




STAYING A STEP AHEAD

*Avoiding risk and optimizing for the
future with utility master planning.*

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Historically, airport passenger loading has nearly doubled every 20 years. Master plans — with their strategic road maps for effectively handling such increased capacities — have long offered airport campuses a solution for anticipating future project needs. But understanding the hierarchy of new projects, updated facilities and allocation of capital funds is only part of the equation in preparing an airport for the future.

Today, faced with possible cutbacks in facility loading, airports are finding that requirements for increased resiliency and system risk mitigation will remain constant.

A utility master plan — developed as an integral part of an airport's master plan — helps prepare an airport to

accommodate not only passenger capacity variables, but also risk and resiliency. As the question of future facility loading — and, consequently, utility usage — hangs in the balance, airports must utilize utility master plans to reduce operating costs and emissions of greenhouse gases while simultaneously mitigating risk and continuing to provide excellent passenger experiences.

CURRENT STATE OF MASTER PLANNING

Airports typically perform master planning on a regular basis, usually every five years as part of a capital improvement plan or as part of an attempt to right-size assets based on changes in terminal demand. It's safe to assume that many airports across



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the country have been undersized in this regard — the growth of the last several years has put the vast majority of airports behind in terms of capacity, adding further stress to aging utility infrastructure and placing more importance on effective master planning.

Such master plans don't always include a detailed utility master plan as part of the package or as a parallel effort. This limits an airport's understanding of the current state of electrical and thermal infrastructure on an airport's campus and what is needed for future planned upgrades, which in turn impacts the alignment of investment allocation to properly meet the changing needs of the campus.

A near-term look focuses on how to maximize existing assets and increase reliability to avoid vulnerabilities. In this scenario, immediate no-cost or low-cost impacts are analyzed alongside real risks related to service and availability.

BENEFIT OF PROACTIVITY

Hundreds of thousands or even millions of dollars are spent throughout the normal master plan process to gather intricate detail of passenger loads now and into the future, the number of people living within the airport's service radius, airfield demand and more. In a master plan, taking much more than a cursory glance at utilities and electrical load is important in making the most of the massive capital spend already being allotted for terminal and other campus upgrades.

While it's acceptable for a utility master plan to lag slightly — waiting to account for the burdens and loads brought on by new facilities and changing passenger capacities — it must go hand in hand with the master plan to prepare for any large changes to the system. The unprecedented impacts of the COVID-19 pandemic in 2020 make future growth plans for some airports less certain, but no matter the case, airports should always prepare to right-size utility infrastructure for the future.

Developing a utility master plan as part of a master plan increases proactivity and offers a wide range of benefits:

OPERATIONS AND MAINTENANCE COST SAVINGS

In some situations, utility infrastructure is made up of assets that were designed to meet old standards or have gone beyond their service life and need replacement. These assets not only cost more to operate but tend to be wasteful from an energy perspective. Utility master plans examine these assets from a

modern perspective, then develop recommendations to effectively support new loads and save on operations and maintenance costs.

INCREASING EFFICIENCY

Many airports have specific energy efficiency goals influenced by location, environmental regulations and ownership. A utility master plan can take these goals into consideration and then develop recommendations that are designed to meet or exceed those requirements while still effectively addressing changing needs.

IDENTIFYING AND MITIGATING RISK

Perhaps more impactful than anything, a utility master plan offers an airport a definitive date for when its level of risk will increase. Sensitivity analyses project the future impact of variability of parameters and determine how those parameters will impact the results and recommendations of the utility master plan. The resulting data — alongside future goals, life cycle cost, carbon reduction and more — support an understanding of available solutions, bringing the most cost-effective option to light.

CASE FOR UTILITY UPDATES

All airports carry a massive challenge: continuous operation, 24 hours a day, 365 days a year. Staying ahead of the constantly evolving nature of air travel while maintaining everyday operations in this environment can be difficult. Master plans are meant to provide organization by projecting development, looking ahead.

But master plans are rarely implemented as intended. Meeting changing needs requires flexibility and proactivity in the face of the unexpected. With a utility master plan, airports can determine what projects to move forward with on a utility scale alongside facility growth, avoiding potentially overloading existing utility infrastructure and creating massive risk to operations.

A detailed master plan and a corresponding utility master plan help make the case for funding such projects. As the air travel industry looks to the future, airports and airlines must work together to invest in such plans to make effective use of their capital budgets and positively impact passenger experiences.

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