

Ithaca Tompkins Regional Airport Sustainable Airport Master Plan

When people think of “green” infrastructure, they rarely think of aviation. Airplanes and related operations activities are often viewed as significant sources of air emissions and other negative environmental impacts. One airport that is breaking new ground is Ithaca Tompkins Regional Airport. C&S Companies of Syracuse, NY, is the airport’s consultant for the development of the country’s first master plan that fully incorporates sustainability into the planning process.

While a traditional master plan requires consideration of environmental impacts of proposed projects, a “sustainable master plan” takes environmental considerations beyond just impact analysis, making sustainability a core objective in all aspects of the final master plan. So while a traditional master plan would narrowly focus on environmental impacts related to a runway extension or obstruction removal, the sustainable master plan applies sustainable principles and practices to everything from airport operations to maintenance practices to selection of materials for capital improvements. Ithaca’s sustainable master plan will achieve all of the FAA-required elements of a master plan, but with an improved and greater focus on making the airport a healthier place for people and the planet.

Tompkins County, owner of the airport, has established a goal of reducing greenhouse gas emissions in the county by at least 2 percent of the 2008 level for each of the next 40 years, achieving at least an 80 percent reduction by the year 2050. The airport’s master plan will address the county’s goals as well as goals for reducing energy, fuel, waste, and water consumption.



To incorporate sustainability into the traditional master plan process, the team established sustainability goals and set targets at an initial kickoff meeting with stakeholders. Areas being addressed include:

- Air quality and climate change
- Energy conservation and renewable energy
- Materials use and waste reduction and recycling
- Hazardous materials management and remediation

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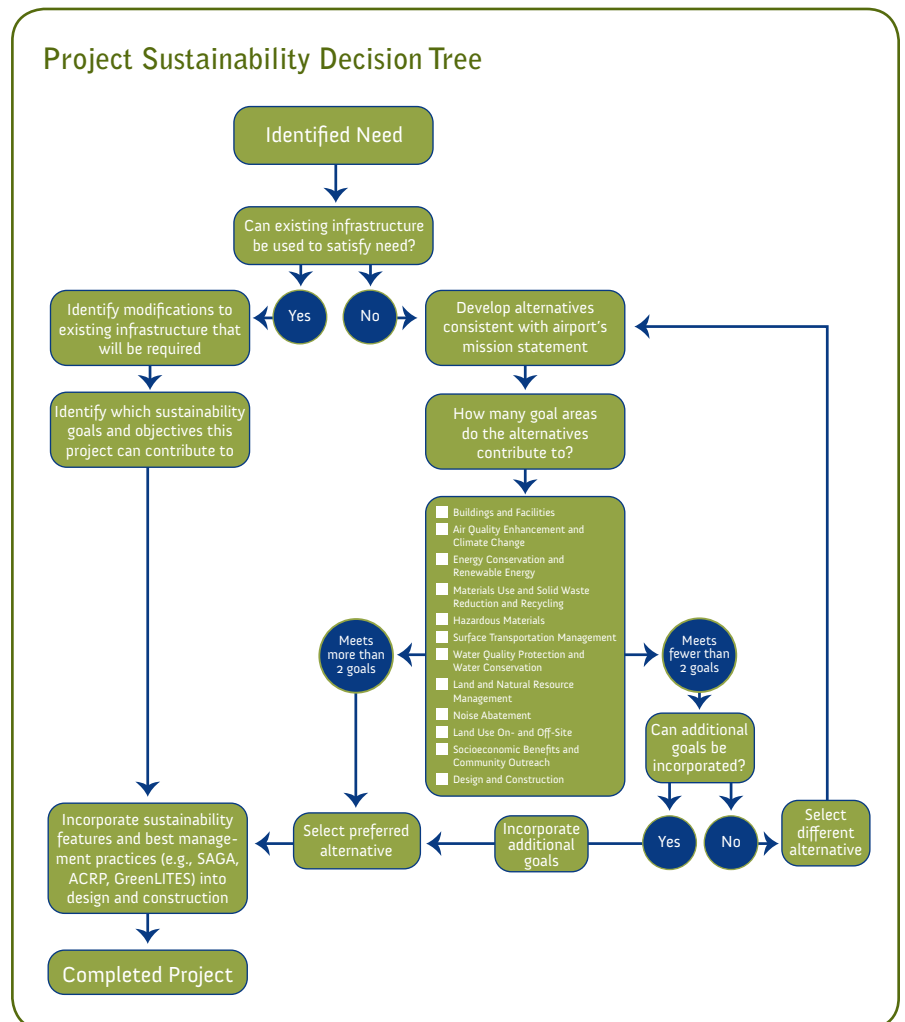
- Land and natural resources management
- Noise abatement
- Surface transportation management
- Water quality protection and water conservation
- Buildings and facility management and operations
- Socioeconomic benefits and community outreach/involvement
- Land use

Sustainability baseline assessments were performed to determine how the airport is currently performing in each of the above areas. From that assessment, goals were set and procedures developed to help the airport achieve those goals. Additionally, sustainable features were evaluated as part of each development alternative shown in the master plan.

During the first phase of the project, a list of facility needs was generated based on analysis of existing conditions, a forecast of aviation demands, and recommendations from the sustainability baseline assessments. Facility needs included expansion of the terminal building, additional t-hangars, increased fuel facility capacity, and more vehicle parking. Additionally, infrastructure for alternative fuels, renewable energy, alternative modes of transportation, and waste minimization were identified.

In developing options to meet the identified needs, the project team posed the following questions: “how can the project contribute to meeting the sustainability goals and objectives?” and “how

can the project be enhanced or modified to meet the goals and objectives?” Using those questions as a framework, the team was able to come up with more resourceful and innovative options that both meet the needs of the facility, are more sustainable and, are often more cost-effective. C&S developed a “project sustainability decision tree” that takes an identified need through a series of questions and decision-making steps to ensure that it contributes to the airport’s stated sustainability goals and objectives. If a project does not contribute to a



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minimum of two goals, it must be re-worked until it complies. Additionally, the tree encourages reuse and adaptation of existing infrastructure instead of automatically relying on new construction for a solution.

Finally, C&S developed a sustainability report card to help the airport track progress toward meeting its goals over time. On a pre-determined basis, data is recorded in the report card and can then be easily compared to previous years' data and the goals to ensure that milestones are being met.

C&S also reached out to Cornell University and Ithaca College, offering a unique opportunity for students to be involved in a real-world green project. Because both institutions are recognized as leaders in sustainability, the institutions were excellent partners for this novel project. Four classes comprising nearly 75 students signed on to make sustainability at the airport their semester-long project. The airport manager and C&S project staff made multiple presentations to the classes. During

the semester, students made numerous field trips to the airport and corresponded frequently with the project team.

An overall project goal is for this master plan to serve as a learning tool and template for the FAA and other airports to learn best practices and develop guidelines to apply sustainability principles to other projects. As environmental regulations become stricter, strategies and technologies for being greener will become more common, and may even become mandated. With Ithaca's experience to build on, the learning curve for other facilities will be reduced.

Implementation

The most important part of the sustainable master plan is in implementation. If the recommendations in the master plan are not followed, the airport and county's long-term goals and objectives will not be met.

The key to identifying sustainable solutions is looking at development needs through a different lens—one that takes sustainability goals and objectives into account for every decision. For almost every development need identified at Ithaca, the project sustainability decision tree provides a simple two-step process to identify the most sustainable and viable solution. First, identify ways to maximize existing infrastructure. Second, if new construction is the only viable option, ensure that it is built in the most sustainable manner possible.

Terminal Building Expansion

One of the most pressing needs identified was expansion of the existing terminal building. The terminal was built in the mid-1990s, before the Transportation Safety Administration (TSA) was formed and security needs at airports increased. Accommodating TSA, screening equipment, airline



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offices, concessions, baggage, and passenger holding areas is difficult within the existing building layout. TSA is currently occupying one of the ticketing slots for their baggage screening operations, processing, and support areas, leaving no space available for additional airlines to serve the airport. Bottlenecks occur frequently as passengers get backed up going through the undersized security screening area. The typical response to this terminal space challenge would be to design a building addition. However, the most sustainable project is the one that is never built, so the project team used the decision tree to solve the terminal space constraints within the existing footprint. The team reached a solution that reconfigures baggage processing, existing offices, and a community room. These changes will eliminate the need for adding square footage in the short-term. However, the existing footprint will not be able to adequately serve the airport's needs forever. Therefore, once it becomes necessary, a long-term building expansion will be designed achieving a minimum certification level of LEED Silver from the US Green Building Council.

Sand Storage Facility

Even though this project was significantly designed by the time the master plan came up with final goals and objectives, C&S was able to come up with ways to take a traditional design for a sand storage facility and modify it to satisfy sustainability goals. Using the sustainability decision tree, we were able to identify a number of options that will now be included on the project, including:

- Using oriented strand board instead of plywood for interior walls (made from a waste/recycled material instead of virgin timber)
- Cellulose insulation (made from recycled material)



- High-efficiency lighting
- Occupancy sensors to turn off interior lights when unoccupied
- Forest Stewardship Council certified lumber for construction
- Recycling of construction debris
- Contractors will be required to limit idling time of vehicles on site to reduce air pollution

Apron Rehabilitation

The design of a new apron rehabilitation project includes infrastructure (conduits and EMH) to accommodate future electric ground power for aircraft. The actual power will not be provided at this time, but the infrastructure will be in place once ITH decides to move forward. Engineers also specified more energy efficient HSP lighting fixtures to replace the metal halide fixtures that currently exist on the roof of an existing hangar. Finally, crushed stone will be used in lieu of crushed ledge rock because of both its functionality and significantly shorter hauling distance than crushed ledge rock.