![esri logo]

# A NEW APPROACH AT RENO-TAHOE INTERNATIONAL AIRPORT

Discover How GIS Fueled Its Efforts toward Success

## PREPARING FOR THE FUTURE

Moving passengers and connecting people from one location to another is a well understood function of an airport. Less well-known is that airports play an increasingly important role in connecting economies and global supply chains and for driving economic development in their regions. Currently, over four million passengers a year travel through Reno-Tahoe International Airport (RNO), and the airport delivers an economic impact of over $3 billion for the region. RNO is owned and operated by the Reno-Tahoe Airport Authority (RTAA).

But with passenger travel forecast to exceed 6.5 million passengers a year and cargo growth opportunities fueled by companies poised for growth, such as Tesla, it was clear that plans for RNO's future needed to include not just accommodating future passenger growth but also considering how the airport could expand its positive impacts on the Reno-Tahoe region. Capitalizing on the fact that an efficient and well-connected airport can deliver a competitive advantage to the region, the airport is positioning the Reno-Tahoe area as a central distribution hub for the western states to help drive greater economic development.

At the same time, any airport wishing to receive Airports Capital Improvement Plan (ACIP) funds from the Federal Aviation Administration (FAA) must also comply with the FAA's Airports GIS (AGIS) program. To support the transition to the satellite-based air traffic control system NextGen, airports are required to collect precise survey information of airfield data in geographic information system (GIS) format. With those regulations in mind, RTAA set aside $1.25 million to complete the effort.

It was at this juncture that RTAA saw the opportunity to leverage the FAA requirements to the airport's full advantage. It recognized that collecting the data for the FAA's Airports GIS program would give RNO a head start on gathering the digital GIS data needed to help the airport become more efficient and productive and would play a significant role in its future development plans.

> "The implementation and application of GIS at the organization will improve the overall business process by connecting departments and making information more accessible. Ultimately, this will allow us to serve our customers and stakeholders better than ever before."
>
> **Marily Mora**
> President/CEO, Reno-Tahoe Airport Authority

## PAVING THE WAY TO SUPPORT FUTURE PLANS

In 2013, Dan Bartholomew, the vice president of Planning, Engineering and Environmental Management at RTAA, wanted to ensure that the airport moved forward in a smart but comprehensive way. He recognized that the airport needed an enterprise GIS to support its future plans, but with a limited budget, he was also hesitant of trying to do too much too fast. Bartholomew wanted an implementation methodology that was, in his words, "simple, logical, affordable, and manageable."

To help him achieve those goals, he brought in Arora Engineers, Inc., to help guide the airport through the development process. To collect the digital information required by the FAA's Airports GIS program, Arora began to collect the precise survey and orthoimagery data to support the creation of the required FAA data elements. Wanting to minimize hardware and software costs, an early decision was made to use Esri's ArcGIS® Online to deliver both data products and applications to the airport.

The data collected for the FAA's Airports GIS program provided the foundation for a series of immediate applications, which were designed to support not just the FAA but also the wider airport and airspace operations, for example, unmanned aircraft systems (UAS) restricted airspace, airport height restrictions, airport land use, emergency flood analysis, and airport surface radar coverage analysis.

While the survey crews were collecting field data, Bartholomew and the Arora engineering team were meeting with each of the major offices within the airport to help define the most strategic business applications that would be built from the collected data. Through a series of stakeholder meetings with the property division, facilities and maintenance, engineering and planning, air service, operations, and finance, the team was able to further refine the airport's future needs for an enterprise GIS.
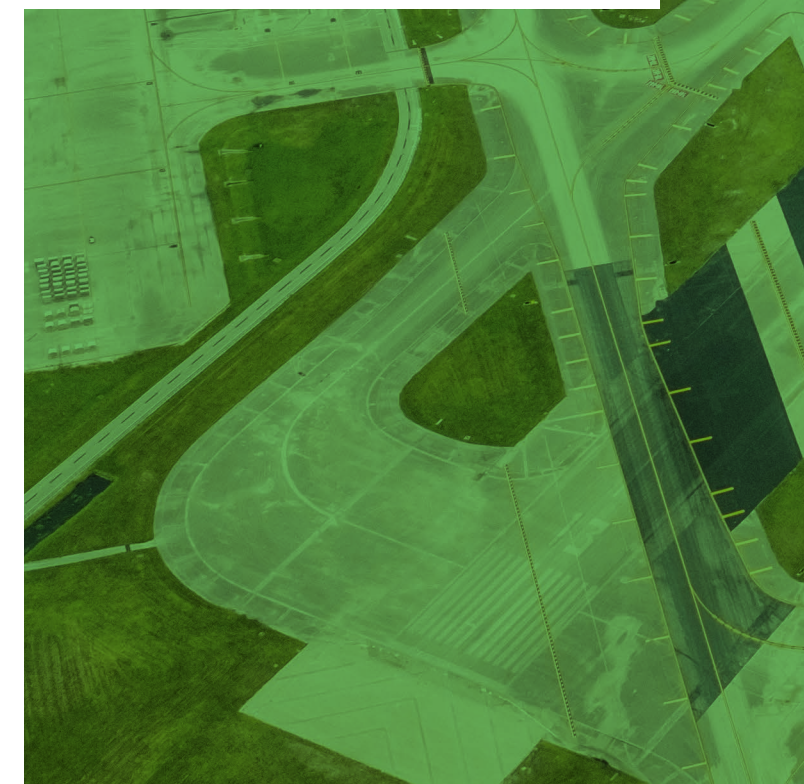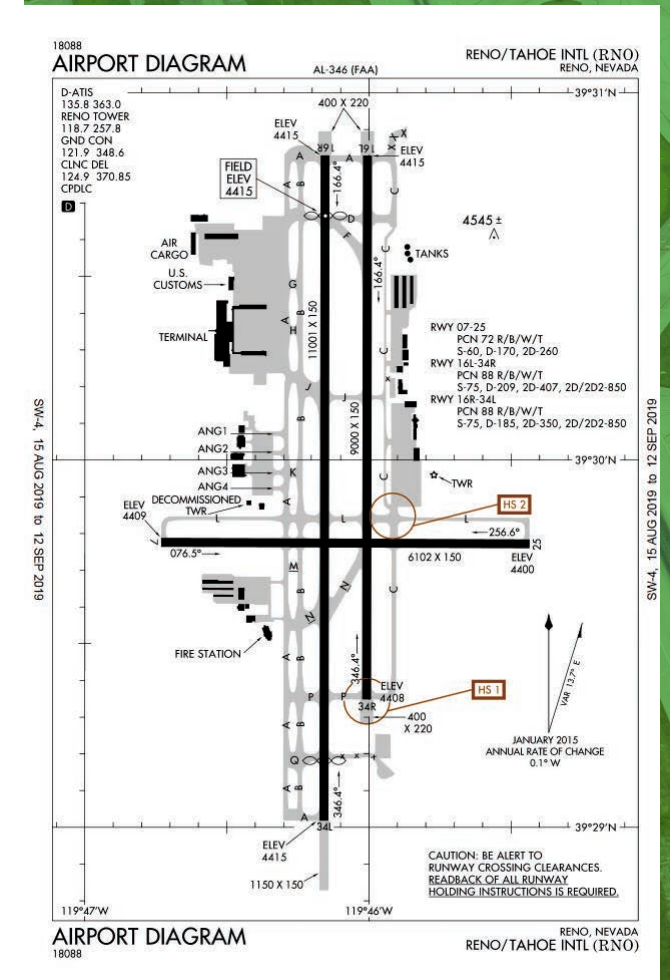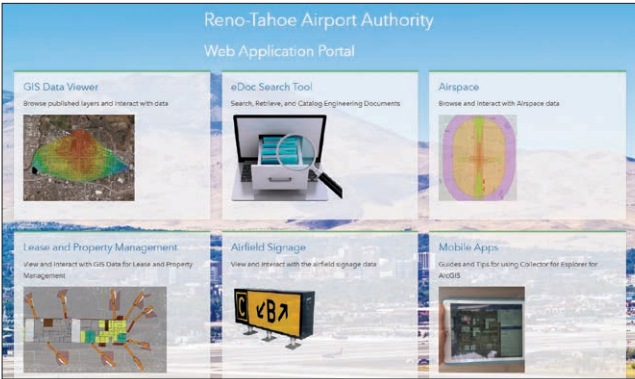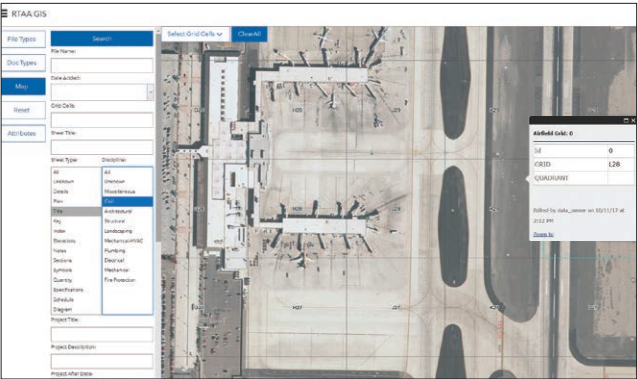
# LEVERAGING AND UPDATING EFFICIENCY

At the center of the GIS applications is a GIS portal through which all the major applications and data can be accessed. Any asset or object on the airfield or within the terminal can be identified with corresponding details about it. And because it is distributed through ArcGIS Online, it can be accessed anywhere, at any time, by anyone with appropriate permissions.

This application also serves as a basic data viewer, allowing airport staff to view any relevant location on the airfield or within the terminal. At the same time, staff can generate their own high-quality maps and exhibits for meetings or other purposes without having to wait for someone to complete it for them.

One of the first applications identified from the stakeholder meetings was a map-based document discovery system. A common problem at every airport is the trove of disparate documents, such as Microsoft Word or Excel files, photos, CAD drawings, and maps. And finding the right documents when you need them is often the most time-consuming part of any airport professional's job. Documents were geographically tagged to a location and made easily retrievable from a map interface.

The next order of business was to capture all the terminal lease spaces and integrate the GIS with the airport's property and leasehold management application, GCR's Airport IQ Business and Revenue Manager.

This application allows staff in the property division to access any of the lease information and understand the status of every property within the terminal, airside, or at off-site facilities. This is especially important to accommodate more airline service and generate revenue to support future growth.

Staff were able to use Collector for ArcGIS to record the locations of assets not captured for the FAA AGIS data collection, add attributes based on field observations, and add photos from the field and tag them to their precise location. In this way, they were able to assemble a very

complete inventory of the airport's major assets. This data, in turn, became the foundation for the daily inspections required by federal aviation regulations of all certified, commercial service airports.

At each step of the development process, the team members would evaluate the success of the developed application to ensure that they were meeting the business requirements of each department. These stakeholder meetings served to bring greater clarity and focus to what the airport wanted to do with its GIS and brought the business units closer together in defining their common goals. There were regular meetings and updates with senior leadership, which served to build substantial support over time.



Reno-Tahoe Airport's Spatial Data Portal



RTAA's eDOC Spatially Enabled Search Tool
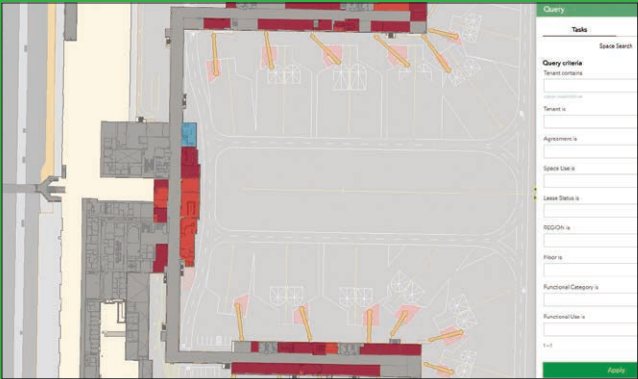


Property Lease Management Map used to Monitor Lease Information at Reno-Tahoe International Airport
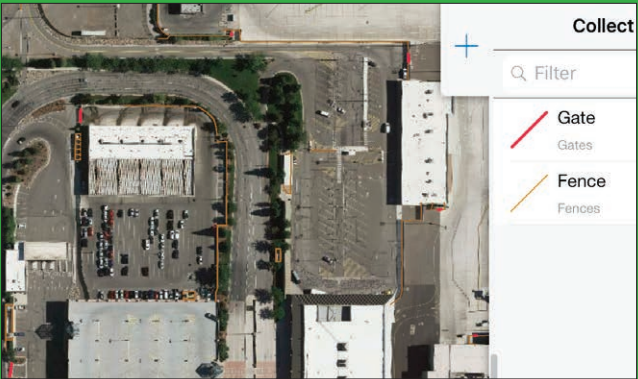


RTAA's Collector Application

## REACHING THE GOAL WITH GIS

A goal for Bartholomew and his team was to establish the data foundation of their enterprise GIS to sustain the airport well into the future. Consultants helped them achieve this goal by implementing comprehensive CAD and GIS standards along with robust data maintenance procedures.

As Bartholomew likes to point out, all this was accomplished with minimal staffing, infrastructure, and IT support and delivered under the original budget. The result was a GIS foundation that requires only 1.5 internal dedicated staff to maintain and continue to develop it. Jed Hammer was brought in as the GIS manager to handle much of this work and to lead the program. Current and future projects include mapping the airport's utilities and implementing a GIS-enabled airfield asset management system.

The future value of the GIS proved itself when Arora brought in Mead and Hunt to develop a new, long-range airport master plan two years later. The airport created a separate ArcGIS Online group for the master plan team, and all the data previously collected became the foundation for its planning activities. Like Mead and Hunt, other subcontractors could take the data into the field, make comments, and add their own photos to be shared among the consultant team and ultimately with the airport.

The airport sought a new approach with its master plan, which focused on expanding commercial air service; general aviation and cargo service; regional economic development; and, in particular, customer service. Central to that effort was defining a true partnership between the airport, community, and region that would promote the creation of a dynamic hub for economic growth.

All the GIS data was central to the development of the airport's master plan, which calls for $1.6 billion for modernization and capital improvements to sustain growing passenger and cargo volumes. ArcGIS Online supported a public comment application along with the ability to add subcontractors to the Master Plan team. At the same time, this provided all stakeholders with efficient and consistent exhibits as they moved through the plan and review process.

The master plan has been submitted to the FAA for approval, and the airport is positioning itself for a new and larger role in the regional economy. RNO also recognizes that, in today's knowledge-based economy, the most valuable cargo it moves is people.
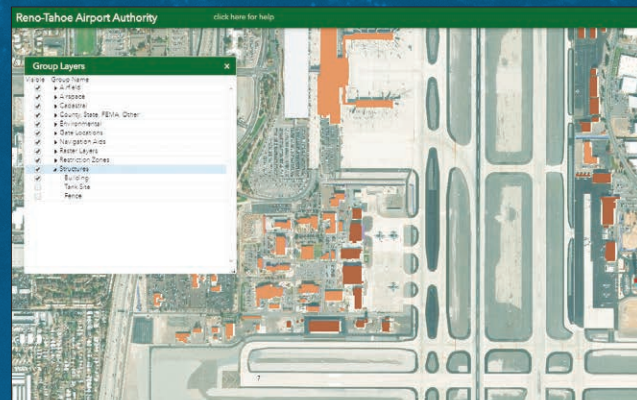


RTAA's Basic Asset Viewer
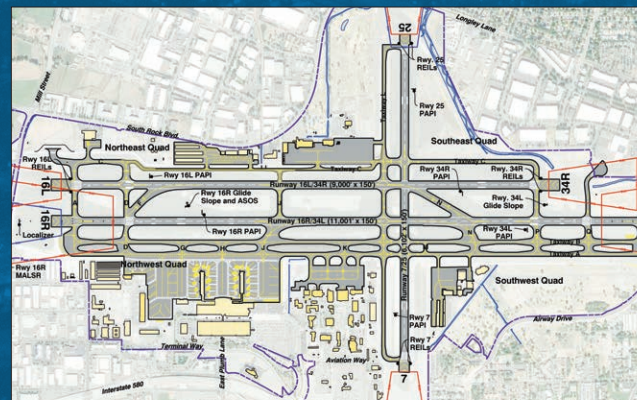


Map of RTAA's Runways, Taxiways, and Navigational Aids (NAVAIDS

## TAKE YOUR ORGANIZATION TO NEW HEIGHTS

If your organization has yet to fully embrace GIS like Reno-Tahoe Airport Authority has, it's time to arrange a preliminary assessment to see how ArcGIS can help your airport achieve its business objectives. Esri airport and aviation experts will conduct an official business value assessment to determine where the opportunities for a location-based strategy exist. In addition, Esri's Jumpstart packages can help you quickly implement intelligent solutions so that you can start right away on the path to greater productivity.

To embrace streamlined operations without further delay, discuss a plan of action with Esri today.

Visit **go.esri.com/GIS-for-Airports**.

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