasingly inconsistent with the infrastructure and technology needs of a rapidly expanding and evolving air transportation system. Shane described examples of alternatives that have been explored, including

- A federal corporation,
- A user-funded authority,
- A public corporation,
- An independent government corporation within the U.S. DOT and removed from the federal budget process,

- A government corporation supported by user fees, and
- A not-for-profit government corporation called the U.S. Air Traffic Services Corporation (USATS).

He noted that while none of these changes had been made, an effort to modernize ATC technologies was launched in 2004 with the Next Generation Air Transportation System (NextGen).

Shane next discussed the National Civil Aviation Review Commission, which was established by the 1996 FAA Reauthorization Act. The commission, chaired by retired Congressman Norm Mineta, issued a report the following year recommending a change in the FAA management structure, including the establishment of a new Air Traffic Organization (ATO) within FAA. The ATO was to be performance based and, eventually, funded by user fees; unlinked from discretionary budget caps; and capable of issuing bonds. Shane reported that ATO was established by an executive order signed by President Clinton in 2000 but without any of the recommended funding innovations.

Shane suggested the use of the reverse flip approach (i.e., imagining that the alternative state is in place and that the proposal is to change that policy) when changes in the current ATC system are being considered. He suggested that had the United States established an ATC system as a not-for-profit government corporation that was funded by user fees at the outset, had access to the bond market, and managed technology upgrades via a disciplined capital budget, a proposal to abandon that structure and place the system within FAA probably would not be considered. A move to FAA would require that the aviation safety regulator assume dual responsibilities as provider of air traffic services as well. Further, he noted, the entity created by such a move would not have borrowing authority and would have to deal with federal procurement regulations and with funding based on a complicated assortment of taxes and fees.

In closing, Shane observed that the government was capable of changing. He cited airline deregulation, which occurred in 1978, and the Open Skies treaties for international flights passed in the early 1990s, as

two examples of change. Shane suggested that the time might be right for a well-thought-out change that had consensus among the different stakeholders to help move the U.S. ATC system forward.

INTERNATIONAL EXAMPLES OF AIR NAVIGATION SERVICE PROVIDERS

Two panel sessions featured speakers discussing international approaches to ATC and regulation, including changes in the organization and operation of ATC systems over the past 30 years. The organizational structures and experiences in Canada, the United Kingdom, Germany, Ireland, France, and other countries were highlighted.

Canada

Michael Korens, U.S. representative to NAV CANADA, which is Canada's ANSP, discussed the genesis, organization, and operation of NAV CANADA. He noted that the factors that influenced the change to NAV CANADA included a federal budget deficit, modernization challenges, and a feeling on the part of customers that the situation was not going to improve. Korens reported that the stakeholders considered several options. The NAV CANADA model was recommended on the basis of the perspective that safety oversight of air transportation was inherently governmental but that providing the ATC service itself was not, and that a bold transformational organization was needed to meet future challenges.

NAV CANADA is a non-share capital corporation that provides ATC and weather and aeronautical information to pilots, Korens reported. NAV CANADA evolved from Transport Canada, the government agency that previously had ATC responsibilities. The enabling statute that created NAV CANADA included general principles that continue to guide its operation. Korens highlighted the following examples of these principles:

- Fees not to exceed the cost of services provided,
- Protections against service changes that would have an impact on safety,
- Requirements that some service changes be reviewed by Transport Canada, and
- Not charging more for service in remote areas.

Noting that NAV CANADA's chief executive officer had been with the corporation from the beginning, Korens suggested that NAV CANADA had benefited from stable leadership. He said that although NAV CANADA serves approximately 10% of the flights served by FAA, the corporation is responsible for more North Atlantic air flights than the FAA's centers in New York; Oakland, California; and Anchorage, Alaska, combined.

Korens noted that, as a non-share capital corporation, NAV CANADA does not have shareholders who expect a return on investment or dividend payments. Customer stakeholders have the opportunity to select proxy directors. Two-thirds of the board are proxy directors selected by the groups of stakeholders of NAV CANADA. Korens suggested that NAV CANADA could be thought of as a customer cooperative, noting that, if there are more revenues than costs, the excess revenues are used to lower service charges, retire debt, or fund a major capital project.

Korens highlighted the following results of 19 years of NAV CANADA operation during a period that included the terrorist attacks of September 11, 2001 (9/11); the outbreak of severe acute respiratory syndrome, or SARS; the bankruptcy of Air Canada; and a global recession:

- Improved safety, as measured by losses of separation;
- Lower fees;
- Canada's change from being a technology lagger to a technology leader;
- Major infrastructure modernization and major technology investments;
- In-house development of air traffic management that resulted in a world-class suite of products sold throughout the world;
- Full engagement of NAV CANADA employees in different activities, with employees being a key part of the ongoing success of the corporation; and
- Increased efficiency, with NAV CANADA managing 50% more air traffic with 30% fewer personnel overall but with an increase in the number of air traffic controllers.

United Kingdom

Jonathan Astill, Director of International and Customer Affairs, National Air Traffic Services (NATS), United Kingdom (UK), described the formation and organizational structure of NATS, the objectives and performance of the public-private partnership (PPP), and some of the benefits from this organizational structure. NATS, he said, was established in 1962 and became part of the UK Civil Aviation Authority (CAA) when that entity was established in 1972. In recognition that as a service provider, NATS should be separate from CAA's regulator functions, NATS was reorganized as a wholly owned subsidiary of CAA in 1996. A PPP was also proposed for NATS in 1996 and was incorporated into UK law in the Transport Act of 2000. The PPP was completed in 2001, when the Airline Group purchased 45% of NATS and gained operational control. Astill reported that a 10-year, £1,000 million investment program launched in 2003 was refinanced because of the aviation downturn after the attacks of 9/11.

Astill described the Strategic Partnership Agreement, which governs NATS. The agreement includes the UK government (49%), the Airline Group (42%), Heathrow Airport, Ltd. (4%), and NATS employees (5%). The partnership owns NATS Holdings Ltd., which owns NATS Ltd. One subsidiary company operates the en route business through a 30-year license with CAA, and another subsidiary company operates airport control towers and provides other services. CAA remained with the UK government and has economic, safety, and air space regulatory authority.

Astill reviewed the UK government's objectives for the 2001 NATS PPP. These included

- Maintaining and improving safety and national security,
- Securing access to private-sector capital and private-sector management expertise,
- Providing incentives to improve efficiency,
- Ensuring accountability to users,
- Providing freedom to invest and undertake business overseas, and
- Providing a return to the taxpayer.

Astill noted that several organizational options were examined and that the PPP model emerged as the preferred approach to best balance competing requirements. Reviewing NATS performance against the initial objectives, he noted that significant safety improvements had been realized and that the infusion of private capital had resulted in self-sufficiency, as NATS was not reliant on state funding. He also noted that NATS had attracted executives from the private sector and had realized 40% real reduction in underlying controllable costs but that charges had not been reduced by the same 40% because of pension obligations NATS had inherited and had honored. Other improvements included lower levels of operational delay, fuel savings, higher levels of engagement with airlines, and new business developments.

Germany

Oliver Pulcher, Director of International Affairs, DFS Deutsche Flugsicherung GmbH, reviewed the history of ATC in Germany, noting that the Federal Administration of Air Navigation Services (BFS) was established in 1953 and that the Eastern German Air Navigation Services was integrated into BFS in 1990. DFS was established in 1993. Integration of the civil and military ATC occurred in 1996, and the first DFS subsidiary, FCS Flight Calibration Services GmbH, was created in 2001. Pulcher noted that DFS manages approximately 3 million controlled flights per year, with some 8,400 daily movements; operates four control centers and 16 international towers; and employs approximately 2,900 air traffic controllers.

Pulcher reported that DFS is a limited liability company fully owned by the German government. The institutional framework of DFS includes a supervisory board with representatives from the Federal Ministries of Transportation, Defense, and Finance and other groups and a board of managing directors. An advisory board to the board of managing directors includes representatives from airlines, airports, financial institutions, and other stakeholders.

Pulcher indicated that issues with the former BFS included poor performance in terms of flight delays, flight diversions, and cost; inability to recruit and retain employees because of unattractive salaries and working conditions; constraints on financial management because of federal budget limitations; lack of investment in new technologies;

and outdated personnel management based on civil service regulations. He reviewed the goals of DFS, which include development of an industry-like and performance-oriented organization, establishment of an efficient finance and accounting system, and introduction of a modern personnel management system. Other goals are shaping a customer- and performance-oriented corporate culture and developing an appropriate user charging structure to achieve full cost recovery.

Pulcher reported that the government corporation approach had improved the quality of service and economic performance of DFS and increased the motivation of employees. The flexible use of airspace increased while segregated airspace declined. Shorter and more direct routings increased and delay decreased. Customer orientation improved and the safety record remained high. Pulcher noted that DFS was independent from the federal government budget and that no subsidies were provided. He reported that DFS has achieved full cost recovery, financial control, and independent access to financial markets. DFS has been able to exploit new markets, establish subsidiaries, and undertake consolidation efforts. Pulcher noted that DFS had increased job attractiveness, improved employee recruitment and selection, enhanced the working environment, and provided state-of-the-art management tools.

Ireland

Donal Handley, head of Corporate Affairs, Irish Aviation Authority (IAA), described the roles and responsibilities of IAA, which was established in 1993 and began operations in 1994 as a commercial state-sponsored body. He noted that IAA, which employs 650 staff at five locations, receives no state funding—no loans, grants, or subventions and no bank loan guarantees or other support. Further, Handley reported, IAA paid a corporation tax of 12.5% to the Irish government and provided a dividend of £6.5 million to the government in 2015. Safety, he said, is the essence of the IAA mission.

Handley reviewed IAA's key roles, which, in contrast to the previous examples, include safety regulation of the civil aviation industry, aviation security regulation, communication on the North Atlantic, ATC at state airports, and air navigation services in Irish-controlled airspace. He stressed that safety is the primary corporate objective at

IAA and that IAA is a good example of an integrated service provider with a safety focus. For example, Ireland was second to France in the 2015 International Civil Aviation Organization (ICAO) safety ranking of European countries and fourth in ICAO rankings worldwide.

Handley discussed the importance of Ryanair, which is the largest international airline in the world on the basis of passengers carried. Ryanair, he said, owned 320 aircraft, carried approximately 86 million passengers in 2014, and was projected to carry 160 million passengers by 2024. He suggested that the presence of Ryanair should be considered in any discussion of the workloads and effectiveness of IAA. He also noted that IAA oversees 15 airlines and commercial operators, 8,500 pilots, and 1,500 aircraft maintenance engineers.

Handley described the governance and management of IAA, which includes a nine-member board appointed by the Minister for Transport. The board, which includes members with different backgrounds in aviation, operates through various committees to develop objectives and work plans. IAA's corporate structure includes a chief executive who reports to the board and a director of safety regulation and director of air traffic management operations and safety who both report directly to the chief executive.

Handley described shareholder relations at IAA. He explained that although all shares are held by the Irish government, there is no interference in the day-to-day operations of IAA. He did note that approvals are required for very large capital projects. The government also has the opportunity to provide input to the IAA corporate plan and other strategic planning documentation from shareholders. He also noted that IAA is required to adopt open public procurement methods.

Handley highlighted the following aspects of IAA's experience:

- IAA is in a strong financial position.
- There is clear delegation of safety and service provisions, with no compromise on safety.
- Decisions related to capital investments are made by IAA on the basis of need and resources.
- The scale is a highly suitable structure for Ireland.
- Profits are reinvested to drive future efficiencies and shareholder returns are generated.

- IAA has flexible hiring policies and a broad base of customers.
- IAA is a leader in air traffic management innovations and has partnered with others to develop new technologies and applications.

France

Bruno Fulda, Counselor for Ecology, Sustainable Development, Energy, and Transport, Embassy of France, discussed the French civil aviation organization and operation, including the ATC system. He reported that the French General Directorate of Civil Aviation (DGAC) was responsible for air transportation, infrastructure, economic regulation, air traffic and security, airport policy, and industry policy, including aircraft construction. He described the responsibilities of three major directorates within DGAC as follows:

- The Air Navigation Services Directorate provides ATC services in France as well as related communication, navigation monitoring, and aeronautical information.
- The Air Transport Directorate is responsible for defining the national safety rules required by ICAO as well as those established by Single European Sky.
- The Civil Aviation Safety Directorate (DSAC) is responsible for safety in all areas: planes, personnel, maintenance, ATC services, and other functions.

Fulda explained that DSAC is a national supervisory authority attached by decree to DGAC. By law, he said, DSAC exercises its powers impartially, independently, and transparently. This organizational structure ensures the independence of DSAC and allows DSAC and the Air Navigation Services Directorate to perform their responsibilities within DGAC, which provides a common framework for public services.

Fulda said that the organizational structure within DGAC provides several benefits, including a common culture, needed financial capabilities, the ability to share overhead costs, and direct lines of communications. He also noted that the Civil Aviation Academy is part of DGAC. He reported that the structure works well, as noted by France's

first-place ICAO safety ranking among European countries and third-place ICAO ranking worldwide.

Factors to Consider in the Separation of CAAs and ANSPs

Stephen Welman, Principal Economist, MITRE Corporation, discussed a recent study conducted for FAA¹ that examined examples of the separation of the ANSP from the CAA, which is typically the national safety regulator. The study focused on the experience of the CAA, not the ANSP, in Canada, the United Kingdom, France, Germany, Australia, and New Zealand and was based on interviews with high-level officials in all six countries.

Welman reported six lessons learned that were identified in the study:

1. Allow enough time for the transition to the new structure. Establishing the roles and responsibilities of the new structure and formalizing the regulations for it take time. Therefore, functional separation of the two entities under the same minister of transportation for a period of time while roles and responsibilities are being worked out is beneficial.
2. Establish proper funding for the CAA, which may be exposed to economic downturns under the new structure.
3. Focus on regulatory efficiency. When a CAA is separated from an ANSP, the costs involved in regulating the industry become much clearer, especially if the CAA is receiving funding from the industry.
4. Deal with challenges to employee retention. Separating the two organizations may result in a public-private wage gap. Examining salary levels and planning for salary flexibility at the CAA appear to have been beneficial strategies in some countries.
5. Ensure an open relationship between the CAA and industry.
6. Avoid political interference with daily operations.

¹Brown, D., T. Berry, S. Welman, and E. J. Spear. *CAA International Structures*. Center for Advanced Aviation System Development, MITRE Corporation, McLean, Va., 2014.

OPTIONS GOING FORWARD

This panel focused on possible ATC system alternatives for the United States. The speakers were asked to address different options and approaches, which might or might not reflect their personal views or those of the organizations they represented.

Maintain the Status Quo

Kevin DeGood, Director of Infrastructure Policy, Center for American Progress, spoke about maintaining the status quo. He noted that the Center for American Progress did not have a formal position on ATC privatization but did have questions, some skepticism, and two overarching principles: doing no harm and matching the level of a policy intervention to the level of a problem.

DeGood suggested that the discussion of any possible reorganization should focus on the areas of operations, funding, and procurement. He noted that proponents of ANSP options often assume that the private sector is more efficient than government agencies. He suggested that this often is not the case and that the United States has the busiest, most complex, largest, and safest air system in the world. DeGood observed that there are two funding-related issues to consider: the overall funding level and the method of taxation. He noted that some have argued that the current mix of taxes does not match the cost imposed on the system by different user groups and have suggested that a weight distance tax, which the Center for American Progress supports, is a more efficient approach that does not require privatization to implement. He further suggested that the self-sufficiency of any ANSP option might come at a high price, as funding needed for modernization did not appear to be any easier under ANSP options. He questioned whether different user groups would be willing to pay their fair shares.

Wholly Owned Government Corporation

Dorothy Robyn, an independent consultant and former special assistant to the president for economic policy during the Clinton administration, discussed the USATS proposal, which would have established a wholly owned government corporation funded entirely by user fees with the authority to borrow on the capital markets under certain conditions. USATS would have been regulated by FAA. Robyn noted that at the time, the economy and the

airline industry were in bad shape. Several airlines had declared bankruptcy and all were losing money. She observed that President Clinton had stated that he needed to help get the airline industry back on its feet to help get the economy back on its feet.

Robyn observed that the USATS proposal focused on three major areas that had been examined in previous studies:

- The nature of the ATC system. The ATC system is a business that operates 24 hours a day, 7 days a week, trapped in a traditional government agency. The budgeting process, the lack of a capital budget, and the procurement and acquisition system are key issues in this regard.
- Financing through the air ticket tax. Passengers pay the tax even though the airlines and general aviation are the users of the service. Robyn stated that the interest in a cost-based user fee was an effort to better link the user—the aircraft operator—with FAA as the service provider.
- Separating FAA's role as the regulator of the ATC system from its role as the operator of the system. Robyn suggested that the safety function is an inherently governmental function and that a board of users should not have final decision-making authority over safety regulations that would apply to their operations.

ATO Experience

Russell Chew, investment advisor and former FAA chief operating officer, described his experience as the first manager of ATO at FAA, which was mentioned by Shane in his opening presentation. Chew suggested that the model turned out not to be sustainable partly because the high-level goals for ATO were not clearly defined. He observed that developing a performance-based organization was a method and that the goals were different for different stakeholders. He remarked that the current system within a traditional government agency makes it very difficult to obtain agreement on high-level goals across the many layers of federal and congressional oversight. Without agreement on those goals, he said, it is very difficult to develop appropriate metrics; identifying responsibility for defining and measuring success continues to be an issue. Chew suggested that three key elements to focus on in the discussion of different options were clarity of a vision, urgency

of a mission, and development of goals that focus on desired end states.

Independent FAA

Craig Fuller, Vice Chairman, FAA Management Advisory Council (MAC), who held different positions in the Reagan administration, suggested that progress has been made with each of the different reform efforts that have occurred. As requested by current FAA Administrator Michael Huerta, he noted that MAC examined potential issues to address in the reauthorization process. He reported that MAC met with 27 stakeholder groups to obtain information on issues and concerns regarding the current system and possible future options. Fuller reported that three major topics emerged from these meetings: funding, certification and regulation, and governance. He noted that key funding concerns voiced by different stakeholders included the chaos caused by sequestration, the need to ensure adequate funding to meet projected budget levels, and the inability to borrow for critical capital projects. Fuller reported that issues raised by stakeholders related to certification and regulation focused on the slow certification process in a time of rapid developments in technology. Issues related to governance included difficulties in implementing NextGen because of the need to focus on a new organizational structure.

Fuller suggested that a possible near-term approach would be to establish FAA as a governmental corporation with an independent board; a decision regarding the separation of ATC functions into an independent organization could be made at a later date. He noted that there is no consensus in MAC for that option. He suggested that the process for considering any possible changes seemed to have slowed down and that any reform proposal would probably need to be considered by the next president.

Reform Options

Robert Poole, Director of Transportation Policy, Reason Foundation, summarized two recent projects he assisted with: the Business Roundtable Task Force and the Eno Center for Transportation Working Group. He noted that both projects were multiyear efforts involving numerous stakeholders exploring ATC options. He reported that the outcome of the Business Roundtable Task Force, which was

initiated in 2011, was a nine-page proposal for an ATC nonprofit user corporation; this report was shared with congressional staff and other stakeholders.

The Eno Working Group was initiated in 2013 after sequestration and involved monthly stakeholder meetings, Poole said. He noted that the initial focus of the working group was on funding reform but that the focus was expanded to include organizational reform. The final report included two alternatives: a government corporation and a federally chartered private nonprofit corporation.² Both alternatives would be outside FAA but regulated for safety by FAA. Almost all the stakeholder groups signed on to the final report.

On the basis of his experience with these two projects and his previous work, Poole suggested the following three key items for consideration in any proposal to change the ATC organization:

1. Separating the safety regulation functions from the operation functions to avoid conflicts of interest over safety issues and to alter the organizational culture to be more dynamic and innovative;
2. Changing the funding of the operation of the system from user taxes to user fees; and
3. Making the stakeholders that fund the operation of the system, excluding the safety area, the board that oversees the organization.

He suggested that all three of these interrelated elements needed to be addressed for a successful change to a new ATC model.

FAA FUNDING AND LABOR PERSPECTIVES

Speakers in this session addressed FAA funding and user fees, the Airport Improvement Program (AIP), and possible labor concerns regarding ATC organizational options.

FAA Funding

David Weingart, Executive Vice President, GRA, summarized FY 2013 budget and cost data released

² Center for Transportation. *NextGen Working Group Final Report*. n.d. [https://www.enotrans.org/wp-content/uploads/wpsc/downloadables/NextGen-Final-Report-12am2.pdf](https://www.enotrans.org/wp-content/uploads/wp-content/uploads/wpsc/downloadables/NextGen-Final-Report-12am2.pdf).

by FAA to allow all groups interested in the reauthorization discussion to use the most recently available data set. He presented information on the FY 2013 Enhanced Traffic Management System (ETMS) flight activity by user group and on ETMS miles and hours in U.S. airspace by user group. Commercial passenger aviation accounted for the largest percentage for all three measures: 68% of ETMS flights, 79% of ETMS miles, and 72% of ETMS hours. Weingart noted that the differences between the measures reflect the characteristics of the different user groups, with commercial passenger flights flying at faster speeds over longer distances. He noted that other user groups remained relatively consistent across the three measures, with freight aviation at 4% to 5%, and general aviation—turbine at 9% to 10%. Owing to shorter trip lengths, general aviation—other (piston and rotor) accounted for 9% of ETMS flights and hours but only 4% of miles.

Weingart presented a breakdown of FAA's approximately \$15 billion FY 2013 budget by appropriated accounts and by business units, of which approximately 71% came from the Airport and Airway Trust Fund. ATO accounted for approximately 62% of the total budget when facilities and equipment costs were included, he said, and the Aviation Safety (AVS) portion, which represents what the residual FAA might include in many of the reorganization options, accounted for approximately \$1.2 billion, or 8% of the total budget.

Weingart estimated that, on the basis of FAA's accounting systems, the total FY 2013 ATO cost of service was approximately \$11 billion, including labor, capital, facilities direct support, indirect and overhead expenses, contract support services, and other operating costs. This cost compares, he noted, to FY 2013 receipts of \$12.9 billion in excise taxes deposited to the Airport and Airway Trust Fund (see sidebar).

Weingart suggested that changing from the current excise tax system to an international-style user fee system would alter what drives payments by operators and the revenue to the ANSP. Rather than the current excise tax drivers, Weingart said, the appropriate drivers for an organization based on user fees would typically include the number of flights, the distance flown in U.S. domestic airspace, the distance flown in U.S. oceanic airspace, and the aircraft weight.

Airport and Airway Trust Fund Shares and Sources of Revenues, FY 2013

- 68% from transportation of persons by air (7.5% domestic ticket tax, \$3.90 per domestic passenger flight segment),
- 22% from the use of international air facilities (\$17.20 per international passenger arrival or departure and \$8.60 per passenger departure from Alaska and Hawaii),
- 5% from transportation of property (6.25% cargo waybill tax on domestic shipments), and
- 5% from fuel taxes: aviation commercial fuel use (4.3 cents per gallon), aviation fuel other than gasoline (21.8 cents per gallon, noncommercial use), aviation gasoline (19.3 cents per gallon), and liquid fuel used in a fractional ownership flight (35.9 cents per gallon).

Airport Improvement Program

Stephen Van Beek, ICF International, discussed the AIP, which accounted for 22% of the FAA budget in FY 2013. He suggested that while the AIP had not been considered extensively in the context of ATO reform, it was indispensable to any discussion of aviation policy reform. He further suggested that ATO reform was not possible without considering aviation policy reform, as the policies and funding were linked. He noted that the AIP was a key part of the creation of the Airport and Airway Trust Fund in 1970. The trust fund was established to address the realization that it is impossible to fund major infrastructure projects on appropriations with no capital budget. Van Beek commented that the AIP accomplished its intended goals for almost 35 years when the annual growth in taxes was in the range of 3% to 4%, noting that those rates of growth did not continue as a result of 9/11, the global recession, airline bankruptcies, and other factors. He commented that the source of future revenue was a key question.

Van Beek observed that with approximately 500 commercial service airports and 5,000 public-use airports in the country, the importance of the AIP varied by airport size: most of the public-use

airports rely on the AIP to fund capital projects, while large commercial airports rely less on the AIP. He described some of the recent issues with funding the AIP, including lapsed appropriations, expired authorizations, sequestration, and the transfer of funds from the AIP to ATO and suggested that large airports were interested in the discussion of ATC options and ATO funding.

Van Beek questioned how the AIP would be funded without the various taxes and by reliance on user charges alone. He suggested that legal issues might arise from users allocating an AIP paid for from user fees and that funding the AIP out of the general fund did not meet the requirements for stable, long-term capital funds. He suggested that if a higher ceiling was allowed through the passenger facility charge program, which is currently limited to \$4.50, larger airports could charge a higher passenger facility charge and not need the AIP, which would either lower the overall AIP budget or allow more funds for smaller airports. From the perspective of airports, Van Beek said, the two major questions related to ATO reform and the AIP are (a) What is the funding source backing the AIP, and is it financially sustainable? and (b) If there is a sustainable funding source, who decides how projects are selected?

Labor Perspective

Michael Perrone, President, Professional Aviation Safety Specialists (PASS), discussed labor concerns about possible changes in the ATC system, which were also addressed in the next session. PASS represents approximately 11,000 FAA employees in both ATO and AVS, he said. These employees have responsibility for maintaining, certifying, inspecting, and supporting ATO and AVS functions. Perrone suggested that the United States had the safest, most efficient, and largest ATC system in the world, and he praised the dedication of the work force represented by PASS. He said that PASS had concerns about some of the recent proposals for making ATO into a separate private nonprofit corporation and that PASS supports maintaining FAA as a single unit. The current FAA organizational structure is not broken, Perrone said, and there are numerous questions with regard to the various proposals to change the FAA structure. He noted that the current system provides an important focus on safety, and he raised concerns that the focus on public benefits might be

lost with a transition to another system. Perrone raised concerns related to the impact of leaving AVS behind, the impact of any changes on the momentum to implement NextGen, and the need to add and train 400 to 600 inspectors.

STAKEHOLDER PERSPECTIVES

The final panel session included representatives from different airline, airport, pilot, labor, and business stakeholder groups. Their perspectives on options and issues were presented and discussed.

Sharon Pinkerton, Senior Vice President, Airlines for America, suggested that there appeared to be an opportunity for changes in the ATC system that would benefit everyone. She said that the FAA organizational and funding structure, rather than the people, was the key issue and that Airlines for America had examined the different organizational models used in other countries and endorsed some fundamental concepts for changes in the United States. These concepts include separating air traffic responsibilities from safety regulator responsibilities and adequately funding the independent ATC organization through an equitable and fair user fee mechanism. Pinkerton also noted that Airlines for America supports a governance board composed of stakeholders and users and suggested that while issues may arise during a transition period, they are not insurmountable and that the United States can learn from the experiences in other countries. She commented that Airlines for America wanted to be a constructive part of the ongoing conversation within the aviation community.

Jim Coon, Senior Vice President of Governmental Affairs and Advocacy, Aircraft Owners and Pilots Association, applauded those examining approaches to improve the current system but noted that it was not an easy task. He said that the general aviation sector was open to discussions of options but was concerned about moving to a privately operated system focused more on economic returns than on public use. He commented that general aviation appeared to have suffered in other countries that changed to private ATC operations. He suggested that the current fuel tax-based funding system for general aviation was very efficient and effective for both the general aviation industry and FAA. Observing that the system was not broken from a general aviation perspective, he said that while

funding and managing large-scale capital projects can be difficult, the overall funding for the ATC system had increased over the years. He commented that the Aircraft Owners and Pilots Association had concerns about the potential ramifications of different alternatives, and he encouraged the examination of possible impacts on all user groups.

Patricia Gilbert, Executive Vice President, National Air Traffic Controllers Association, noted that the unpredictability of funding, and not necessarily the funding levels, continued to be a concern for the association. She stressed that safety, rather than producing a profit, had to be the number one priority with any ATC organizational option. She indicated that a nonprofit organization, such as NAV CANADA, may be an appropriate model. Gilbert noted that other important considerations from the perspective of the National Air Traffic Controllers Association include maintaining service in rural America, modernizing the system, and retaining the current well-trained workforce. She noted that the association wants to be part of developing a solution and that the details of any reforms would be important.

Joel Bacon, Executive Vice President, American Association of Airport Executives, said that the discussion focusing on the long-term best interest of all groups was encouraging. He stressed that considering long-term needs both in the air and on the ground was important and that transformational funding options for airport infrastructure should be considered to meet growing needs. He said that the AIP is an important part of the funding mix today and that some level of steady ongoing federal funding should continue in the future, in combination with other sources such as the passenger facility charge and other local self-help programs. Bacon noted that the airport community was open to discussing trade-offs between AIP funding and raising the ceiling of the passenger facility charge, which was last increased in 2000. He noted that the end result should not be a step forward for the ATC system and a step backward for airports, but steps forward for both.

George Kelemen, Senior Vice President, Airports Council International, agreed that a balanced approach that addresses both air and

ground needs is important. He stressed the need to include representatives from both large and small airports on the governing body of any new ATC organization and suggested that a mechanism to give communities a voice in discussions of airspace use in their areas is important. He noted that a thoughtful and balanced approach that included all aviation and airport sectors is needed.

Ed Bolen, President and Chief Executive Officer, National Business Aviation Association (NBAA), said the United States has the largest, most diverse, safest, and efficient ATC system in the world. He noted that NBAA has been actively involved in NextGen because the ATC system needs the ability to accommodate future growth and demand. Business aviation, he observed, is sometimes not allowed to use airspace and airports because of congestion. Bolen highlighted points from recent NBAA congressional testimony, including the need to ensure the expansion of capacity to accommodate all users. He expressed skepticism about organizational reform and commented that NBAA had concerns that a new system would be dominated by self-interested stakeholders to the detriment of the public and businesses. Bolen stated that the United States has the largest general aviation system in the world and that this system contributes to the economic vitality of the country.

WRAP-UP

The chair of the symposium planning committee, **John Fischer**, independent contractor and former Congressional Research Service staffer, provided closing comments. He stated that the wealth of information provided by the speakers on experiences with and benefits of different ANSPs, issues with and opportunities for the current U.S. structure, and perspectives from different stakeholders groups enriched the ongoing discussion of possible changes in the current system. Fischer further suggested that the symposium speakers pointed out the importance of involving all stakeholders and points of view in these discussions, clearly defining goals for any change, maintaining appropriate governmental safety oversight with any new structure, and addressing stable and ongoing funding needs.

ACKNOWLEDGMENTS

This meeting summary was prepared by **Katherine F. Turnbull**, Texas A&M Transportation Institute, as a factual summary of what occurred at the symposium. The committee's role was limited to planning the meeting. The statements made are those of the author or individual meeting participants and do not necessarily represent the views of all meeting participants, the planning committee, the symposium, or the National Academies of Sciences, Engineering, and Medicine.

The summary was reviewed in draft form by **Robert Poole** of the Reason Foundation, **John Strong** of the College of William and Mary, and **Richard Golaszewski** of Gellman Research Associates, Inc., to ensure that it meets institutional standards for quality and objectivity. The review comments and draft manuscript remain confidential to protect the integrity of the process.

PLANNING COMMITTEE ON AIR TRAFFIC CONTROL: SYMPOSIUM ON ORGANIZATIONAL REFORM OPTIONS

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