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Cladys Jackson
Wings member since 2003

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NextGen and You

Top aviation officials have not spent every waking moment so far this year discussing reauthorization and the Next Generation Air Transportation System (NextGen)—it only seems that way.

Here’s a question: what does it all mean for your airport? Yes, a busier and more efficient system means more planes on your runways and at your gates. (Assuming—and this assumption is A380-big—that FAA and Congress get the funding side of this whole deal together to pay for the system and the on-ground capital improvement projects that must come with it.) But what does it mean, from an action-item standpoint, in terms of getting from here to there?

Regarding NextGen, the to-do list for the other aviation segments is pretty straightforward: FAA must craft a plan to build the system and find the fortitude to stick to the plan. Operators must equip their aircraft with the necessary tools—mostly avionics—to operate in the NextGen. Vendors must develop the hardware and software that ties it all together. None of that is negotiable—minus any single piece, the NextGen puzzle isn’t complete.

Automatic Dependent Surveillance-Broadcast (ADS-B)—NextGen’s “backbone” (FAA’s word)—is coming, and it has the potential to change a lot more than how aircraft are tracked from takeoff to touchdown. Airports in mountainous areas, where full radar coverage is impossible, will have happier customers (and fatter bottom lines) as ADS-B gives pilots the precision guidance they need to make safe approaches in less-than-ideal weather, thus cutting down on diversions. Airfield safety stands to gain much from a National Airspace System-wide ADS-B deployment; at the extreme, both aircraft and ground vehicles could be tracked, and their locations made visible to pilots, drivers, and of course air traffic controllers.

None of this is news—nor is it pie-in-the-sky stuff that has yet to be proven. ADS-B programs like Capstone in Alaska and the UPS-led efforts at Louisville and elsewhere in its system (the carrier has more than 100 Boeing 757s and 767s outfitted with ADS-B displays) have demonstrated the technology’s potential. FAA and Colorado have teamed up to bring multilateration—considered by many to be a transitional step to ADS-B, as it uses the same ground receivers and requires nothing new on aircraft—to the state’s mountain airports. Their goal: improve safety and cut down on flight delays and diversions that number, on average, 75 per airport per day in the winter months, state officials report. On the ground, companies like Sensis have delivered multilateration-based vehicle-tracking systems to airports in the U.S. and Europe.

What must airports do to ensure they are NextGen ready? Perhaps more importantly, what can airports do to ensure they will take maximum advantage of the new system?

So far—from this writer’s perspective, at least—there hasn’t been enough time dedicated to discussing such questions, or engaging the airport community in this impending sea change. When NextGen funding is on the table, airports are given a seat (and are thankful for it). But too often, it seems, the technical side of NextGen embraces the operators, vendors, and regulators, but relegates airports to spectator status, if they’re in the room at all. (Here’s where members of the airport community can do a better job of getting involved. Rosters from three FAA-sponsored ADS-B industry days in 2006 and one RTCA symposium on NextGen this past March listed some 600 attendees combined. Not one works for an airport.)

Let’s change this. If your airport is involved in NextGen-type work—from ADS-B or multilateration projects to getting new, satellite-based approaches and anything in between—drop me a line. I want to hear about your experiences and spread the word.

I don’t know much about NextGen, but I know this: No matter how the system operates in 2025, it will start and end where it does today—at your facilities. To me, that’s more than enough to put airports at the center of any NextGen-related discussion.

Sean Broderick
Editor
sean.broderick@aaae.org
AAAE Chair Roberts Leads Hill Charge

AAAE Chair Elaine Roberts, A.A.E., has urged members of the House aviation subcommittee to raise the cap on PFCs and increase AIP funding to help airports keep pace with escalating passenger numbers and steadily climbing construction costs.

Roberts, AAAE President Charles Barclay, and other airport industry witnesses testified March 28 as part of the subcommittee’s consideration of FAA reauthorization legislation. The airport representatives asked lawmakers to increase the cap on PFCs from $4.50 to $7.50 and to index PFCs for higher construction costs. They also recommended that Congress increase AIP funding to $3.8 billion in fiscal year 2008, $4.0 billion in fiscal year 2009, and $4.1 billion in fiscal year 2010.

Roberts, president and CEO of the Columbus Regional Airport Authority, said that raising the PFC cap to $7.50 is important to the “long-range requirements” of Port Columbus International Airport and would generate about $10 million in additional revenue per year. She explained that the airport has used PFC revenue for extending runways and other airside capacity projects and for adding gates in the terminal.

Subcommittee Chairman Rep. Jerry Costello (D-III.) commented that, “There is no question that there has been a loss of (PFC) purchasing power, and we must increase the cap to adjust for inflation.” But he voiced concern about expanding PFC eligibility as the administration is proposing and suggested that additional PFC revenue should be used “to promote national policies and goals such as increased capacity, safety and competition....”

Barclay also told lawmakers that airports are being hit hard by construction inflation that has “absolutely ravaged” the existing elements of financing for capital improvements.

Barclay pointed out that FAA predicts passenger enplanements will increase from 740 million today to one billion by 2015, which is the equivalent of adding the entire U.S. population to an already constrained system. Airport executives are “very concerned” about their ability to meet this upcoming demand for capacity, he said. He noted that it takes seven to 10 years or more for any major capital development at airports to be completed. “So we need to be starting right now for things we want in the system and operating in the next decade,” he said.

Barclay also told lawmakers that airports are being hit hard by construction inflation that has “absolutely ravaged” the existing elements of financing for capital improvements.

According to the January 1, 2007, Means Construction Cost Indexes, the average construction costs for 30 major U.S. cities have jumped more than 24 percent in the past three years, climbing at an average annual rate of more than 7.5 percent.

Barclay said that, although airports collected about $2.4 billion from PFCs last year, the value of PFCs has eroded over time due to inflation and higher construction costs. Unless Congress takes corrective action, a $3 PFC by 2010 will be worth only $1.55, and a $4.50 PFC is expected to be worth only $2.56.

James Bennett, A.A.E., president and CEO of the Metropolitan Washington Airports Authority and chair of the Airport Legislative Alliance (ALA) Policy Roundtable, also supported an increase in the PFC cap to $7.50 and voiced his support for the administration’s proposal to increase AIP discretionary spending. Bennett endorsed the administration’s proposal to streamlining the PFC application and approval process. However, he testified that FAA should “provide notice within a 30-day period if it does not expect to grant PFC authority for a project” to
Airport executives who testified March 28 agreed that, absent an increase in AIP funding and a higher PFC cap to help fund capital improvements, the forecasted passenger growth would soon leave their facilities grappling with capacity issues.

give airports a chance to make their case to the agency.

The O’Hare Modernization Program is another good example of PFC revenue and AIP funds being used for major airside capacity projects, according to Nuria Fernandez, aviation commissioner for the city of Chicago. She told panel members that 35 percent of the funding for Phase One of the modernization project will be generated by PFC revenue and AIP grants. “As we work toward Phase Two, AIP and PFC will again play a significant role in funding the completion of the OMP,” Fernandez said.

Karen Ramsdell, director of Santa Barbara Municipal Airport, discussed how her airport is using PFCs to expand capacity on the landside. She explained that the airport intends to use PFCs to help fund a $63 million terminal project. Enplanements at Santa Barbara are expected to increase from approximately 414,000 in 2006 to more than 600,000 in 2020—more than a 45 percent increase, she said.

Ramsdell, Gary LeTellier, A.A.E., manager at Southwest Oregon Regional Airport, and Douglas Kimmel, manager at Williamson County (Ill.) Regional Airport, opposed the administration’s proposal to reduce the federal matching share for small hub and smaller airports from 95 percent to 90 percent. Ramsdell pointed out that “the difference between a 10 percent match and a 5 percent match can mean the difference on whether a project is constructed.” LeTellier testified that, “Given the growth that our airport is experiencing, a 5 percent increase in matching fund requirement now would prevent us from moving forward with many of our planned construction projects.”

In addition, Barclay emphasized that passenger growth would soon leave their facilities grappling with capacity issues.

Eugene, Ore., city officials named Tim Doll, A.A.E., the new Eugene Airport manager, effective April 16. Doll moves from Little Rock (Ark.) National Airport, where he was director of operations and the primary airport security coordinator. Doll replaces retiring Eugene Airport Manager Bob Noble. … The FLO (Fast Lane Option) Alliance, led by Saflink, announced it has been selected by Huntsville International to develop a Registered Traveler program. … Smarte Carte on March 2 resumed its baggage cart service at Orlando International Airport after a five year absence. … Siemens and Lithuanian partner Lemminkainen Lietuva will widen, lengthen and provide ICAO Category 2-standard lighting for a runway at the country’s Palagana Airport. The work will be done this year. … BWI Thurgood Marshall Airport renewed its contract with ARINC Managed Services to support and maintain the common-use passenger processing system and flight information displays for the International Terminal, ARINC reports. … Lambert St. Louis International saved $13 million in debt service costs thanks to a bond refunding, city Comptroller Darlene Green announced. … A University of Louisville economic impact study of Louisville, Ky., airports found that the facilities generated $4.5 billion in total direct and indirect business expenditures in 2005. … General Aviation Manufacturers Association reports that piston airplane shipments totaled 2,465 in 2006, an 11.6 percent increase over 2005. Shipments of turboprops increased 11.5 percent to 407 units. Business jet shipments increased 18 percent in 2006, to 885 airplanes.

Construction briefs are on page 30.
Retail Briefs are on page 39.
Tech Briefs are on page 53.
FAA Forecasts Fuller Skies

FAA’s just-released 2007-2020 commercial aviation outlook projects that U.S. commercial air carriers will transport 1.2 billion passengers annually by 2020, while the industry remains on track to cross the one billion passenger mark by 2015.

Planes will become fuller, as the load factor is expected to reach 80.3 percent by 2020, and the passenger trip length is forecast to increase by more than 130 miles during the same period to reach nearly 1,200 miles.

The agency said it continues to be optimistic about the future, noting that the airline industry has survived and thrived in the uncertain years since the terrorist attacks of 2001.

In domestic markets, FAA said capacity should increase 2.1 percent in 2007, with revenue passenger miles climbing 2.8 percent and enplanements rising 3.6 percent. Regional carrier capacity will gain 2.9 percent, boosted in part by stronger feed traffic from legacy carriers. The average size of domestic aircraft is forecast to increase this year by 0.3 seats to 120.5 seats, FAA said. Network carriers are reconfiguring their domestic fleets to increase the number of seats, while low-cost carriers with relatively smaller aircraft
sizes continue to grow at a faster rate. Further, the number of commercial aircraft is expected to increase from 7,626 in 2006 to 11,203 in 2020, an average annual growth rate of 2.8 percent or 256 aircraft.

Over the entire forecast period, strong economic gains in the Asia/Pacific and Latin American regions will produce passenger growth averaging 7.0 percent and 4.8 percent, respectively, in these markets, FAA said. Passenger traffic is projected to grow an average of 4.1 percent annually in Atlantic markets and 3.6 percent annually in Canadian transborder markets.

General aviation is expected to receive a boost this year from the certification of Very Light Jets (VLJs), which may redefine on-demand air taxi service, FAA said. In 2008, the agency projects that 350 VLJs will enter the GA fleet, with that figure growing to 400-500 per year through 2020. Partly as a result of the VLJ influence, the number of GA hours flown is expected to increase an average of 3.4 percent annually through 2020, the agency said.

Activity at the combined FAA and contract towers is forecast to increase 2.2 percent this year, reflecting a surge in non-commercial activity; rise 2.7 percent in 2008; and increase 2 percent annually over the remaining 12 years of the forecast period, reaching 81.1 million operations in 2020.

The network carriers in 2006 experienced the beginning of a turnaround in their finances despite increased competition and higher fuel prices. Low-cost and regional carriers are impacted by higher fuel prices as well, and carriers have deferred deliveries of new aircraft and trimmed growth plans to sustain profitability.

“We see the industry returning to a period of sustained profitability buoyed by a strong national economy,” FAA said. “In the long run, a healthy industry, inexpensive tickets, and increasing demand for seats aboard aircraft should bode well for consumers.”

SCAS Grants Available
DOT has called for communities to apply for grants under the Small Community Air Service Development Program (SCASDP). The deadline for applications is April 27.

Congress approved $10 million for the program this year. The program’s authorizing statute limits DOT to a maximum of 40 grant awards, with a maximum of four grants per state, in each year the program is funded. However, last year DOT only selected 28 communities to participate after Congress approved $10 million for the program in fiscal year 2006.

The law does not set any limits on the dollar amount of individual awards, and the amounts awarded will vary depending upon the features and merits of the proposals selected.

Over the past five years, grants
have ranged from $20,000 to nearly $1.6 million. Grant funds do not have to be spent in the year the award is made, nor do they need to be used within a one-year period. Authorized projects may include activities that extend over a multi-year period under a single grant award. Generally, however, grant awards have not exceeded a three- to four-year period.

Eligible applicants are communities that are served by an airport that was not larger than a small hub in calendar year 1997 and had insufficient air service or unreasonably high air fares. Communities that do not currently have commercial air service also are eligible, but they must have met or be able to meet in a reasonable period all necessary FAA requirements for the type of service specified in their grant proposals.

Communities served by medium and large hub airports are not eligible to apply. However, small communities that meet the basic criteria and currently receive subsidized air service under the Essential Air Service (EAS) program are eligible to apply for funds. DOT’s order may be viewed at http://dms.dot.gov/searchdocument.cfm?documentid=455917&docketid=27370. The docket number is OST-2007-27370.

The department’s call for applications comes as Congress begins work on the FAA reauthorization bill, which also contains authorization for the SCASDP.

AAAE President Charles Barclay testified March 8 before the Senate aviation subcommittee, which is considering the administration’s FAA reauthorization proposal. Barclay said that airports support working with the subcommittee to obtain “stronger smaller community air service provisions.” AAAE and the Airport Legislative Alliance (ALA) are urging Congress to increase funding for the Small Community Air Service Development Program to $50 million per year.

### AAAE Board Allocates Funds to Raise Isbill Endowment To $2 Million

AAAE’s Board of Directors, following through on a long-standing commitment, has authorized a transfer of reserve funds to the AAAE Foundation for the H.G. Isbill Endowment Fund. The move means the endowment’s holdings now match the $2 million goal originally established for the fund. The decision to allocate an additional $800,000 was made during the recent board meeting in January.

“The Board’s decision completes a long-standing pledge to reach $2 million in the Isbill Endowment,” said AAAE Chair Elaine Roberts, A.A.E. “The association is proud to support A.A.E.s and other deserving recipients through the scholarship programs that the Foundation and Isbill Endowment support.”

The Isbill Endowment assists in funding AAAE Foundation scholarship programs by contributing the annual earnings on its endowment, which together with other association-generated funds, meets the annual needs of the scholarship programs. Since 1989, the AAAE Foundation has awarded nearly $2 million to more than 1,000 individuals as scholarship grants.

For more information on the AAAE Foundation or to make a contribution, see www.aaae.org/foundation or contact AAAE at (703) 824 0504.

### Revamp At LAX

Los Angeles officials have broken ground on a $723.5 million project to renovate the Tom Bradley International Terminal at Los Angeles International Airport. The construction will include addition of an inline checked baggage screening system, as well as a second boarding gate for New Large Aircraft.

Officials said the terminal rehab is the largest individual project in the city’s history and is intended to help the airport retain its competitiveness as an international gateway, especially to the Asia/Pacific region. In addition, the construction work will be performed while the terminal is fully operational.

The project, which is scheduled for completion in March 2010, will add approximately 45,000 square feet of space in the terminal to house a $140-million, in-line baggage security screening facility. Interior improvements will include upgrades to the arrivals level lobby and concourses. Renovations to the passenger boarding lounge and outside ramp area at Gate 123 on the north end of the terminal concourse will create a second gate to accommodate the new generation of jets such as the Airbus 380 and Boeing 747-800. Gate 101 on the south end of the terminal concourse was renovated last June to accommodate the new jets in advance of test flights.

Four new “mega” airline lounges will replace 16 individual lounges and expand the terminal’s overall lounge space to 47,000 square feet—an increase of 72 percent over current space. Three of the new lounges will serve airline alliances, and the fourth is for customers of airlines not affiliated with an alliance.

The program will involve the installation of modern technology such as dynamic video monitors that automatically update flight status and information technology components that support the upgrades and promote better passenger flow, officials said.
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FAA Expands ADS-B

FAA’s Joint Resources Council (JRC), a team of top agency executives, has approved funding for the next phase of the Automatic Dependent Surveillance-Broadcast (ADS-B) program, which runs from 2009 to 2014. ADS-B is intended to serve as the cornerstone for the agency’s Next Generation Air Transportation System (NextGen) program, which will transition the nation’s airspace system from ground-based to satellite-based.

The JRC also selected three vendors to participate in further acquisition activities leading to a contract to establish the ADS-B ground infrastructure and provide broadcast services. The vendors are ITT of McLean, Va.; Lockheed Martin of Rockville, Md., and Raytheon of Marlborough, Mass.

In June 2006, the ADS-B program received JRC approval for segment one, along with funding for 2007 and 2008. In segment one, FAA will install ADS-B at Philadelphia, Louisville and Juneau, plus install new stations on oil and gas platforms in the Gulf of Mexico, where there is no radar surveillance. Segment one also includes the expansion of ADS-B broadcast services along the East Coast, throughout North Dakota, and along the lower part of the U.S. to Arizona and through Southern California. In addition, it involves the development of ADS-B separation standards and software to interface between ADS-B and other air traffic control systems.

Further, the JRC approved moving the Alaska Capstone project into the national ADS-B program, as well as expanding Capstone services within the state. Alaska, the location for the operational evaluation of ADS-B and other aviation safety services, experienced a dramatic reduction in its fatal accident rate through the Capstone program. FAA said that combining Capstone with the national ADS-B program ensures that development of the Alaska aviation infrastructure will be on par with the national infrastructure as developed in the lower 48 states.

An Airbus A380 staffed by Lufthansa flight crews completed a 12-day, seven-city route-proving exercise in the second half of March that included stops at three U.S. gateways: New York Kennedy, Chicago O’Hare, and Washington Dulles. The trips included the first realistic turn of an A380, in Frankfurt. Lufthansa turned A380 MSN 007—which is slated to end up with customer Etihad—in 95 minutes on March 25, between a flight from Hong Kong and one to Dulles. The turn, which included handling some 480 passengers and a full complement of catering supplies, went “better than expected,” one U.S.-based Airbus executive said. A second A380, outfitted with flight-test equipment and crewed by Qantas, visited Los Angeles International during the month.
MKE Markets With Hometown Tunes

Milwaukee General Mitchell International Airport (MKE) has introduced a free music download program, Air Play: MKE Never Sounded Better, as part of its strategy to define itself as a low-stress alternative to nearby Chicago O'Hare International (ORD). Air Play spotlights songs in a “virtual lounge” setting that allows travelers to decompress and download tunes.

To be released quarterly in 2007, Air Play collections from Milwaukee musicians will be packaged for download on www.AvoidTheChicagoORDeal.co, and be accompanied by a printable CD booklet. Air Play is accessible to anyone who registers at www.AvoidTheChicagoORDeal.co. MKE is coupling the Air Play launch with a sweepstakes for a pair of free airline tickets on Midwest Airlines, and iPod giveaways.

According to Patricia Rowe, Mitchell Airports marketing and PR manager, Air Play adds a dynamic new layer to the airport’s online marketing effort, which for the past several years has urged travelers to “Avoid the Chicago ORDeal! Fly MKE!” The campaign funnels website visitors to an airfare comparison tool that displays side-by-side fares from both ORD and MKE; the tool also takes into account fees for daily covered parking.

Rowe said she anticipates Air Play will catch on with the airport’s top Illinois passengers, who have been identified in research to be technology savvy and enjoy such music as classical and jazz, genres that will have major play in the program.

The debut collection, Air Play Jazz, features trumpeter Jamie Breiwick and saxophonist Curt Hanrahan. “By packaging locally grown music that represents the essence of Mitchell Airport—easy, smooth, happening—we’re resonating with our passengers in a new and meaningful way,” she said.

Nome Expansion Complete

Alaska Airlines in late February marked the completion of a $3.5 million expansion and renovation of its Nome, Alaska, airport terminal. The rehab includes upgrades to the passenger lobby, cargo facility and ground service equipment area.

The terminal lobby area was expanded by 1,500 square feet, or about 50 percent; the cargo warehouse was enlarged by 30 percent and cold storage facilities were added, and the ground service equipment area is about 15 percent larger.
Alaska Airlines built the Nome terminal in 1985. The upgrade is part of the airline’s five-year capital improvement plan to improve many of its airport facilities throughout the state.

**NTSB Reviews Runway Safety**

Airports are working with FAA, the airlines, and pilots to improve overall safety at the nation’s airports, AAAE Vice President-Regulatory Affairs Tom Zoeller said at a National Transportation Safety Board (NTSB) hearing held March 27.

NTSB convened the hearing on the 30th anniversary of the deadliest runway accident in aviation history—the March 27, 1977, collision of a KLM Boeing 747 and a Pan Am 747 on a runway in Tenerife, the Canary Islands, that killed 583 people. NTSB Chair Mark Rosenker noted that, while there have been significant improvements in safety and in the overall ground safety record, a number of near misses and other incidents have occurred over the last few years. These were reminders, he said, of the significant challenges that remain in improving runway safety.

Zoeller said that AAAE, in partnership with FAA’s Office of Runway Safety, has held forums over the last several years to examine the issues and available technologies to improve runway and airport safety. He cited numerous examples in which airports have volunteered and encouraged FAA to test new concepts in runway safety.

Jeffrey Loague of FAA’s Office of Runway Safety related the many safety improvements that the agency has implemented over the last several years, citing enhancements in controller training, implementation of crew resource management in air traffic facilities, and directives to ensure clear, concise, and uniform phrases in air traffic control directions. FAA also provided information about the technologies that are being deployed, including ASDE-X radar and tests of runway status lights.

FAA’s efforts to make airfields safer have generated mixed results. On one hand, the overall incursion rate has held steady since 2001 at about 5.2 incursions per one million operations. However, the number of serious (Category A and B) incursions has come down steadily, from 53 in 2001 to 31 in 2006.

Year-to-date figures for fiscal year 2007 are similarly mixed. FAA reported 168 incursions for the first two quarters of the year, compared with 151 in the same time period last year. However, only six of them have been classified as serious incursions, putting FAA on pace to come in well below the fiscal year 2006 total of 31.

The presentations from the NTSB symposium are available online at www.ntsb.gov/events/symp_ri/sym_p_ri.htm.

**LAX: Airfield Safer**

Los Angeles International on April 2 opened Runway 25 Left/7 Right, a $250 million project that is a major milestone in the airport’s overall $333 million South Airfield Improvement Program, which is intended to enhance safety by reducing the number and severity of runway incursions.

The runway project began in July 2006 and was completed on time and 5.7 percent under budget, airport officials said. The project involved demolishing the former Runway 25L, relocating it 55 feet to the south, and reconstructing it to the same measurements as the previous runway—11,095 feet long and 200 feet wide. Construction also included the relocation and replacement of all navigational and visual aids, as well as utilities, lighting, signage, grading, and drainage.

Construction now will begin on a center taxiway to run parallel to and between the two south runways, followed by the addition of taxiways to link the two runways to the new center taxiway. These next phases of the South Airfield Improvement Program will take 18 months to complete, officials said.

For the four-year period from 2000 through 2003, Los Angeles International experienced the highest number of runway incursions of any U.S. commercial airport, officials said. In 2006, the airport experienced eight runway incursions, of which two were classified by FAA as serious. This year, the airport has experienced two runway incursions, and neither one of them was classified as serious.

**Compass Cleared To Fly**

Northwest Airlines’ wholly owned subsidiary Compass Airlines has received FAA certification to begin commercial passenger operations. Northwest said that Compass will institute service in May with a single 50-seat Bombardier CRJ200, and plans to grow to operate a fleet of 36 regional jet aircraft by the end of 2008.

Based in Chantilly, Virginia, Compass will operate as a Northwest Airlink partner airline, serving communities in the Midwest and beyond from Detroit, Minneapolis-St. Paul, and Memphis. The regional airline initially will operate daily flights between Minneapolis-St. Paul and Washington Dulles International.

During the third quarter of this year, Compass will add service with the first of 36 Embraer 175 aircraft that Northwest ordered for the new carrier last year. The Embraer 175 will accommodate 76 passengers in a dual class configuration, with 12 seats in first class and 64 seats in coach class. Compass expects to operate a fleet of 10 Embraer 175s by the end of 2007.
listen.
Atlanta, a bustling hub of economic activity, needed a more efficient means for moving goods, services, and people in and out of the city to accommodate growth and increasing commercial activity.

think.
As a comprehensive environmental management consultant for the city of Atlanta’s Department of Aviation, CDM developed more than 170 civil and environmental initiatives to increase and streamline air travel at Hartsfield-Jackson Atlanta International Airport, such as environmental assessments and regulatory support. CDM also served as a primary member of the design team for the new 9,000-foot Runway 10-28 and supporting taxiways.

deliver.
In addition to greatly expanding airport capacity and saving millions of dollars in expenses related to flight delays, the initiatives and new runway are pivotal in the city’s ability to sustain economic development, attract both businesses and residents to the Southeast, and limit environmental impacts on the community.

Cities of the Future

Hartsfield-Jackson Atlanta International Airport Environmental Management

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East Coast Airports—Flights, Available Seats
April 2006 vs. April 2007 (from OAG Max March 2006 & March 2007 issues; Non-stop, operating, scheduled flights only)

<table>
<thead>
<tr>
<th>Airport Name</th>
<th>April 2006</th>
<th>April 2007</th>
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<td></td>
<td>Flights</td>
<td>Available Seats</td>
<td>Flights</td>
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<td>New York Kennedy</td>
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<td>Atlanta Hartsfield-Jackson</td>
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source: OAG Max (www.oagmax.com)
### U.S. Scheduled Passenger Airline Fleet, 2002-2006

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<th>Equipment Category</th>
<th>2002</th>
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<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>CAGR* (02-06)</th>
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<td>972</td>
<td>844</td>
<td>745</td>
<td>664</td>
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<td>Small Regional Jet (under 60 seats)</td>
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<td>1,338</td>
<td>1,353</td>
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<tr>
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<td>543</td>
<td>546</td>
<td>521</td>
<td>517</td>
<td>-3.1%</td>
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* CAGR = Compound Annual Growth Rate

Source: BACK Aviation Solutions Fleet Database; Data YE December 31
A Bright Future

Light-emitting diodes, already in use as taxiway edge lights, hold promise as a more efficient, effective choice for runway lighting.
Today’s airport runway lighting systems are equipped with traditional incandescent bulbs, halogen bulbs and flash tubes. These lighting sources are based on century-old technology of current passing through a small wire to generate light—and are slowly proving to be less efficient and more expensive. These sources demand a surplus amount of energy to operate and have proven to be extremely costly to maintain. They also have short life spans, which make them a source for constant maintenance and repair.

Efficiency isn’t the only drawback of older-technology lighting systems. Maintenance has increased the number of repairmen and vehicles on the runway, thus increasing the risk of runway incursions. Studies indicate that some 25 percent of the runway incursions are linked to vehicle or pedestrian deviations. Reducing the airfield maintenance operations could increase runway safety and efficiency. FAA, concerned about safety, is attempting to improve the situation.

Traditional lighting sources are also not efficient at converting electrical energy into light. Incandescent and halogen light bulbs require a lot of energy to operate and only convert a very low percent of that energy into light. Safety and
energy costs are the two dilemmas runway operation is currently confronting. Airports have begun to install light emitting diodes (LEDs) on runway edge lights and taxiway lights, in hope to increase safety and reduce costs of runway operation.

Taxiway LED technology is currently deployed in many U.S. airports. These runway edge and taxiway lights are in accordance with the FAA Engineering Brief 67, Light Sources Other Than Incandescent and Xenon. Taxiway edge lights that are equipped with LED technology have shown significant financial savings in energy costs and have also increased runway safety.

LEDs are a better alternative to airfield lighting due to their inherently unique properties. They are extremely durable, energy efficient, and require close to no maintenance or repair throughout their lifespan of eight to 10 years. LEDs also have a very responsive and instantaneous on-off property that allows them to demonstrate special features such as microprocessor control, dimming, exact flash patterns, strobing, encoding, and higher “effective” intensity when flashing. Lights controlled by pilots, visual glide-slope indicators, runway-end identifier lights (REILs), and in-runway lighting require lighting sources with microprocessor control, exact flash patterns and strobing characteristics. Such properties and characteristics make LEDs most appropriate and practical for runway lighting.

However, LEDs do not meet federal standards for full-scale runway lighting applications. Currently, LEDs can be found on airfields only for taxiway and runway edge lighting systems. LEDs produce required levels of brightness for these two systems and do not violate any standards. The rest of the runway requires lights to produce a tremendous amount of brightness to assist pilots with landing. Such brightness levels have not yet been attainable via LEDs, thus posing a conflict of human factors design.

The Lighting Research Center (LRC) at Rensselaer Polytechnic Institute has been selected by FAA to join its “Centers of Intelligence Program” to evaluate the application of LEDs. The LRC will be applying its expertise in the area of solid-state lighting to provide new lighting solutions that benefit the aviation industry, and conduct research with LEDs for airport and airfield lighting applications. Since LEDs today are only used primarily for taxiway lighting, the LRC will look at how LED technology can be applied to light runways, approaches, and other areas of the airfield.

According to a press release by the LRC, researchers are trying to develop recommendations and metrics that consider the brightness perception of LED lighting on the airfield. Research director Nadarajah Narendran suggests that performance standards for LED systems based on traditional lighting metrics, like luminance, are causing big problems for viewers. For example, green LED approach lights are typically perceived as much brighter and less comfortable to view than incandescent green light at the same luminance. The LRC plans to work with FAA to conduct psychosocial studies that compare the brightness perception of colored and white LED lighting systems with incandescent lighting systems.

According to a report prepared by the Washington, D.C.-based Navigant Consulting Company, runway lights require several thousand-candela (cd) beam strength while taxiways require only 2cd for elevated edge and 200cd for taxiway centerline fixtures. Further research is being conducted on LEDs to improve lighting requirements demanded by runways.

Once improvements are made, airports should consider installing LEDs on runways, because it is important to understand the energy savings and overall cost savings that are feasible by LEDs. Although savings are not apparent instantaneously, the amount of money spent over the lifetime of a LED is significantly lower than a traditional light bulb. LEDs have surpassed traditional lighting sources in taxiway applications, and should be considered for all runway lighting purposes.

Once the brightness of LED technology is improved, LEDs will be able to light runways. LED technology has already proven to be satisfactory for
Among the companies that produce or supply LEDs for airfield applications are Alstom, Avlite Systems, Carmanah Technologies, Cooper Crouse-Hinds, DME Corp., Flightlight, Off The Wall, OkSolar, Point Lighting and Siemens.

- FAA’s LED Airport Lighting Web site: www.faa.gov/and/and500/520/programs/led.htm
- Links to reports and other relevant information on FAA’s airport LED research.
- Web-based LED Lifecycle Cost Comparison Calculator: www.faa.gov/and/and500/lccc/
- Airports can use this online tool to enter data and compare the costs of incandescent lighting systems and LED lighting systems.

Runways require a significant number of incandescent/halogen light bulbs that demand constant maintenance, repair, and replacement, and have high energy costs. Incandescent and halogen bulbs have a poor efficacy and are not ecologically amiable. LEDs promise a solution to almost all shortcomings of traditional and conventional lighting sources on the runway. Installing LED lights on the runway should reduce energy costs, as well as maintenance and repair costs.

LED technology is improving. Once standards and compliances are met, LED application on the runway will lead to positive and beneficial outcomes. Savings are already prominent in taxiway lighting, and runway applications are next.

Richard Klein is manager of the FAA/NISC National Energy Program. Contact him at richard.ctr.klein@faa.gov. Sangam Napit is a graduate student at Embry Riddle Aeronautical University. Contact him at napit3fc@erau.edu.
Lighting on an airfield for providing guidance to pilots has been with us since the 1920s. Early airports were literally fields—the pilot landed where he wanted and in whatever direction the winds seemed most favorable. Fortunately, usually only one aircraft at a time had a need to land and all landings were done during the daylight hours.

When it became apparent that aviation’s growth meant that planes needed to fly at night, lighted visual aids were introduced. The first lighting was the illumination of the entire usable field by large flood-lights, which obtained power from a commercial power constant voltage system. Lighting an entire field presented a number of problems—not the least of which was the potential blinding of the pilot by the high-intensity flood lights.
Soon, lower-intensity lights were introduced to outline the airfield boundaries. These lights were installed about 300 feet apart. Depending on the application, the lights had red, yellow or green globes on them. The power used for these lights was either 115 volts AC or they were installed on a constant current series circuit. The series circuit had the advantage over the constant voltage parallel circuit when it came to long circuits, as a series allowed current to remain constant throughout, thus insuring uniform light output from all lights. The technology behind the series circuit was borrowed from the early street lighting industry and remains the basic circuit configuration for airfield lighting systems.

Present-day airfield lighting circuits are powered by constant current regulators with a maximum output of either 6.6 or 20 amps and provide brightness selection for the connected runway or taxiway lights in either three or five brightness steps. The incandescent lamp with a tungsten filament has been the primary source of light since airfield lights debuted some 80 years ago. The one major improvement in incandescent lamps that was introduced to the airport lighting visual aids industry in the 1960s was the tungsten-halogen lamp. This lamp took advantage of the chemical reaction between tungsten and a halogen (Iodine) that prolonged the life of the tungsten filament and allowed higher filament temperatures, thus increasing the efficiency of the lamp.

The introduction of the light-emitting diode (LED) for airport lighting represents the greatest potential change for lighted visual aids since their inception. LEDs have dramatically improved their ability to produce more lumens/watt in recent years, increased the power handling capability of the individual LED. In addition, they are now available with blue and white light output in addition to the red, green and yellow. The longer life of LEDs compared to incandescent lamps has the potential to decrease airport lighting fixture maintenance. The reduced amount of power required to power an LED fixture could cut airport energy costs and provide the capability to downsize an existing electrical
About 90 percent of the energy utilized by an LED is converted into visible light. No more than 10 percent of the energy is converted in heat. This is just the opposite of the incandescent or tungsten-halogen lamp where most of the energy used ends up generating heat.

In April 2003, FAA convened a government/industry workshop on the future use of LEDs and to stimulate increased attention and use of this technology. One result was the formation of an FAA team to document the feasibility of developing an affordable alternative airport electrical power distribution infrastructure that would support the efficient use of the LED as a lighting source for airport visual aids.

One of the challenges faced by airfield lighting equipment manufacturers was that, due to current FAA advisory circulars governing the design and application of airfield lighting fixtures, the new LED fixtures had to be installed in existing circuits. One of the primary differences between the LED light source and incandescent is in how the two light sources dim in response to the electrical current supplied. While incandescent lamps follow a non-linear dimming curve, the LED dims in a linear fashion. The solution for the manufacturers was to install additional electronics in the LED fixture to allow it to dim in a similar fashion to the incandescent lamp so that it could be used as a direct replacement fixture. This added extra complexity and cost to the LED fixture, and required additional power to operate the extra electronics.

A January 2004 feasibility study published by FAA outlined a lower power distribution system designed to take advantage of the blue LEDs’ linear dimming characteristics and utilize the existing series circuit infrastructure, while reducing power

<table>
<thead>
<tr>
<th>CHART 1</th>
<th>Step 1</th>
<th>Step 2</th>
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<tbody>
<tr>
<td>6.6A Circuit</td>
<td>4.8A</td>
<td>5.5A</td>
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<td>Incandescent taxiway edge light load (watts) with 30/45 watt transformer</td>
<td>18.4</td>
<td>26.66</td>
<td>43.7</td>
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<tr>
<td>Standard LED with 30/45 watt transformer</td>
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<td>Standard LED with 10/15 watt transformer</td>
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<td>2.8 Amp Circuit</td>
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<td>Prototype LED taxiway edge light load (watts)</td>
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<tr>
<th>CHART 2: TOTAL INCANDESCENT VS. LED CIRCUIT ENERGY COSTS</th>
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<td>Incandescent 6.6A, 30 watt with 30/45 watt transformer</td>
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<tr>
<td>Fixtures Load</td>
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<tr>
<td>Cable Load</td>
</tr>
<tr>
<td>CCR Loss</td>
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<tr>
<td>Total Energy Costs</td>
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</table>

Assumptions: 2200 fixtures, 12 circuits (16 ft.), $.11 per kWh, 12 hrs. per day, Ferro-Resonant CCR averaging 85 percent efficiency.
consumption, operating voltage and current on the all LED lighting circuit. The system utilized a modified constant current regulator (CCR) that produced a maximum output of 2.8 amps. Pulse wave modulation (PWM) electronics was removed from the individual LED fixture with the light interfacing with a series circuit interface device that provides the normal series circuit transformer function plus provides direct current (DC) to the LED light source. This enables the LED to be brightness-controlled by varying the current in the primary taxiway series circuit.

A secondary goal of the study was to test the feasibility of utilizing the same low power circuit for a new generation of LED elevated runway guard lights (ERGLs). Testing of prototype LED ERGLs at the FAA Technical Center and Phoenix Sky Harbor International Airport led officials to conclude that the shorter rise and decay time of the LED flash provides better visual conspicuity than the standard incandescent ERGL. As a result the required candela output of the ERGL can be reduced providing significant energy savings.

Prescott Arizona Municipal Airport/Ernest A. Love Field was chosen as the test site for the new power distribution system since the airport was in need of replacement taxiway lighting on Taxiway Delta and an FAA safety team had suggested the use of guard lights to reduce the number of runway incursions. The blue circles in Figure 1 indicate the intersections where the RGL units are installed and Taxiway D. The location of the LED elevated taxiway lights is indicated in yellow.

The all-LED taxiway edge light circuit consists of about 300 fixtures. The LED guard light circuit includes 14 elevated runway guard lights. Chart 1 indicates that at the lowest brightness step the 300 LED taxiway edge lights consume 1/3 of a watt each and the total circuit load approximates that of a single 100 watt incandescent lamp. The prototype LED ERGLs consume between 6.34 and 28.57 watts compared to the incandescent that consume between 48 to 105 watts depending on the brightness step selected.

Chart 2 also shows the comparison in fixture watts for three brightness steps between incandescent and currently installed LED taxiway edge fixtures utilizing two different size transformers plus the 2.8A prototype unit.

If an airport is able to limit the LED circuit load to 1.5 kW at 2.8 amps the maximum output, voltage in the primary series circuit would be limited to approximately 550 volts, thus potentially allowing the use of the less expensive standard 600 volt insulation building wire.

An additional benefit when reducing the maximum series circuit current from 6.6A down to 2.8A is the reduction in CCR losses and cable losses when using the standard #8AWG cable. Chart 2 gives the magnitude in dollars of the potential savings for the specified circuit.

If we take the data that includes the savings in cable and CCR losses when using the 2.8A circuit, and show a comparison of energy costs with a circuit utilizing standard incandescent fixtures the results are dramatic. Chart 2 assumes that the standard 6.6A incandescent taxiway edge light circuit would represent energy usage at the 100 percent level for purposes of comparison.

The outcome of the utilization of LEDs as a viable light source for integration into the National Airspace System remains to be seen. However, research and field testing clearly demonstrates the potential for energy savings and increased safety for the aviation community.

David Rainey is president of Navaid Lighting Associates, Inc. Contact him at david@navaidlighting.com. Seward Ford is president of Visual Aids Services, Inc. Contact him at sewardf@visualaids.com.
A newly announced $105 million plan to modernize and rehab the main terminal at Lambert-St. Louis International will involve upgrades to the ticketing area, departure curb, arrival drive, concessions, baggage claim facilities, restrooms, security screening check points and other passenger circulation areas. According to an announcement by the airport, the city and the airport authority are cooperating on the improvement program. Certain aspects of the planned improvements will require approval by the airlines and FAA. The airport primarily will use PFC revenues to fund the program, as well as other equity funds. Pending approval, the airport expects to begin project design as early as June of this year and the total program is scheduled to be completed by April 2012.

FMC Technologies announced that its Airport Systems Division has been awarded a three-year contract valued at $38 million to provide various airport services at Dallas/Fort Worth International. Additionally, the contract provides an option to extend the term for two more years at approximately $13 million in revenue annually. The scope of supply includes the service and maintenance of all Terminal E gate systems, which include passenger boarding bridges and related equipment, baggage systems, and the physical facility. Currently, FMC Technologies provides similar services to DFW Terminal B and Terminal E under separate contracts. This new contract includes FMC Technologies’ Intelligent Operations Performance System (iOPS) Technology Package. iOPS core functions enable a reduction in aircraft turn-times at the gate and decrease fuel usage and emissions by improving the efficiency of ground support functions.

Primavera Systems announced that Hartsfield-Jackson Atlanta International used the company’s project management software to deliver the first milestone of its 15-year, $6.2 billion capital improvement plan early and under budget. Runway 10-28, a $1.2 billion program, came in $102 million under budget and 11 days early, the company said.

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Going Non-Fed

Funding navigational and visual aids through the AIP non-Fed program is a win-win situation for airports and FAA.

By Peter J. Butler
Airports are always looking for ways to improve their facilities quicker. It’s no different for airside navigational and visual aids, such as instrument landing systems (ILS), runway end identifier lights (REILs), medium-intensity approach lighting system (MALS) with runway alignment indicator lights (RAILs), which results in MALSR, a high-intensity approach lighting system with sequenced flasher (ALSF-2).

In the past, if an airport wanted to install a new navigational aid (NAVAID) or upgrade an existing facility, the only option was to request that FAA provide the system. This request was typically added to the FAA’s Facilities and Equipment (F&E) budget listing and the airport waited until FAA could fulfill the request. Historically, a request could have been accommodated quickly, or it could take five years before the NAVAID was commissioned. With the fast-changing dynamics in the industry today, airports can’t wait long for a NAVAID for fear of losing the chance at a new airline or cargo carrier.

In recent years, more airports have opted to fund NAVAID design, procurement and installation with Airport Improvement Program (AIP) funding as part of the “non-Fed” program. This program was originally developed to establish standards and approve equipment installations by non-federal entities for acceptability in the National Airspace System (NAS). Federal Aviation Regulation Part 171 contains the minimum requirements and procedures for getting non-Fed facilities and equipment approved and operational.

Under FAA policy, airports should look to accommodate NAVAIDs on new runway and runway extension projects through the AIP, and look to the F&E program for needs on existing runways. The normal AIP rules of local share requirements (25 percent or 5 percent) apply.

Under current law, airports are permitted to use AIP funding for instrument landing systems and associated lighting, and FAA is required to take ownership and maintain the NAVAIDs—provided the equipment has been designed and constructed in accordance with FAA standards. Although the law applies to ILSs and associated equipment, airports should seek a determination from FAA at the outset about takeover possibilities for other navigational and visual aids.

AIP funding also provides an opportunity for the airport sponsor to work cooperatively with FAA. Since airport sponsors want to be assured that FAA will take over these NAVAIDs, they enter into reimbursable agreements with the FAA. These agreements define the roles and responsibilities of each party. NAVAIDs can be designed and installed with varying levels of FAA participation. FAA can provide technical, management, and construction support for all systems, but with recent budget cuts, their resources are limited. FAA involvement can range from full design and installation by FAA, to design and construction by the airport sponsor and design and construction reviews by FAA, or to design by the sponsor and design review and construction by FAA.

The multiple combinations available to provide a new NAVAID offer several opportunities for partnering.
The key elements to the process are communication and coordination with FAA at the local, regional, and national levels. The airport needs to understand the restraints, concerns and requirements of FAA personnel, while FAA needs to appreciate the airport’s need for the NAVAID.

The first step in the non-Fed process is to contact the local FAA airport district office (ADO) to determine the non-Fed coordinator for the region. This individual will be able to assemble the appropriate FAA personnel, whether it be NAVAIDs Platform Operations, Flight Procedures, Flight Standards, System Support Center (SSC), System Management Office (SMO), or engineering staff. The non-Fed coordinator also organizes inter-agency departments and their associated tasks.

Once the staff is identified, a meeting can be held to define roles and responsibilities of the parties, resulting in a reimbursable agreement. These agreements generally include project scope of work, schedule, FAA costs for services and equipment, administrative procedures, and delineation of responsibilities.

Once the agreement has been signed by FAA and the airport sponsor, the NAVAID planning and design can proceed. Meetings will be held between the sponsor and relevant FAA groups to discuss applicable standards for the NAVAID, existing conditions of current FAA and airport facilities, points of contact, project scheduling, airspace analysis, regional preferences, geographic impacts, frequency application, etc. Standards
provided to the sponsor for use as guidelines during the design may include FAA orders, advisory circulars, specifications and standard system drawings. In reference to geographic requirements, standards vary from region to region, typically due to weather conditions, such as the need to extend equipment foundations below the frost line in Great Lakes Region, but not in the Southern Region.

In the case of a sponsor design, FAA can provide limited or full scale reviews of the project at typical milestones—30 percent, 60 percent, 90 percent, and 100 percent—to verify compliance with FAA standards and site requirements. During the design phase, Flight Procedures is also needed to start developing the approach procedure associated with the new NAVAID.

After the design is complete, the project can be bid. FAA can provide assistance during this phase with identification of vendors since they are the largest purchaser of NAVAIDs. In some cases, the FAA may offer the sponsor the opportunity to purchase NAVAIDs from the national procurement contracts. This opportunity assures the airport they are purchasing.

The key elements to the process are communication and coordination with FAA at the local, regional, and national levels.
While the non-Fed process requires several FAA procedures and extensive documentation, it has tangible benefits.

an FAA-approved system and FAA receives a system they are currently trained to maintain and service.

As construction proceeds, FAA may provide on-site, full-time or part-time observation to review construction and verify compliance. At the point of substantial completion, a Joint Acceptance Inspection (JAI) is conducted with FAA and the airport sponsor to document compliance. The JAI follows flight checking of the NAVAID if required. Once again, FAA coordinates scheduling of the flight checking crew and procedures to be administered and monitors the performance. One flight check can be funded with an AIP grant, so airport sponsors should include a requirement in construction contracts to assure the NAVAID installer covers the cost of additional flight checks if required.

After the NAVAID has been accepted by FAA and the sponsor, Flight Procedures issues the associated procedure, the appropriate data is published and the facility is commissioned. At this point, the NAVAID can be transferred to FAA for ownership and maintenance. This transfer requires an agreement between the two parties and typically includes ownership documentation, right-of-ways, equipment submittals, spare parts, record drawings for the facility, facility reference data, and warranties.

While the non-Fed process requires several FAA procedures and extensive documentation, it has tangible benefits. First, it permits the airport to install an FAA-approved navigational or visual aid that can be transferred for ownership and maintenance. Second, dependent upon an airport’s needs, this procedure could streamline the process to provide an instrument landing system or an approach lighting system for a new airline or cargo operator in two years or less, which could have taken five years in the past.

Once again, good communication between the airport sponsor and FAA facilitates this process and promotes good will among airport users.

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Hudson News
New York John F. Kennedy Terminal 4
By Melissa Babula

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Big city—big newsstand. Hudson Group recently managed a $2.5 million renovation of its 7,500-square-foot space located in JFK International Airport’s Terminal 4.

The new Hudson News gives tourists an opportunity to load up on souvenirs and grab one last taste of the Big Apple before they board their flights. With concepts like “Discover New York” and “Christmas in New York,” shoppers are surrounded by New York-themed merchandise displayed in a “loft space” with wood floors and fixtures and backlit windows showcasing classic images of New York City. In addition to newsstand essentials such as magazines, candy and convenience items, merchandise includes New York-themed holiday ornaments and gifts from the Bronx Zoo, Metropolitan Opera and New York Stock Exchange. Hudson Booksellers also offers a complete, full-service bookstore.

JFK’s Terminal 4 has renewed the lease agreement for the Hudson News store until 2013: “We consider Hudson News at Terminal 4 to be a gateway to New York City and the entire United States,” said Joe DiDomizio, executive vice president and chief operating officer, Hudson Group. “It is one of our most visible locations, so we are thrilled to continue this valuable partnership.” A partnership that will prosper, no doubt, and help JFK passengers find that perfect “something special” from New York.

JCDecaux North America and SecurityPoint Media LLC announced a strategic alliance to market the SecureTray System, an integrated, three-part system that includes advertisements affixed to the bins passengers place their personal belongings into for x-ray screening at checkpoints. … HMSHost Corp. was awarded a 15-year lease extension at Jacksonville International and announced plans to open 13 new eateries. Meanwhile, HMSHost opened four new restaurants at Minneapolis-St. Paul International: local favorites French Meadow Bakery & Cafe, Locanda D’Amico and Ike’s, and national brand Rock Bottom Restaurant. … The Paradies Shops got a contract to open seven new stores at Fort Lauderdale-Hollywood International, including a Brooks Brothers, CNBC News, and clothing and apparel store Island Breeze. … BAA Pittsburgh, developer and manager of the retail and concessions program for Pittsburgh International’s Airmall, reported an increase in per-passenger spending from $12.33 in 2005 to $13.21 in 2006.
In the past few years, Airport Magazine has done several articles on Geographic Information Systems (GIS) touching on popular and/or emerging applications, including security (AM, 2005 Annual Conference issue, p.20), operations tasks like tracking pavement defects and helping with wildlife management (AM, April/May 2006, p. 32) and developing information management systems that are useful to an entire airport staff (AM, 2006 Annual Conference issue, p. 26). As a follow-on, we asked several GIS companies to discuss one current trend they are seeing among their clients and/or among airports—U.S. or international—in general. Following are their responses.

John M. Przybyla
Vice President, Woolpert, Inc. (www.woolpert.com)

As epitomized by very large-scale GIS projects at Phoenix Sky Harbor International and the Metropolitan Washington Airports Authority, airport GIS has begun to truly enter the phase of becoming a full-fledged enterprise IT solution. Such systems are now being seen as critical to the operational success of the airport and are being developed with greater sophistication and more comprehensive detail than ever before. Characteristics of these enterprise airport GIS systems include:

- Sophisticated hardware/software architecture, including separate production, query and testing environments, often with redundant hardware components. These systems are now being seen as needing to match the high availability requirements of other mission-critical information systems.
- Enterprise-level database designs, which incorporate all of the operational and functional needs of the airport in a holistic manner. For a large modern airport upwards of 300-400 separate GIS feature classes will be required to encompass the range of data requirements. With today’s GIS technology, these feature classes can be designed to abstract the behavior of the real-world features they describe.
- Comprehensive development of accurate data, incorporating all of the infrastructure and space information on, under and above the ground, inside all the facilities, and surrounding the airport to at least the extent of the noise contours. By incorporating all of this data into a single, spatially consistent database, the organization can use
the GIS to answer virtually any question that involves location.

- Sophisticated security models that define, on a layer-by-layer basis, who among airport staff can see and edit each specific dataset. This type of security environment is required for the deployment of enterprise GIS to potentially hundreds of users.
- Positioning the GIS as a web-based portal that can view multiple spatial datasets from multiple sources. This will almost always include using the GIS as a spatial window into scanned drawings that are stored in an electronic document management system.
- Tightly coupled integration into multiple other airport information systems, including those for operations, maintenance management, leasing, dispatching, facilities management, land acquisition, pavement management and others.

This trend is shifting GIS from a back-room system used by a few experts to one of the most important and most widely used applications in an airport today. It provides huge opportunities for GIS to excel, but also comes with huge responsibilities that GIS must fulfill.
There have been two distinct trends in airport GIS development. The departmental GIS focused on one specific aspect such as pavement management or security. The second trend was based on the holistic airport approach with generalized infrastructure and management information linked to the GIS, often with one or two applications such as noise management or obstacle management.

As airports mature in their GIS thinking, the development of GIS systems is following the trend of “multi-purpose development for multi-purpose application.” This trend is not merely the coincidental result of good system design or database development, but a conscious decision to develop both GIS applications and spatial datasets with multiple applications.

Consider for instance the fast-developing trend of vehicle tracking on airports. Imagine ground handling service providers tracking their vehicles so that they are able to re-route critical resources, respond to a tug breakdown on an aircraft ready for departure or withdraw a vehicle from service due to engine overheating. Consider the security provider tracking his vehicles to ensure that patrols are taking place, or the airport operator tracking technical vehicles to alert airport control of runway incursions.

Turn the GIS switch on for all of them, provide one base map common to all users, combine the spatial location information of all the vehicles and equipment and provide this holistic picture to all those concerned. The sudden multiplier effect means that more vehicles are now being tracked on the airport for safety and security reasons, while each department or user group has access to its specific needs. It is now the trend to consciously apply the design and development of GIS systems and applications to address multiple applications and data requirements at the same time.

As with any complicated network of systems and data, this trend brings new challenges to airport GIS professionals who have to rethink the way they design systems and databases to incorporate multipurpose datasets and applications from the onset of the project. Fortunately, many database and software development trends including standards on spatial features and data exchange have made more of these developments possible.

Implementing a complete, airport-wide GIS from scratch can be daunting for an airport of any size. Many airports envision expensive assessments, studies and implementation plans as an overwhelming hurdle to purchasing and using a GIS. The new trend for airports looking to acquire a GIS is to start small with a niche or area-specific system and build from there as time goes on.

A needs assessment doesn’t have to be expensive or labor-intensive. A simple study can help the airport decide which area makes the most sense for an initial GIS implementation and also figure out how the system might be expanded for future needs.

The key to starting small with a GIS is to make sure that the GIS you implement—whether a custom-designed system or an off-the-shelf product—is scalable and expandable. For example, Cleveland Hopkins International Airport started its GIS with a custom system that managed and tracked homes in its residential sound insulation program. With that system already in place, it was much less expensive and time-consuming to add a module to manage land acquisition projects a few years down the road.

Most recently, Cleveland implemented an environmental management system, which also integrated with the existing sound program/land acquisition modules that their staff was familiar with. Plans for the future at Cleveland include a possible pavement management system component.

In the end, the system will integrate data from all existing modules so that users can see information about airport systems as they relate to many different areas.
How often do you hear about a new airport opening? Not often enough. Last issue, I made reference to the number of general aviation airports closed or closing (AM, February/March 2007, p. 48). The most egregious recent example is Chicago’s Meigs Field, destroyed and converted into a park. But Meigs is only one example of an unfortunate trend in this country.

It’s refreshing to learn that a brand new airport has opened—four months ahead of schedule—on the west side of Houston, about 40 minutes from the downtown part of the city. Ron Henriksen, a Houston-area pilot and telecommunications businessman, invested $36 million of his own money to take what was once a short grass strip used for agricultural purposes and convert it into Houston Executive (TME), a first-class general aviation airport. There were no public funds used in the construction of the airport, and the entire facility—1,200 acres and all the soon-to-be built hangars—is owned by Henriksen.

“He always thought that if he had the means to build an airport, he would,” commented Andy Perry, A. A. E., executive director of Houston Executive and someone whose voice clearly conveys his enthusiasm for the new airport he is managing.

Henriksen purchased the property in March 2005. With no viable business aviation airports on the west side of the city (Andrau Airpark was sold to developers in 1998), Henriksen came up with a long-term vision of building a first-class FBO and hangars to serve both transient and based customers, and developing some of the land for commercial and light industrial use. Construction started in November 2005 and the airport officially opened for business in January of this year—after more than a million cubic yards of dirt were moved. Perry makes it clear that the airport opened four months early “because of Mother Nature.”

Houston Executive is situated close to Interstate 10, a Union Pacific rail line and the “energy corridor”—locally based oil and gas companies whose flight departments would make attractive customers for the airport and Henriksen Jet Center, the sole FBO on the field, to be completed by early next year.

The one runway, 18/36, is currently 5,050 feet by 100 feet and will eventually be expanded to 7,600 feet. With the runway extension will come two ILS approaches. Of the 1,200 acres, 600 is airside property and 700 will be developed for industrial and commercial use.

“We’re looking for maintenance, charter and flight school businesses to base here,” said Perry, adding that the airport does not want to run those businesses but have them available as part of a diversified mix of services to offer customers. “Our main focus is building and operating the airport,” he said.

For now, Perry and his staff are running everything out of triple-wide trailers. The first set of 10 T-hangars will be delivered and erected shortly, followed by the two main hangars: 200 feet by 130 feet, and 65 feet by 62 feet.

The airport’s master plan calls for 100 operations per day after two years in operation, 250 operations per day after five years, and 575 per day after 10 years. A community sports complex, an aviation education center and an airport restaurant are also specified within five years.

What about neighborhood opposition to converting a rural grass strip into a full-fledged airport? Perry says that there was some isolated local opposition to the airport, but that the airport staff worked with the community and started a “Fly Quiet” program, in addition to building berms between the airport and the affected neighbors.

Another nice touch in working with the community is “a public park where families can picnic and let their kids watch the planes come and go, along with facilities for aviation-related youth activities that are part of the Boy Scouts, Girl Scouts, Civil Air Patrol and Young Eagles,” according to the “Community Issues” portion of the airport’s website (www.houstonexecutiveairport.com).

Houston Executive is a case study in how to build a general aviation airport from scratch, the right way. Today, that’s a rare occurrence indeed.

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Burlington International Airport (BTV) has grown a lot in the past five years, and not just in passenger traffic. The airport recently completed a $28 million, four-year expansion project that brought a bigger parking garage, a new skywalk from the garage to the terminal, an additional baggage carousel and a new five-gate concourse. The project, led by local architectural firm Freeman French Freeman, won an “Excellence in Architecture” Award from the American Institute of Architects.

The terminal includes a new Wi-Fi system that is free to the public and, airport officials say, getting rave reviews.Plans call for the network to be expanded with public-use workstations.

One of Burlington International’s best assets is a geographic one. The airport’s proximity to the significant population center of greater Montreal and southern Quebec has helped it become one of the fastest-growing airports in the country as Canadian residents take advantage of increased destinations out of Burlington. Canadian residents account for about 30 percent of all enplanements at BTV, airport officials note. Services to popular U.S. destinations like Las Vegas, Los Angeles and Orlando drove a five-fold increase in bookings out of Burlington through Canada’s Expedia.ca travel site in a recent 12-month period, the Web site reported. The airport will cater to its neighbors with a French-language version of its recently re-launched Web site.

Other marketing efforts are aimed at attracting more tourists to the Burlington area and improving air service. So far in 2007, the plans continue to pay dividends. Burlington International Airport officials reported that enplanements for January set a new record for the month.
QUICKFACTS

- BTV is one of two commercial-service airports in Vermont. Rutland State is the other.
- BTV is served by Continental, Delta, JetBlue, Northwest, United, and US Airways. These carriers provided service to 13 non-stop destinations in 2006 for a total of about 1.4 million passengers. JetBlue’s BTV market share in 2006 was about 25 percent, according to DOT data.
- The airport’s 690,641 enplanements in 2005 ranked it 104th in the U.S., according to FAA statistics. BTV’s 10.1 percent year-over-year growth made it the 25th fastest growing airport among the top 125 airports in the U.S.

Visit the airport on the web at www.burlingtonintairport.com.

Burlington International Airport’s expansion included a skywalk (above) and a new parking garage. Local architectural firm Freeman French Freeman led the project.
A golfer once remarked that he believed in better golf through technology. He explained the concept as he consistently used his new $500 titanium driver to out-distance me and my outdated steelhead driver. Thankfully, the world of passenger checkpoint screening technology also subscribes to this concept. Although not visible to the public, better screening technology is being developed behind the scenes at research and development centers nationwide—and it’s coming to our airports.

Currently, a 45-linear-inch piece of luggage (the typical maximum carry-on size allowed on most commercial carriers) can go onboard an aircraft in one of two ways: it can be checked, in which case it is screened by an explosives detection system (EDS) that uses computed tomography (CT) technology, or it can go onboard as a carry-on, in which case it goes through a static x-ray machine at the checkpoint, monitored by a human screener. Given the far superior detection rate of EDS versus x-ray machines, I know which club I want in my bag.

In November 2005, the Transportation Security Administration (TSA) awarded two contracts for the development of CT equipment for security screening checkpoints. The program, labeled Project Cambria, is focused on applying the same CT technologies being used for checked baggage screening to replace the carry-on baggage x-ray machine. It makes plenty of sense. Hundreds of millions of dollars have been spent on the development and deployment of CT technology and now, with the new generation of reduced-size EDS machines, the limited amount of floor space at security checkpoints is no longer a major issue.

On August 10, 2006, 19 alleged terrorists, with the apparent intentions of simultaneously blowing up 12 international flights inbound to various U.S. cities, were apprehended prior to doing any harm. The centerpiece of this unfathomable plot was, of all things, toiletries containers. To a human screener monitoring a static x-ray machine, these items would
have appeared to be harmless hygiene products. In fact, these containers contained chemicals that, once mixed together, would have created a lethal combination more than capable of bringing down a commercial aircraft. Had these containers passed through an EDS device, CT technology potentially would have identified nearly 50 percent of the dangerous materials.

After a bag is placed in the EDS device, a gantry continuously spins around the bag, transmitting images of objects in the bag to a viewing screen. These images then are referenced against atomic massing data. If the object appears to have an atomic mass similar to that of explosive or otherwise hazardous material, the computer flags the object as a potential threat. The threat can be resolved visually by a human screener, who can view a

Reveal Imaging is one of several explosives detection systems (EDS) makers participating in TSA's Project Cambria. The goal: put screening technology in a small enough package to fit at the checkpoint.

The incorporation of CT technology at checkpoints would increase baggage throughput.
future of checkpoints

fully-rotational, sliced 3-D image of the object. If the object still is deemed to be a threat or definitive identification cannot be made, the bag can be searched by hand and the offending object removed for more invasive searches at an explosives trace detection (ETD) table, if necessary.

Automating this process—and allowing the continuous movement of the bag through to the secure side of the checkpoint—makes this an incredibly efficient and effective method of scanning. Ideally, the passenger arrives at the secure side of the checkpoint at the same time as the bag. This eliminates the bottleneck that often occurs at the x-ray exit as passengers wait for the human screener to analyze their carry-ons.

The incorporation of CT technology at checkpoints also would considerably increase baggage throughput. The latest reduced-size EDS machines are certified for 120-plus bags per hour, with some exceeding this standard based on installation and equipment used. This far eclipses the current throughput provided by static x-ray machines with human screeners. Delays due to divestiture by passengers also would be greatly reduced, as laptops and video cameras could remain in their cases and liquids and gels could be packed normally rather than inspected separately.

Screening baggage at security checkpoints with the use of CT EDS devices would improve the current practice of baggage screening by x-ray, but what about screening the passengers themselves? Jackets, shoes and metallic accessories still would need to be removed and placed on the belt prior to passing through the walk-through metal detector. Or would they?

The all-too-familiar next phase of the security screening process is to go through a walk-through metal detector (WTMD). The complete technical workings of these systems is far beyond the scope of this article but, in brief, they typically rely on pulse induction. Using a coil of wire as both a transmitter and receiver, the machine uses pulses of electric current to create brief magnetic fields. The timing of the spike and collapse of these fields is very specific (down to the microsecond). If metal is present within the magnetic field, the timing of these pulses is interrupted slightly and the machine alerts the human scanner to the presence of metal.

This system works well for detecting guns, knives, cell phones, belt buckles, earrings, and keys, but what about concealed explosives and narcotics? These items are not on the detection list for the current systems. Plastic explosives and other dangerous items can go undetected and possibly make their way onto aircraft. Other methods, such as bomb- and drug-sniffing dogs, are effective but not always practical or desirable.

One recent and significant change at passenger checkpoints is a drop in the number of bags going through them. After TSA banned most liquid carry-ons in August 2005, the number of checked bags jumped by about 20 percent, agency officials report. Among the consequences of this shift is an increased importance on an efficient way to handle suspect bags.

Pennsylvania-based explosives containment vessel specialist NABCO recently expanded its product offering to include a unit tailored for airports. NABCO has licensed the Threat Containment Unit (TCU), which was developed by the Naval Surface Warfare Center and FAA for FAA’s Security Integrated Product Team.

The unit (pictured, top) is designed to contain an improvised explosive device (IED) detonation inside a passenger bag. The unit comes with two carts—one tailored for the terminal environment and one designed to work on the road. This gives airports maximum flexibility for transporting suspect bag out of the terminal area, possibly avoiding delay-causing airport shut-downs.

NABCO reports that some TCUs have been delivered to a variety of airports from medium hubs to Category Xs. Among airports with the units are Austin Bergstrom and Nashville.

The company also offers the Suspect Luggage Containment Vessel (SLCV, pictured right) which is smaller than the TCU and includes more automated functionality.
mass cross-referencing). If a substance, such as nitrogen, is detected, an alarm sounds to alert TSA personnel. The person then is subjected to a series of secondary screenings.

Besides the recent concerns over the reliability of these machines (which is due to false positives triggered by the dirt and dust that accumulates in airports), the process is inefficient. It can take anywhere from 15-30 seconds for a single person to go through the machine, and that individual still has to go through the WTMD afterwards. In addition, passenger concerns have ranged from being confined in an enclosed portal to women’s skirts being blown upwards.

What if the combined technologies of the WTMD and ETP were available in one simple process? In the near future, backscatter imaging technology could provide us with just that.

Industry insiders often joke that we should just lay passengers on the bag belt and send them through the EDS device. Conceptually, this isn’t a bad idea. In a one-step process, the person and all of her clothing and belongings could be screened for organic and inorganic materials without having to remove shoes, jewelry or anything else. Fortunately, backscatter imaging technology is capable of performing these same screening functions with the added advantage of the individual remaining upright.

With backscatter, a person stands in front of a semi-enclosed screen containing a device that emits beams through and around the body. Once these emitted beams come in contact with organic and inorganic materials, the images of these materials are “scattered back” into the screening system. The screening operating system, utilizing sensitive material detection capabilities, then displays a high-resolution image of the person’s ghosted body, identifying any suspect materials, as well as their locations on or in the body. A human screener, with image in hand, can then escort a threat passenger to a secure area for...
One could argue that backscatter is much less invasive than the current practice of removing shoes, overcoats, and jewelry.

secondary screening or release to local law enforcement.

Backscatter has been used successfully for several years in prisons, diamond mines, and customs searches. Despite objections that these are “virtual strip searches” akin to the x-ray glasses of years ago, the benefits of such a system certainly outweigh any perceived privacy violations. In fact, one could argue that backscatter is much less invasive than the current practice of removing shoes, overcoats, and jewelry, and at the same time provides a much greater level of detection and safety.

It’s just a matter of time until those intent on disrupting peace, in part by defeating aviation security systems, discover ways to beat the latest technology advances. This is why those responsible for protecting people and aircraft must ensure they remain at the forefront of advances in newer, better technologies for detecting threats to aviation security.

Call it aviation security’s version of better golf through technology.

Aviation Architect and Senior Associate Tim Hudson (tim_hudson@gspnet.com) and Aviation Marketing Specialist Matt Frankel (matthew_frankel@gspnet.com) are with architecture and engineering specialists Gresham Smith and Partners.
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Alaska Will Test Newest EMAS

The EMAS runway end arrestor bed system has undergone a facelift, adding features that manufacturer ESCO hopes will alleviate concerns that airports had with previous versions of the product.

The new version, dubbed EMAS Max or JBR 502, includes the same crushable concrete block material as before. The improvements are in how the blocks are finished and protected from the elements.

EMAS Max blocks have new, moisture-blocking plastic lids that have their color pigment embedded into the material. This, explained ESCO’s EMAS Regional Director Kevin Quan, is expected to cut down on the most expensive part of maintaining a system: re-painting the exposed surface.

The old blocks are topped with a cement board that is coated at the ESCO factory with a special moisture-blocking paint. The paint peeled fast enough so that re-finishing was typically required every three to five years. “With the new system, we’ve looked at a material that’s proven and can withstand UV exposure and jet blast,” Quan said. “We’re confident you won’t have to repaint it for 10 years or longer.”

The added durability also means the systems can be installed closer to runway ends without fear of jet blast taking too much of a toll on the block coatings, Quan noted. The setback distance for a standard EMAS bed is 75 feet from runway ends, but many airports don’t have that much room. ESCO is confident that the hardened block coating means airports can move the blocks closer and still get acceptable performance. Chicago Midway, for instance, recently installed its first bed with a 35-foot setback.

The block bases have been re-worked, too. The EMAS Max bases include a simple yet effective feature that, Quan said, makes installation much quicker and more economical: forklift slots. The old blocks required a special clamping machine during installation. The new blocks “are a lot quicker and a lot safer to install,” Quan said.

Changes to how EMAS installations are finished also target system durability. Top-side seams are now sealed with tape, not caulk, and a new rubber membrane finishing on the side can be applied as rows are completed. The old system called for sealing the sides only after installation was complete—a process that both left the blocks exposed to the weather (and potential integrity-denigrating moisture) for a longer period of time, and required a special contractor. The rubber membranes can be applied by anyone, Quan noted.

So far, the new system—which was announced publicly in February but has been in the field since late last year—is in place at several airports, including Boston Logan (two beds), Teterboro, N.J. (one), Chicago Midway (one) and Jiuzhai-Huanglong, China (two). The real test for EMAS Max, however, may come at a soon-to-be installed site—Alaska’s Cordova Municipal Airport.

The Alaskan airport community has vocally debated the benefits of EMAS vs. the system’s total lifecycle costs. With good reason: the two big challenges with an EMAS system—at least a pre-EMAS Max system—is keeping moisture out of the blocks and keeping up with system maintenance. Both issues are especially significant in Alaska, where moisture is a given in much of the central and southern part of the state, and the airports—and hence their staffs—are generally small. (Alaska’s two largest airports, Fairbanks and Juneau, were...
ranked 129th and 135th, respectively, among U.S. airports in total enplanements in 2005, FAA data show. Only one other—Bethel—was in the top 200.)

How significant are Alaska’s concerns? Two years ago, the Juneau International Airport Board drafted a resolution saying that EMAS, “in its present form and at its present cost,” was “an unacceptable and unworkable alternative” for bringing Juneau’s two runway safety areas up to FAA standards. Among the reasons cited by the board: the system’s excessive maintenance burden and the lack of evidence that EMAS would hold up to the region’s temperate rain forest climate. (Juneau’s preferred—and the less expensive—solution is to expand its runway ends; FAA, citing environmental concerns with that option, backs EMAS.)

“EMAS takes some maintenance,” said Jason Hill, construction manager for Alaska’s Department of Transportation and Public Facilities. “Some maintenance is a big burden on small maintenance staffs.”

Hill explained that Cordova will be a worthwhile test for the new EMAS system. Not only is it a small airport with an appropriately sized maintenance staff, but the climate is challenging as well. “Cordova gets lots of rain and snow,” he said. “There will be lots of opportunity to get moisture into this bed.”

If all goes as planned, Cordova’s EMAS system will be in place this summer. With the first EMAS block still awaiting placement on Alaskan soil, it’s far too early to tell if the improved product will stand up to what the state’s climate dishes out. However, Hill acknowledged this much: the changes were enough to get EMAS a chance there.

“It’s really good that they made these improvements. Painting alone would probably have been enough to sway opinions against it,” he said. “And a roll of tape sure looks a lot better than a caulking gun.”

**Inline Study Recommends Funding, Design Guidelines**

The final version of the industry-produced baggage screening investment study (BSIS) recommends several steps to fund explosives detection system (EDS) machines, including airport-issued bonds, continued Congressional appropriations and more PFC program flexibility. The study, released in February but completed late last summer, was required by the Intelligence Reform and Terrorism Response Act of 2004. DHS and TSA were tasked with completing a cost-sharing study in collaboration with industry stakeholders to identify, among other things, innovative financing options to accelerate deployment of EDS machines. The BSIS Working Group consisted of representatives from airports, airlines, TSA and other federal government agencies, financial services firms and baggage handling system design firms.

The BSIS Working Group reviewed many potential funding and financing options. Among the final report recommendations:

- Create a voluntary $3 billion tax credit bond program under which airports can issue tax credit bonds to fund the necessary infrastructure to accommodate optimal EDS baggage screening systems,
- Continue appropriations of at least $435 million for purchase and installation of EDS, increasing annually, and
- Enhance PFC program flexibility to include 1) tax credit bond sinking fund payments and 2) modification or construction of exclusive-use outbound baggage handling systems and infrastructure to accommodate EDS screening systems.

Also included in the final report is the recommendation that TSA publish BSIS planning and design guidelines for baggage screening systems, with an emphasis on performance standards, embracing new technology, and economic analysis to determine optimal solutions. TSA CIO/CTO Mike Golden, a former Southwest Airlines executive with extensive experience in designing and implementing bag-gage handling and screening systems, will be reconstituting the BSIS Working Group to begin work on this recommendation.

**Los Angeles World Airports (LAWA) will launch T-Mobile HotSpot service throughout Los Angeles International and LA/Ontario International. T-Mobile will provide “curb to nose” Wi-Fi wireless broadband access in all terminals and public areas of LAX and ONT airports, including the ticket counters, restaurants, boarding gates and baggage claim. ... TSA and Cleveland Hopkins International unveiled a new $7.5 million inline explosives detection baggage screening system at the airport. ... Megadata reports that San Diego International has become the first customer to launch the new collaborative version of Passur AirportMonitor, a web-based airspace education tool for airport communities.**
While aircraft accidents and incidents during flight are well reported and documented, ground accidents and incidents at airports do not always receive the same level of attention. Ground operations bring together a large level of various activities with high-risk potentials, including traffic volume and mixtures; weather extremes; wildlife hazards; airport layout, design and signage; and vehicle operations on and near the aprons, to name a few. Given this complexity of an airport operation, the International Civil Aviation Organization (ICAO) concluded that a systematic approach to safety is required in order to coordinate the various activities for the safe delivery of services.

In November 2006, the ICAO amended Annex 14, Volume 1 (Airport Design and Operations) to require member states to have certificated airports establish a safety management system, or SMS. According to ICAO, the requirement’s purpose is for airports to achieve an acceptable level of safety in the operation of aircraft.

ICAO has similar requirements in place for air operators, maintenance organizations and air traffic management organizations. To help facilitate implementation and create a common understanding across the different disciplines, ICAO last year published the first edition of its Safety Management manual. Chapter 18 of the manual outlines the ICAO mandate for airport SMS programs.

Seeking to comply with ICAO Annex 14, FAA’s Office of Airports drafted an advisory circular (AC) to serve as guidance for implementing the ICAO mandate for U.S. Part 139 certificated airports. As the draft AC noted, the goal of the ICAO SMS mandate is to have an acceptable level of safety, not necessarily the “highest” level of safety. Within the U.S., FAA uses a standard matrix of risk levels for various phases of operations, depending on the severity of potential consequences.

FAA defines SMS as “[t]he formal, top-down business-like approach to managing safety. It includes systematic procedures, practices, and policies for the management of safety (including safety risk management, safety policy, safety assurance, and safety promotion).” There are four distinct elements of an SMS: safety policy and objectives; safety risk management; safety assurance; and safety promotion.

The draft AC proposes that a top executive in the airport organization be designated as the “accountable executive.” This is defined as a “single, identifiable person within the organization whom will assume full accountability of the SMS. This accountable executive must have adequate control over financial and human resources to respond to organizational safety needs.” The draft AC also calls for the designation of an individual responsible for the administration of the overall SMS, to be known as the “safety manager.”

Under the draft, the key to an SMS is a process of formal documentation that clarifies the relationship of the SMS to other organizational functions and integration of SMS activities. The documentation process defines how SMS activities relate to the organization’s operating policies. This would be done through the creation of an SMS program manual for the specific airport, and this manual should become a part of or appendix to the Airport Certification Manual (ACM).

Another key factor of the SMS proposed by the draft AC is the inclusion of a visible, non-punitive safety reporting system supported by the airport management. This reporting system would permit feedback from personnel regarding hazards and safety-related concerns. The data generated by the reporting system should be used to identify and address safety deficiencies. Safety auditing is a core activity in safety management, and the draft proposed that the airport’s accountable executive to have an external agency audit the airport’s SMS. The safety audit, with other safety activities, should provide feedback to the airport’s managers concerning the overall safety performance of the airport.
FAA’s plan was to issue a notice of proposed rulemaking later this year, which would lead to an SMS mandate that the draft AC was written to support.

In response to the draft AC, AAAE submitted comments on behalf of the membership, outlining the airport industry’s concerns with the proposal. While we credited FAA for its initiative in preparing the draft, we indicated that FAA needed to provide additional information and guidance prior to a fully mandated implementation of SMS within the U.S. airport community. While the draft AC seemed to indicate that compliance issues were minimal for airports, we noted that the budgetary and staff requirements to meet the SMS mandate are substantial—particularly for smaller airports. We fully supported the FAA’s intentions to implement SMS over a phased in period of three to five years.

With respect to apron safety oversight, we expressed concerns about the overlapping responsibilities of the airport and the many other entities that operate on the apron, including air carriers, catering, fueling, and other services. While such operations must meet an airport’s requirements to operate on the AOA and ramps, their safety programs are not managed by the airport. Enforcement of the apron safety oversight is complicated because of varying corporate philosophies and policies. There must be collaborative agreements reached between the airport and these entities. AAAE urged FAA to delineate the responsibilities of the airports and the air carriers with respect to apron safety oversight.

One of the AAAE membership’s main actions was urging FAA to provide a sample SMS program. In our view, a sample program provides the delineation of roles and responsibilities between the airport and air carriers, and would also help avoid overlap with other regulatory agencies on safety management, such as the Occupational Safety and Health Administration and other U.S. Department of Labor requirements.

After the consideration of the comments provided by AAAE and other interested parties, FAA released its final advisory circular, AC 150/5200-37, on February 28. The final AC, “Introduction to Safety Management Systems (SMS) for Airport Operators,” essentially provides information on how the FAA intends to implement the ICAO mandate. It states that FAA has initiated a rulemaking project to consider the formal requirement of SMS at certificated airports. A notice of proposed rulemaking is scheduled to be released for public comment in 2008.

FAA notes that it will not proceed with a final rule until it has received extensive comment from the regulated community on the issues surrounding such things as the benefit/cost of a rule; whether to require SMS at all certificated airports or at a defined activity level; acknowledging the requirements of Part 139 rules to avoid overlap with SMS and a review of training needs for FAA employees and airport operators.

In an effort to learn more about SMS, FAA—as suggested by AAAE—is initiating an airport SMS pilot program. Airports interested in piloting SMS will be eligible for a planning grant under the AIP program. Airports should contact their local airport district office or regional office. FAA is hoping to have a diverse group of airports within the pilot program. Results of the pilot program will help FAA in scoping the SMS rulemaking project.

While the FAA’s new AC has a more phased approach to the implementation of SMS, it is clear that the FAA is moving towards the requirement for certificated airports to at least initiate a SMS program within the next five years.

Tom Zoeller is AAAE’s vice president for Regulatory Affairs.

NOTE: AAAE will be offering an introductory workshop on SMS this summer. Partnering with the Mitre Corporation’s Center for Advanced Aviation Systems, AAAE will host a two-day session July 19-20 in Alexandria, Va. For program and registration information, contact Tom Zoeller at (703) 824-0500, ext. 172, or by e-mail at tom.zoeller@aaae.org.
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