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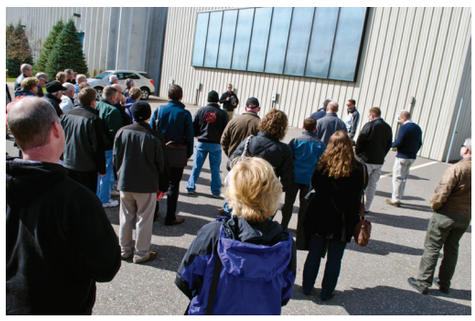
Special Fall Forum Issue: This issue of AirTAP *Briefings* features extended coverage of the 2014 AirTAP Fall Forum.

Fall forum offers ideas for managing energy, assets

The 2014 Fall Forum, held October 9 and 10 at Cragun's Conference Center in Brainerd, Minnesota, drew attendees from across the state to learn from each other and the aviation experts who presented.

Jim Grothaus, AirTAP director, opened the forum by encouraging attendees to "be curious" by asking questions of their colleagues and the presenters. Kathy Vesely, assistant director of the Minnesota Department of Transportation (MnDOT) Office of Aeronautics, welcomed attendees to this 10th fall forum and invited ideas for future educational events.

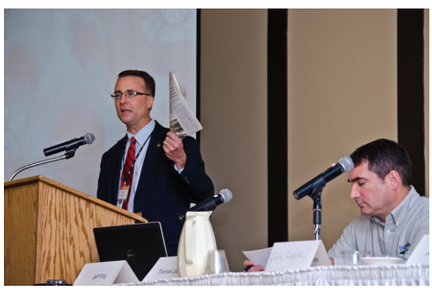
The forum was sponsored by Minnesota AirTAP (housed within the Center for Transportation Studies) and MnDOT Aeronautics, in cooperation with the Minnesota Council of Airports. Presentations from the sessions are available on the AirTAP website.



Technical tour at the Brainerd airport

Airport self-sufficiency: Taking a fresh look at alternative energy

Nearly every commercial airport in the United States is owned and operated by public entities and is largely self-sustaining as mandated by the Federal Aviation Administration (FAA). Since these airports receive almost no taxpayer-funded support from state or local sources, they are required to maintain a fee and rental structure that makes the facilities as financially self-sufficient as possible. In addition to generating revenue, airports also must effectively manage expenses. In this session, speakers shared their thoughts on one of the most significant costs their airports face: energy.



Jeff Wig and Tom Leach

"The viability of airports depends a lot on the ability to control costs," began Jeff Wig, manager of Brainerd Lakes Regional Airport. At Brainerd, electricity is the second-largest expense after labor, he said. To help rein in these expenses, the airport partnered with Energy Insight, a consulting group that helps businesses identify conservation opportunities, maximize utility rebates and grant programs, and access free or low-cost energy auditing services.

"Public utility companies in Minnesota are required to have some type of conservation improvement program with savings goals of 1.5 percent of their retail sales," explained Energy Insight's Joe Frauenshuh. "My job is to help them reach those goals by working with customers like the Brainerd airport to find ways of conserving energy."

As a first step, Energy Insight conducted an energy audit at the airport and found that by replacing old lighting with new energy-efficient systems, the airport would save more than $3,000 a year in operational costs and would be eligible to receive more than $2,000 in rebates from Brainerd Public Utilities.

Because lighting retrofits are among the easiest ways to reduce both energy and maintenance costs, the Rapid City Regional Airport was an early pioneer in the use of high-efficiency LED (light-emitting diode) systems in its airside operations, said Dave Lepine, with the airport's consultant KLJ. While LED systems cost more up front than incandescent systems, they offer long-term savings in that they require less power to create the same amount of light, are more durable, and have a longer life, he said. Typical incandescent bulbs, for example, last 1,000 hours, whereas LED runway bulbs last 56,000 hours and LED taxiway bulbs, about 100,000 hours.

"Since there are 300 taxiway light bulbs on an airfield, just the time spent changing burned-out bulbs can add up fast," Lepine said. Since the airport installed an LED taxiway system in 2004, it has greatly improved the efficiency of the maintenance staff—in addition to achieving major cost savings on energy use, he said.

Although FAA Airport Improvement Program (AIP) grants generally cannot be used to replace systems with remaining service life, Lepine said it's worthwhile to discuss AIP eligibility details with the airports district office in your region.

In other efforts to cut utility costs, some airports, including the facility in Orr, Minnesota, are investigating alternative energy sources such as solar power. The major barrier to solar systems, however, remains their high start-up costs. "If your airport wants a short-term return on investment, solar energy is not competitive yet," said Gary Cerkvenik of Silicon Energy. "As [the country] moves away from coal and other fossil fuels, the price of electricity most likely will rise. When that happens, solar will become more viable."

Several existing federal and state initiatives aim to make solar more financially attractive right now. Through a federal program, taxpayers may claim a tax credit of 30 percent of the total solar system installation cost against their federal tax liability. The tax credit has no maximum and may be carried forward to the succeeding tax year, but the program is set to expire at the end of 2016.

In Minnesota, the state legislature established the Made in Minnesota Solar Incentive Program, which began in 2014. It offers a total of $15 million per year for 10 years in incentives to public electric utility customers who install solar systems certified as manufactured in Minnesota. Participants are paid annually, based on their solar system's kilowatt-per-hour output the previous calendar year.

The Minnesota State Legislature also passed an aggressive solar mandate in 2013 requiring the state's four investor-owned utility companies to generate 1.5 percent of their power from solar by 2020. To meet this goal, utilities will have to consider subsidizing small-scale residential and commercial solar installations at places like airports, Cerkvenik said.

Another potential, and perhaps unexpected, source of funding comes from the United States Department of Agriculture (USDA). The USDA Rural Economic Development Loan and Grant Program (REDLG) provides funding to rural community projects by providing loans and grants to qualifying utility organizations, which in turn originate a loan to the local

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Strategies for managing airside vegetation

Editor's note: During the fall forum, Ann Johnson, Professional Engineering Services, gave a brief overview of vegetation management at the Brainerd airport. The following information expands on what was presented.

A typical general aviation airport in Minnesota can encompass hundreds of acres of turf—and all of those areas require vegetation management. Smart vegetation management is important for airport staff because a healthy turf environment reduces maintenance needs and costs, reduces erosion and runoff, improves water quality and infiltration, and preserves the airfield surface. Effectively managing vegetation also improves safety for airport users and limits liability for the governing agency, primarily by reducing the number of wildlife attracted to the airfield's pavement surfaces.

Following are several strategies for addressing the most common vegetation-related issues facing airports.

Remove accumulated sand and soil

Snow removal can create an unhealthy environment for turf grasses, which can lead to several problems. The soil that accumulates along pavement edges can contain high levels of salts and deicing chemicals, which in turn kill the grass. Excess soil accumulation also reduces the vertical pavement edge drop-off—which can eventually cause water to pond on the runway edge, affecting safety and contributing to pavement deterioration. A good solution is to vacuum the area with the same standard broom vacuum used for sweeping in the summer. This removes the overburden of soil left from winter as well as the salt and chemical residue. A light broom with pick-up capabilities could also be used. When sweeping the pavement, broom soil onto the runway or taxiway edge, then remove it with a sweeper. This maintains the edge drop and reduces build-up on runway edges. A poor environment can also be improved by simply dethatching the soil with a light brooming over the turf area.

Repair winterkill

Storing snow along pavement edges will also lead to winterkill of the grass. To fix this problem each spring, hire a local seeding contractor or farmer, or work with a local agency (such as the city or county), to disc the dead areas. Lightly go over the compacted soil with the disc harrow to break up the hard, compacted soil and crust, then till to aerate the soil. This task could also be performed by maintenance staff with just a simple track backhoe with common skid-steer attachments. A lawn aerator or residential lawn tool could also be rented for hard-packed soil areas.

Rejuvenate stripped soils

Before attempting to treat your airport's soil, have a soil sample tested by the local extension office. Then, after disking or aerating, broadcast soil amendments as recommended. Most soils are likely missing nitrogen or phosphorus, so replace those nutrients with a standard 10-10-10 fertilizer blend at 100 lbs/acre. Make sure to use slow-release fertilizer that:

- Is specifically processed to release nitrogen at a slow rate over a growing season;
- Contains nitrogen, phosphorous, and potassium;
- Contains a primary nitrogen source that is in a coated, pilled urea form; and
- Has at least 70 percent of its nitrogen component as slow-release, water-insoluble nitrogen.

A product called Tazo®, which consists of Azospirillum bacteria that feed the soil, is another option. (Similar products are available under other names, such as "Boost.") More information on Tazo can be found on the Terramax website (http://terramax.co/products/tazo-st/).

Once the soil is amended, overseed with a commercial turf seed mix at a rate of 220 lbs/acre. The cost for this is approximately $1,200/acre, which includes the cost of seed. MnDOT standard mix 25-131 is a low-maintenance turfgrass that contains non-native grasses with some salt tolerance. This seed will produce somewhat drought-resistant grass that will require mowing only once every three weeks.

Mulch after seeding

The goal of a seeding repair is to produce green grass as soon as possible—grass that will hold moisture and lower fire danger. For best results, use a fiber mulch that sticks to the soil. Several appropriate mulch options are available, including stabilized fiber matrix (SFM) included in MnDOT specification 3884.2B3. With poor soils, use hydraulic compost matrix (Verdyol black mulch or hydromulch).

Mulch costs can vary, for example, from $1.35/sy for hydropost to $2.00/sy for erosion control blankets. Airports should consider partnering with local agencies to share the equipment and labor needed for mulching.

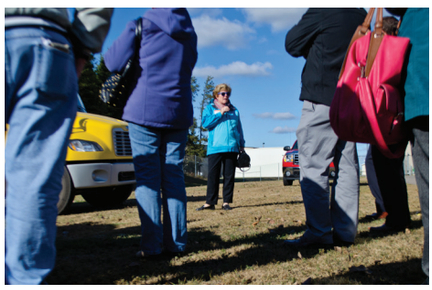
Discourage wildlife

Native grasses sometimes get a bad name because they are thought to attract animals, but this is not the case. All grasses are attractive to wildlife, so the species of turfgrass doesn't matter much. However, to control wildlife in turf areas, consider the following strategies:

- Eliminate food, water, and sheltering vegetation near pavement edges so birds and animals go elsewhere.
- Control grass height.
- Apply nonselective herbicides in areas that can't be mowed, such as along fences, ditches, or steep banks with riprap for erosion control. Be sure to follow local rules and guidelines.

Reduce woody vegetation

The MnDOT Office of Aeronautics identifies obstructions in runway approaches every three years. Aeronautics will assist, but simple surveying techniques are also available to determine tree height and



encroachment into approaches. Begin by staking your approach area using lath and surveyor ribbon. Conduct one survey and tie ribbon on trees that are nearing the critical height, then monitor the tree heights with GIS or with a simple database. Most important, develop an annual maintenance plan that includes monitoring tree height and encroachment.

For guidance on tree trimming, see the Minnesota Local Technical Assistance Program's *Roadside Vegetation Management Handbook*, available at lrrb.org/media/reports/200019.pdf.

Aviation industry takes new approaches for profitablity

In another forum session, Jeff Hamiel, executive director of the Metropolitan Airports Commission (MAC), discussed the state of the aviation industry, particularly regional airlines, which provide a valued service yet are struggling financially.

The domestic airline industry has been rife with bankruptcies, mergers, and takeovers throughout much of the past decade, such that today, nearly 80 percent of air travel passengers in the United States fly on one of four consolidated airlines: Delta, United, American, or Southwest. "Consolidation reduces competition a bit and leaves fewer choices overall, but it's a financial model that has to come together in order for the airlines to be profitable," Hamiel said.

In past years airlines aggressively sought to dominate market share, but today the goal is bottom-line profitability. Toward that end, one strategy for airlines is outsourcing all activities that cost them money but do not provide an immediate positive financial return. This includes everything from wheelchair assistance, aircraft cleaning, and above- and below-wing services to subcontracting with regional airlines to fly into smaller communities.

Regional airlines now provide at least 50 percent of all flight departures from airports in 35 states, carry 22 percent of all U.S. passengers, and provide the only scheduled air service to 70 percent of commercial U.S. airports. Although they play a significant role in getting passengers from smaller communities to the hubs to connect to their final destinations, regional airlines simply do not make enough money, Hamiel said. This results in some very real, and dire, consequences: inadequately paid flight crews and unreliable equipment, among them. "All of these things are challenging regional operators who are trying to be profitable while still serving the needs of their large carrier partners."

Chief among the problems is a shortage of trained pilots to fly the smaller, regional jets. The next 20 years will see a 35,000-pilot deficit, Hamiel reported, primarily because young people are not choosing aviation as a career. That path has become too expensive, and the new minimum flying hours required to pilot a regional aircraft, which was recently raised by Congress from 250 to 1,500 hours, is a nearly impossible mark to reach, he said. "The reality is that regional airlines are in a real pickle…and smaller communities with commercial service airports may very well end up without any scheduled commercial airline services."

Hamiel then shifted his discussion from the somewhat bleak state of regional airlines to a more upbeat report on what is happening at the Minneapolis-St. Paul International Airport (MSP). MSP is the 17th busiest airport in North America as far as total passengers, with about 34.5 million air travelers a year passing through, and is the 11th busiest in terms of total operations, he said. While the number of passengers moving through MSP is steadily rising, the number of operations is declining, as airlines are able to carry more people on fewer flights.

MSP is Delta's second-largest domestic hub, but is Delta's most profitable per capita, Hamiel continued. One reason is that the cost per boarding passenger, which is one metric airlines use to manage overall costs, is significantly less at MSP than at most other large hub airports, despite MSP's added expenses for snow removal and deicing that airports in warmer climates do not incur.

Jeff Hamiel

Hamiel said one way the MAC keeps per-passenger costs down is by maintaining a relatively small organization. "We have one of the smallest airport staffs of any larger airport in the country by more than 20 percent. We also are fiscally conservative and very careful with how we manage our money," he said.

MAC's effective fiscal management enabled it to fund a number of significant improvements at both MSP terminals in 2014, Hamiel said. These included an expanded and more-automated customs inspection area; reorganized and expanded security checkpoints; updated rest rooms, seating areas, and lactation rooms; and an additional 1,400 parking spaces at Terminal 1. Terminal 2 improvements included new auto rental and ready-return facilities, an in-line bag screening facility, additional gate seating, and automated passport control kiosks in the international arrivals area.

"We also have just begun one of the largest solar projects in Minnesota on the roof of the Red and Blue parking ramps at Terminal 1," Hamiel added. "We will spend $25.4 million [on this project], but in 30 years, we will have completely paid for this system, including its operation and maintenance, and will have at least $10 million in the bank."

While MSP is in good shape at present, Hamiel acknowledged the immediate need to determine how to support air service to small communities. "The entire state of Minnesota deserves high-quality air service, and if MSP can help support and encourage that, I think the entire state benefits."

Grant assurances: basic compliance

When airport sponsors accept financial assistance from federal grant programs, they are legally required to meet certain obligations, called grant assurances, pertaining to use of the airport. In the case of Airport Improvement Program (AIP) grants, there are 39 separate assurances designed to ensure the airport sponsor and any potential airport tenant follow all existing regulations in developing, leasing, and operating the airport.

The most common mistakes airports make regarding grant assurance compliance tend to revolve around land use, Sandy DePottey, with the FAA Dakota-Minnesota Airports District Office (ADO), explained. However, many of these problems could be avoided by maintaining both a current Airport Layout Plan (ALP) and "Exhibit A" property map, as required by the FAA.

An ALP depicts the entire airport property and identifies both the present facility and the plans for future development. The Exhibit A property map, which forms the basis for the ALP, provides information on the acquisition and identification of all land parcels that make up the dedicated airport property and are generally unavailable for any other use.

If the dedicated property is not needed for present or future airport purposes, the airport can request a land release or concurrent use approval from the FAA. A land release is a formal, written authorization discharging and relinquishing the FAA's right to enforce an airport's contractual obligations. In some cases, the release is limited to releasing the sponsor from a particular assurance or federal obligation (e.g., release from aeronautical use). In other cases, a release may permit disposal (sale) of certain airport property.

"There may be some unused land an airport sponsor wants to sell off. But check the airport layout plan," DePottey cautioned. "That empty land may be set aside for a crosswind runway or some other future expansion…Once you sign that land away, it's gone forever."

Airports also may request an interim use of dedicated airport property for non-aeronautical purposes for up to five years. When allowed, these interim non-aeronautical activities must pay fair market value for use of the airport, which ties back to the FAA requirement that airports be as self-sustaining as possible, DePottey said.

The FAA monitors airports for unauthorized land use by conducting inspections at 18 selected airports each year, with at least two inspections conducted in each of the nine FAA regions. For Minnesota, this means one inspection occurs in the state every other year.

In recent years, FAA compliance inspections around the country found airport han-

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AirTAP was developed through the joint efforts of the Minnesota Department of Transportation (MnDOT), the Minnesota Council of Airports (MCOA), and the Center for Transportation Studies (CTS). *Briefings* is published quarterly in print and online. Please direct comments to:
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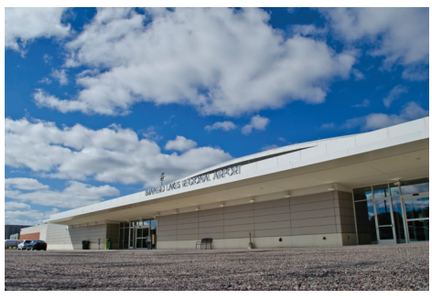
An airport's story: Brainerd Lakes Regional

Brainerd Lakes Regional Airport, which hosted the 2014 fall forum's technical tours, was also in the spotlight during a session given by airport manager Jeff Wig.

Wig has been manager since 2013, but was previously employed with the airport throughout his teens and college years. "It was always a dream to return to aviation," he told attendees. "As people in this room know, it has an allure."

Although aviation came to Brainerd in 1929 at a strip near the fairgrounds, it soon outgrew that location. Land for the current site was purchased in 1945. In 1948, with Walter Wieland as chair, the newly formed airport commission received a grant of $80,000 to build the new airport.



The Brainerd airport terminal

During the airport's grand opening, visitors were allowed to drive their cars on the three runways, Wig said. Wisconsin Central Airlines flew the inaugural flight into the airport on March 1, 1949—an event that featured dignitaries and other fanfare. The following day, however, saw the airport's first flight cancellation (due to weather).

In 1965, the Brainerd-Crow Wing County Municipal Airport was officially renamed Walter Wieland Field (in honor of its founder), eventually transitioning to the current name of Brainerd Lakes Regional Airport.

The 1980s were characterized by significant airport growth and change. The main runway was lengthened and widened; the airline terminal, maintenance, and rescue and firefighting buildings were constructed; and full-time staff were hired.

In the 1990s, a 20-year comprehensive plan was developed, and the terminal building was remodeled, expanded, and connected to the GA terminal, among other changes. As part of this construction, administrative offices and a conference room were added, as well as space for an additional air carrier. In 2012, the newly remodeled and expanded airline terminal opened and a jet bridge was added.

Wig noted that the airport has had continual air service since 1949, albeit with different carriers. Wisconsin Central became North Central Airline, which became Republic, then Republic Express, before evolving into Mesaba/NW Airlink—which were absorbed by Delta. In 2013, SkyWest Airlines, a Delta Airlines partner, began operating daily service.

Today, the 2,400-acre site hosts up to five flights daily in the summer. Brainerd Lakes has about 80 based aircraft, 2 long runways, and 12 organizations based on the field with more than 70 year-round employees. General aviation plays a major role at the airport with 80 rental hangars and 11 private hangars. Airmotive Enterprises is the airport's fixed-base operator and offers heavy aircraft maintenance and flight instruction services. Flying lessons are also given. Additionally, Civil Air Patrol is located at the airport, as well as North Memorial Air Care, Brainerd Helicopter Service, a full-service restaurant, and a variety of other travel-related businesses.

The Brainerd Lakes Regional Airport Commission controls, operates, and manages the jointly owned city/county airport operations. The airport completed a strategic plan in 2013, Wig said, in which it set some strong goals for development, for bringing more jobs on the field, and for saving money by cutting energy costs. The five-month process, co-facilitated by Wig and a consultant from a local retired executive program, included participants from the Brainerd Lakes chamber, airport commission, consultant Short Elliot Hendrickson, airport staff, and frequent fliers.

Compliance continued from page 3

gars intended for aircraft storage were routinely used to store non-aeronautical items. In some cases, this storage prevented aeronautical use of the hangars—a violation of the grant assurances. But the FAA acknowledged that small incidental items could be stored and have no effect on the utility of a hangar. This ambiguity caused much confusion and frustration at airports; in response, the FAA issued a notice of proposed policy in July 2014 to clarify compliance requirements.

Following a period of public comment, the agency unveiled its new draft policy in late 2014. While the core policy has not changed, DePottey said, some areas of the draft policy are still somewhat controversial. "We'll just have to wait and see how everything shakes out down the road."

Meanwhile, the best way to avoid compliance mistakes of any kind is to know and understand each of the assurances attached to AIP grants, DePottey said.

Online tool for tracking towers

In "Keeping Tabs on Towers," Rick Braunig with MnDOT Aeronautics explained how to register with the FAA to be notified of proposed structures such as cell phone towers planned near airports. Through the online Obstruction Evaluation/Airport Airspace Analysis (https://oeaaa.faa.gov) users can create an account to receive e-mail notification if someone files an application to build a tower over 200 feet tall within a specified radius of the airport. Users can also see how proposed structures would affect the airport. "Some people you might want to talk to about using this [tool] are the people who handle zoning administration for the area where your airport is located," Braunig said, because the system could help them advise tower applicants whether they need to have an FAA evaluation before moving forward.

Towers can be a problem in rural areas even when they're less than 200 feet tall, Braunig added. Meteorological, or "met," towers, which are erected to collect weather information prior to the installation of wind turbines, don't require a permit but may affect agricultural operations such as crop dusting. "It's a hot issue that MnDOT wants to address," Braunig said.

Mark your calendar!
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