

# Oak Ridge Airport

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## COMMUNITY INTEGRATION STUDY

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## 1. Introduction

### 1.1. City of Oak Ridge Overview

The City of Oak Ridge was once the largest of the Manhattan Project’s “Secret Cities”, dating back to 1942, shortly after the United States entered World War II (WWII). With the intention of developing materials and technology for the creation of the atomic bomb, the U.S. government recruited thousands of young workers to the 59,000 acre-site located approximately 25 miles west of Knoxville, Tennessee. Within the Oak Ridge area there were four original production facilities, including the Y-12 electromagnetic plant, the X-10 experimental plutonium pile and separation facilities, the K-25 gaseous diffusion plant, and the S-50 thermal diffusion plant. Though the City of Oak Ridge was initially designed to accommodate 8,000–15,000 employees, it’s population grew exponentially in the years to come with estimates ranging from 75,000–80,000 three years later. Following WWII, the City continued to develop facilities to develop enriched uranium until the Department of Energy (DOE) terminated operations in 1987.<sup>1</sup>

To this day, the City of Oak Ridge continues to embody its legacy as a hub for technology and innovation. The City is home to the East Tennessee Technology Park (ETTP), where the Oak Ridge National Lab (ORNL) and the Y-12 National Security Complex are located. ORNL is now one of the leading research and development facilities in the world. ORNL researchers deliver scientific discoveries and technical breakthroughs to provide societal and economic benefit to the nation. ORNL specializes in neutron science, high-performing computing, advanced materials, biology and environmental science, nuclear science and engineering, isotopes, and national security. Alternatively, Y-12 serves DOE’s weapons dismantlement complex and plays a vital role in nuclear security after Shifting from weapons manufacturing in 1992.<sup>2</sup>

The theme of innovations in research and technology goes beyond the sites previously involved in the Manhattan Project and is apparent throughout the entirety of Oak Ridge. As the City emerged as a global hub within the technology industry, additional organizations and businesses have chosen to locate in the area. The Seattle-based global leader in developing micro-reactors, Ultra-Safe Nuclear, established its Pilot Fuel Manufacturing (PFM) facility in Oak Ridge in 2022. Other companies, such as Karos, Energy-X, Fusion Company, and others are also located in Oak Ridge. Oak Ridge’s theme of innovation is even present within the local high school, which provides unique technical and vocational programs for students orientated within the automotive and aviation fields. In addition to the technology advancements expected from existing Oak Ridge entities in the coming years, the attraction of technology-related businesses and organizations is anticipated to

<sup>1</sup> National Park Service. Oak Ridge, Tennessee. NPS.Gov.  
Explore Oak Ridge. 5 Interesting Facts to Help You Learn More About the History of Oak Ridge TN. ExploreOakRidge.com  
The Tennessee Historical Society. Oak Ridge. TennesseeHistory.org.  
Oak Ridge Office of Environmental Management. History. Energy.gov.

<sup>2</sup> National Museum of Nuclear Science and History – Atomic Heritage Foundation. Oak Ridge, TN. Nuclearmuseum.org.



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enhance the region's standing as a global driver and hub for innovation. As a result, numerous businesses and organizations have committed to locating in the ETTP.

To accommodate current and expected growth in the region, transportation and access enhancements were identified to ensure residents and businesses are adequately served. As such, in 2009 the City of Oak Ridge began the planning and development of a new general aviation (GA) Airport in the City. The Oak Ridge Airport (the Airport) was proposed to be under the ownership and operation of the Metropolitan Knoxville Airport Authority (MCAA), which undertook significant planning efforts on the project. Between 2012 and 2020, MCAA led the planning, researched funding, and conducted technical reviews to determine the need for the Airport. In 2020, the Oak Ridge City Council approved the transfer of sponsorship of the Airport from MCAA to the City of Oak Ridge.<sup>3</sup> Between 2012 and 2020, numerous planning efforts were completed, including the development of an Airport Master Plan, an Airport Layout Plan, relevant environmental evaluations, as well as countless coordination and visioning meetings. As supplement to the previous planning initiative, the City of Oak Ridge and Tennessee Department of Transportation (TDOT) commissioned The Oak Ridge Airport Community Integration Study, using a Transportation Planning Grant, to evaluate strategies and action items for the thoughtful inclusion of the Airport into the local community.

## 2. Study Purpose

The purpose of the Oak Ridge Airport Community Integration Study is to provide guidance to the City of Oak Ridge on surrounding opportunities and issues of the Airport; as well as establish a planning framework for identifying land use and transportation requirements, ensuring integration of the Airport into the local community. The study is further intended to provide actionable steps associated with the prioritized goals and objectives of the proposed Airport resulting from collaborative efforts and stakeholder engagement. Ultimately, this study aims to support mobility plans throughout the region, including the Tennessee Department of Transportation and the Knoxville Transportation Planning Organization's Mobility Plan 2045 and the City of Oak Ridge's Comprehensive Plan.

The Oak Ridge Airport Community Integration Study consists of four main elements:

- Data Collection
- Stakeholder Outreach
- Airport Vision, Goals, and Objectives
- Recommendations and Action Plan

<sup>3</sup> [www.oakridgetn.gov/oak-ridge-Airport](http://www.oakridgetn.gov/oak-ridge-Airport)



### 3. Data Collection

The Oak Ridge Airport Community Integration Study is one of many planning studies developed for the City as it prepares for the design and construction of the Airport. This study is not meant to replace previously completed Airport-focused planning studies, but to incorporate findings and information from other analyses. The planning documents collected and reviewed as part of this study include the following:

- Oak Ridge Airport Master Plan and Airport Layout Plan
- Oak Ridge General Aviation Airport Benefit-Cost Analysis (BCA)
- Environmental Assessment (EA)
- Beneficial Reuse of the ETPP

#### 3.1. Oak Ridge Airport Master Plan and Airport Layout Plan (ALP)

The Oak Ridge Airport Master Plan was developed in 2018 and evaluated existing conditions, identified anticipated stakeholder needs, and formulated both near-and long-term development needs associated with the proposed Airport. The Master Plan provided aviation forecast summaries indicating a total operational growth rate of almost 37 percent from 2020 to 2040 and facility requirements necessary to accommodate the forecasted demand for GA activity.

The Airport Layout Plan (ALP) provided depictions of recommended airfield and landside facilities to meet the projected demand outlined in the Master Plan. It details the location of future Airport facilities, including the configuration of the runway, taxiway, hangars, and aprons of the proposed Airport.

It is anticipated that the Airport will have 17 hangar spaces upon opening, which will expand to 33 spaces in the initial term. Six key factors were considered when establishing the Airport Layout Plan, which are listed below:

- Locate runway and Airport boundaries within existing site constraints of DOE Heritage Center
- Ensure surrounding land use compatibility
- Adequate runway length to meet anticipated needs of initial and future critical aircraft
- Offer adequate GA terminal area space for 20-year Master Plan horizon
- Evaluate airspace obstacles and maximize capabilities for instrument approaches
- Maintain feasible construction costs



### 3.2. Oak Ridge General Aviation Airport Benefit-Cost Analysis (BCA), 2020

Led by the MKAA, the BCA assessed the return on state and grant funding provided by the Appalachian Regional Commission (ARC) and the Federal Aviation Administration's (FAA) Airport Improvement Program (AIP) for a new GA airport. The BCA evaluated four alternatives against a base case using a variety of evaluation criteria to analyze each alternative's ability to satisfy the project objective, which is to provide additional aircraft capacity and access to the region's innovation ecosystem.

The findings of the BCA concluded that construction of a GA reliever airport in Oak Ridge is the best alternative in meeting the project objective. The BCA also provided a conservative estimate for direct fiscal impact resulting from the construction of the Airport. The resulting BCA ratio of 1.3 indicated a modest return on investment by the FAA and ARC through increased facility capacity. Additionally, the BCA detailed the significance of collaboration efforts required from federal, state, and local partners for developing the Airport. It is important to note that while many factors were considered in the development of the BCA, it may require further review and additional follow-on studies.

### 3.3. Environmental Assessment (EA)

In February of 2016, the U.S. DOE completed an Environmental Assessment (EA) for the title transfer of the U.S. DOE property located at the ETTP Heritage Center to the MKAA for the purpose of constructing and operating the Oak Ridge Airport. The request for the land transfer made by the MKAA detailed the Airport's primary purpose of expanding GA services and leveraging the extensive assets existing at the ETTP to support regional economic development through industrial investment.

The analysis examined the proposed action's impact to airspace, air quality, noise, safety, land use, socioeconomics, geology and soils, water resources, ecological resources, cultural resources, infrastructure, waste management, intentional destructive acts, and cumulative impacts. The results of the analysis concluded that the proposed action did not constitute a federal action that would significantly affect the quality of the human environment within the parameters of the National Environmental Policy Act (NEPA) of 1969, and as such, a Finding of No Significant Impact (FONSI) was issued. As the Airport Master Plan is now finalized, further environmental review is underway to analyze the potential effects associated with construction and operation of the Airport in its final design, in compliance with FAA regulations.

### 3.4. Beneficial Reuse of the ETTP

The Beneficial Reuse of the ETTP provided an overview of the environmental cleanup and redevelopment processes for the ETTP, as was conducted by United Cleanup Oak Ridge (UCOR). The document provided historical background information of the site, property transfer details, future reindustrialized forecasts, and examined the relationship of the site in consideration of historic preservation, conservation, industrialization, and the proposed Oak Ridge Airport.



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The end goal, or vision, of the Beneficial Reuse of the ETTP is to plan for and develop complementary land uses throughout the entirety of the ETTP. This promoting a mix of land uses, balancing historic preservation, reindustrialization, and conservation and greenspace. The document specifically identified greenspace as an integral aspect moving forward.

## 4. Stakeholder Outreach

One of the initial steps associated with the Oak Ridge Airport Community Integration Study was to develop a comprehensive list of existing and future stakeholders for the project and conduct targeted outreach efforts to these individuals, businesses, and organizations. Reaching out to and interviewing each stakeholder supported an enhanced understanding of the desired Airport facilities and services, as well as potential impacts of the proposed Airport specific development.

### 4.1. Stakeholder Identification

Early in the project, stakeholders were initially selected by the City of Oak Ridge. The initial pool of stakeholders included approximately six (6) organizations. As interviews were conducted and further information was gathered, the list of potential stakeholders grew.

Collaboration with the City of Oak Ridge remained a priority throughout the stakeholder selection process and all additions to the stakeholder group were approved by the City. The final pool of stakeholders included a diverse set of individuals representing a variety of industries, organizations, and interests. The full list of stakeholders interviewed for the study is provided as follows.

- Oak Ridge High School  
*Local high school that boasts unique educational and vocational training programs*
  - Community Reuse Organization of East Tennessee (CROET)  
*Economic development organization focused on the creation of quality jobs in the region*
  - Coqui Pharma  
*Radiopharmaceutical organization specializing in the development and distribution of medical radioisotopes*
  - Oak Ridge National Lab (ORNL)  
*Global innovation hub specializing in science and technology research for energy and national security*
- Ultra-Safe Nuclear  
*Global leader and vertical integrator of nuclear technologies and services*
- Y-12 National Security Complex  
*Premier manufacturing facility focused on ensuring safe and effective U.S. nuclear weapons deterrent*
- United Cleanup Oak Ridge, LLC (UCOR)  
*Environmental cleanup contractor for the DOE Oak Ridge Office of Environmental Management*





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- Edlow International  
*Leading nuclear transportation service organization*
- Cirrus Aircraft  
*Global-leading aircraft manufacturer*
- Kairos Energy  
*Engineering company focused on the delivery of a clean, affordable, and safe energy solutions*
- Energy Solutions  
*Nuclear waste services company providing safe recycling, processing, and disposal of nuclear material*
- Federal Aviation Administration (FAA) Unmanned Aircraft System (UAS) Integration Office  
*Leading entity for the FAA's efforts to safely integrate UAS and advanced air mobility operations into the U.S. National Airspace System*
- Los Alamos Airport  
*County-owned, public-use airport in Los Alamos, NM*
- Perot Field Fort Worth Alliance Airport  
*World's first industrial airport in Fort Worth, TX, which serves as the foundation of the Alliance, Texas development*
- Thaden Field  
*City-owned, public-use airport located two nautical miles south of the central business district of Bentonville, AK*

## 4.2. Stakeholder Interviews

Initial outreach to each stakeholder group was conducted via phone call and email correspondence. Following initial requests for participation in the study, a follow-up email and meeting invite was sent to the stakeholder to reserve the time for the interview. Shortly thereafter, questionnaires were sent to each stakeholder, allowing for time for preliminary consideration of topics to be discussed during the interview.

Questionnaires were developed to extrapolate both general and stakeholder-specific information from each group. Each questionnaire included 10-15 questions, with around half of the questions being consistent for each interview. These questions included topics inquiring about the interviewee's familiarity with the planned Oak Ridge Airport as well as background information on their organization. Remaining questions were tailored to the stakeholder being interviewed. These questions asked about the specific organization's reliance on aviation (if any), types of aviation services that would benefit them, and more. Major takeaways yielded from the interview process are summarized below.



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- The proposed Airport will assist in further establishing Oak Ridge as a global hub for innovation and technology.
  - A diverse, technology-led base of businesses is currently present in the area.
  - Oak Ridge is often viewed as a “flyover” location, as the existing major hubs are predominately along coasts – the Airport would help to attract more business by making long-distance access more convenient.
- The proposed Airport can provide transport and shipping options for time-sensitive, life-saving materials.
  - Coqui Pharma will develop and ORNL currently develop radioisotopes, which decay rapidly and require expedited shipping needs.
- The proposed Airport can promote careers and education within the aviation industry.
  - Opportunity to expand upon existing educational and technical programs offered in Oak Ridge, including programs led by Oak Ridge High School.
- Promote a business-class Airport.
  - Streamline travel efficiency and reduce travel costs for corporate personnel in organizations throughout the ETTP.
  - Attract outside investment to the region.
- The proposed Airport will support GA activity and provide GA relief for the region.
  - Lack of available hangar space at airports in the region, including congestion at McGhee Tyson Airport (TYS).

### 4.3. In-Person Stakeholder Meeting

In addition to the initial stakeholder interviews and data collection processes, the Oak Ridge Airport Community Integration Study included an in-person stakeholder meeting that was held on March 9, 2023, at the Oak Ridge Fire Station 4, located at the ETTP. The meeting was well-attended, with nearly 25 individuals representing stakeholder interests, the City of Oak Ridge, and project consultants. The purpose of the meeting was to provide a progress update on planning efforts related to the proposed Airport and corresponding study and to obtain feedback from the stakeholders on priorities. In addition to presentations and discussion led by the project consultant, meeting attendees also participated in a series of activities.

The first activity involved brainstorming ideas for the Airport vision statement. Attendees were asked to call out a word or brief phrase that they felt embodied the future Oak Ridge Airport. Participants were also asked to provide feedback on numerous draft vision statements that were prepared prior to the in-person meeting.



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The second activity was to participate in a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis associated with the Airport in a discussion-based forum. Factors identified in each component of the SWOT analysis were also ranked low, medium, or high based on the presumed impact or relation to the project.

Both strengths and weaknesses were defined as internal to the Airport, meaning they represented current characteristics that would impact decisions moving forward. Most strengths identified for the project were ranked as high, while most weaknesses were ranked medium. Opportunities and threats were defined as external to the Airport. Most opportunities were ranked in the high category, while most weaknesses were evenly ranked across all categories.

The third group activity was to identify and prioritize Airport goals and objectives. Twenty objectives, organized by five goals, were presented to participants who were asked to demonstrate the importance of these objectives using stickers, where a sticker placed next to an objective would indicate one vote for that objective. The number of votes placed next to each objective ranged from zero to seventeen. Goals and objectives identified as significant are prioritized for the project moving forward, and all goals and objectives are discussed in greater detail in remaining sections of this report.

All information provided during discussion and activities at the stakeholder meeting was incorporated in the final vision statement, objectives, and action items moving forward.

## 5. Airport Vision, Goals, and Objectives

A vision for the Airport, including overarching goals and objectives, were developed utilizing information from previous planning exercises and documents, as well as collaboration with the City and stakeholders.

### 5.1. Airport Vision

Vision statements are developed to document how an entity desires to succeed. As mentioned previously, the Airport vision was curated in collaboration with the City of Oak Ridge stakeholders. Resulting from this collaborative effort was a multifaceted vision, which includes a declarative, emphasized statement, as well as a supporting description to provide an extended narrative. The vision statement is portrayed as follows.

*“The Oak Ridge Airport expands the innovation corridor’s presence, drives economic development, and supports existing and future community needs.”*

*The Oak Ridge Airport is committed to being a strong community partner, bringing Oak Ridge’s legacy of cutting-edge research and development into the future. The Oak Ridge Airport will expand the innovation corridor’s presence as a global industry leader in science and technology, driving economic development, creating new business opportunities, providing valuable community services, and supporting the active aviation community.”*



## 5.2. Airport Goals and Objectives

Goals provide direction for desired results in key areas and serve as the starting point for defining objectives. In collaboration with the City of Oak Ridge and the stakeholders, the following goals were developed:

- Goal 1: Setup the Airport for Future Success
- Goal 2: Prioritize Business and Corporate Use
- Goal 3: Support Small Cargo Transport
- Goal 4: Accommodate GA Activity
- Goal 5: Enhance the Aviation Corridor
- Goal 6: Prioritize Access

Objectives are descriptions of how goals will be achieved. Objectives become the foundation of recommendations and drive the Airport's action plan. In collaboration with the City of Oak Ridge and the stakeholders, **Table 1** shows the objectives that were developed under each goal:



Table 1. Oak Ridge Airport Goals and Objectives

Goal	Objective
<b>Setup the Airport for Future Success</b>	Continue successful partnership with the Tennessee Department of Transportation (TDOT) Aeronautics Division
	Preserve adjacent land for future aeronautical use and protection from incompatible development
<b>Prioritize Business and Corporate Use</b>	Attract a premium Fixed Based Operator (FBO) to accommodate business/corporate users
	Attract a Charter Operator to Accommodate Local Business Travel
<b>Support Small Cargo Transport</b>	Partner with a small cargo transport firm
	Plan for Airport security access controls that provide badged access for fast-time shipping needs
	Ensure adequate airfield and associated landside design to accommodate anticipated cargo usage
<b>Accommodate General Aviation Activity</b>	Preserve space for GA aircraft storage
	Leverage partnerships with local/regional aircraft businesses
<b>Enhance the Innovation Corridor</b>	Identify space for future drone operations to test and/or provide package delivery services
	Preserve space for a future vertiport to accommodate Advanced Air Mobility (AAM) operators
	Preserve space to accommodate continued aviation education via the Oak Ridge High School and other surrounding higher education centers
	Plan and Implement Electric Aircraft Charging Stations
<b>Prioritize Access</b>	Ensure appropriate access to the Airport for future users
	Minimize access disruptions to local businesses and organizations
	Establish last-mile connection services

Sources: City of Oak Ridge, Oak Ridge Airport Stakeholders, Kimley-Horn, 2023

## 6. Recommendations and Action Plan

This section serves as the culmination of the Oak Ridge Airport Community Integration Study and presents recommendations for each objective. Each recommendation is focused on four main components:

- Necessary actions
- Responsible party
- Timeframe
- Resources needed

The recommendations below are organized by goal and objective.



## 6.1. Goal 1: Setup the Airport for Future Success – Objectives & Recommendations

The following sections detail the objectives associated with Goal 1: Setup the Airport for Future Success, which evaluates building successful partnerships with TDOT Aeronautics Division and preserving land for future aeronautical use. Recommendations, roles, and responsibilities, as well as resources needed and timeframe for implementation are presented for each of the objectives in Goal 1.

### 6.1.1. Objective: Continue successful partnership with the Tennessee Department of Transportation (TDOT) Aeronautics Division

The proposed Oak Ridge Airport was granted inclusion into the National Plan of Integrated Airport Systems (NPIAS), which demonstrated the FAA's recognition of the Oak Ridge Airport as an essential facility within the national aviation system. Inclusion in the NPIAS is a critical first step that gives the Oak Ridge Airport opportunity and access to federal funding. Since Tennessee is part of the FAA's State Block Grant Program, federal funds are administered via TDOT Aeronautics Division. This emphasizes the need to maintain an effective working relationship with TDOT Aeronautics Division in terms of Airport capital needs.

To obtain FAA and state funds, the Airport and City must comply with state and federal grant obligations to remain eligible for funding. This includes formal entry into the Tennessee Aviation System Plan (TASP) and eventual identification of the role the Airport will play at the statewide level. The TASP 2040 was published in November 2021 and did not include Oak Ridge Airport. The TASP 2040 included a methodology to classify the Airports within the state. Tennessee's Airport system was stratified into five role classifications as shown in **Table 2** below. It is likely that the Oak Ridge Airport will initially classify as Community Service but aims to reclassify in the future as a Regional Service Airport, once demand is realized.



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Table 2. TASP 2040 Classification Methodology

State Classification	Criteria	Functional Role
<b>Commercial Service</b>	Primary and nonprimary commercial service airports as defined in the most current NPIAS report	Provides scheduled commercial service and supports economic activity with markets located across the globe
<b>Regional Service</b>	At least 350 jet operations annually, which represents an average of approximately one jet takeoff or landing per day during a calendar year	Supports regional populations with highperformance aircraft during all weather conditions and supports economic activity with domestic markets outside of the state
<b>Community Business</b>	At least 100 jet operations per year and/or a NPIAS airport with 100 or more based aircraft	Supports local populations with moderate jet activity and serves economic needs within the state
<b>Community Service</b>	All other airports with a paved runway	Supports local communities with limited or no jet activity and supports economic needs within regions and communities
<b>Turf</b>	All other airports with a turf runway	Supports emergency access, medical flights, recreational, and other quality of life benefits for local populations and visitors

Source: Kimley-Horn, 2021

#### 6.1.1.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:**
  - Coordinate regularly with TDOT Aeronautics Division, including them in all planning, design, and implementation meetings and projects.
  - Integrate into the statewide system via inclusion in the TASP
    - Identify the TASP role the Airport will serve once operational
    - Identify the future TASP role the Airport strives to achieve
    - Evaluate the Airport against the TASP Facility and Service Objectives to ensure appropriate infrastructure and services are provided at the Airport based on Airport classification
- **Responsible Party:** The Airport sponsor and TDOT Aeronautics are responsible for coordination and planning for integration into the TASP
- **Resources Required:** The resources required for this objective are human capital to support the planning and coordination efforts. There should be no financial resources necessary to implement this objective.



- **Timeframe:** Action for this objective should begin in the near term (five years) at least to identify when the TASP will be updated again so that Oak Ridge Airport can be considered.

### 6.1.2. Preserve Adjacent Land for Future Aeronautical Use and Protection from Incompatible Land Use

The FAA defines airport compatible land uses as those that can coexist with a nearby airport without constraining the safe and efficient operation of the Airport or exposing those living or working nearby to significant environmental impacts. The six core evaluation characteristics used to assess compatibility are as follows: aviation noise, airspace, visual/atmosphere interference, wildlife, protection of people and property, and development density.

Without effective land use planning, or adequate land use ordinances in place to protect the Airport environment, neighboring land could be developed in incompatible ways and threaten the future optimization of the Airport. For example, if a dense multifamily development is built near the Airport, then the Airport may not be able to expand due to safety concerns (more people to be impacted by a plane crash) and may not be able to conduct the same type of operations due to noise impacts.

The land area within and airspace above an Airport's runway protection zones (RPZs) and FAR Part 77 Surfaces should be protected from incompatible development, as development within these zones can impact the long-term performance of an Airport. The following subsections provide an overview of the RPZ and Part 77 Surfaces and what type of development is and is not compatible within these areas. It should be noted, this document is not intended to develop land use controls or zoning language. This document is intended to introduce these topics and make broad recommendation for use by the City of Oak Ridge in developing their land use and zoning regulations.

#### Runway Protection Zones

RPZs form a trapezoidal boundary around the end of each runway end and provide a safety buffer in the event of an aircraft overrun. The dimension of an RPZ is dependent on the runway's critical aircraft and visibility minimums; where a heavier and faster aircraft using more sophisticated instrument approaches require a longer, wider runway, and as a result a larger RPZ boundary. According to FAA design standards, an airport sponsor should aim to acquire complete control of the land within the RPZ, either through fee title acquisition or an easement, to ensure that the area within the RPZ can remain in compliance with federal safety standards. If fee title or easement is not an option, then zoning ordinances authorized by the local planning agency can offer a lesser form of protection. The FAA recommends that the RPZ be clear of all above ground obstructions, such as buildings, shrubberies or trees, and all other above ground objects. Airport sponsors must take appropriate measures to protect against, mitigate, or remove land uses considered incompatible within RPZs, as is feasible, understanding that removing public roadways or waterways is not always possible.





### Land Use

**Figure 1** presents a conceptual land use map for the land surrounding the Airport property. The yellow area demonstrates where existing aeronautical use has been identified, with the yellow striped area indicating opportunities for future aeronautical expansion. It is important to program future aeronautical land uses so that the zoning map and ordinance is developed with future expansion of the Airport in mind. The brown shaded areas on the map are areas that are currently and will remain preserved for the DOE and the green area identifies an easement that will preserve space for future Airport expansion.

It was determined that land to the west of State Route 58 (SR 58), shown in purple, be reserved for light industrial uses, which not only aligns with existing plans for the Heritage Center, but also aligns with the existing uses occurring in that area, such as ONRL and Coqui Pharma. Light industrial uses may include electronic facilities, factories making fast-moving consumer goods, small scale construction shops, and other more consumer-based assembly facilities. Light industrial uses are largely considered compatible with aviation activity, with some important exceptions. If light industrial uses emit smoke, dust, steam, or particulate matter, or airborne material of any kind then that specific use may not be considered compatible with the Airport environment. The area north of the light industrial area, shown in light green, is part of the Black Oak Ridge Conservation Easement (B.O.R.C.E). Development withing the B.O.R.C.E should be avoided.

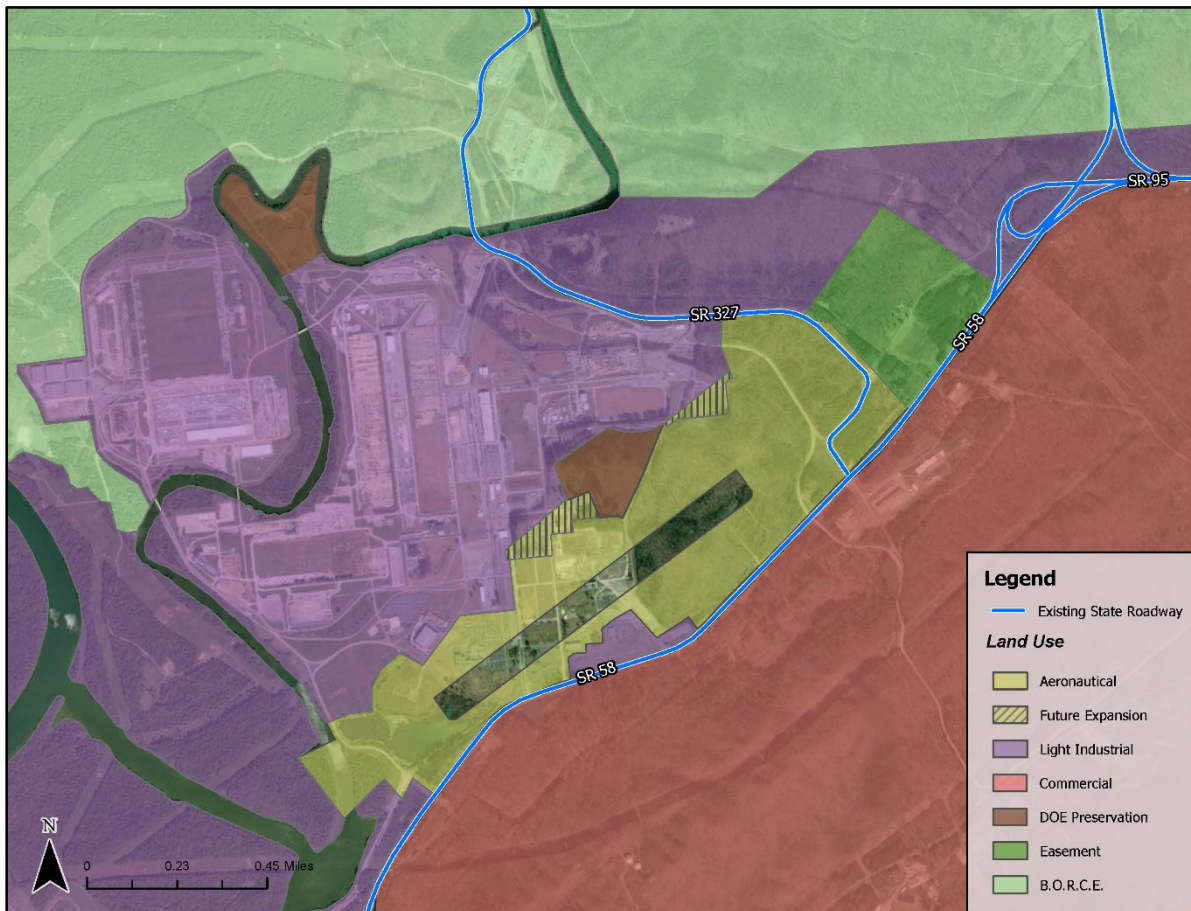
To the east of SR 58 it is recommended that the land use be reserved for commercial use, shown in red in **Figure 1**. Reserving this land for commercial uses aligns with goals to support the Airport and the region in the future, with new hotel, restaurant, shopping, gas stations, and other similar developments. It is important to note that some of these commercial developments, specifically hotels, gas stations, and other uses that attract larger groups of people, should be considered special uses to allow for a close review of each development before the development is permitted. Moreover, the use of specific design standards, such as down shielding lighting, containing trash, no water detention, no linear lighting, or building materials that produce glare, should be implemented within certain proximity to the Airport to avoid incompatible commercial uses. As a rule of thumb, the lower the density of uses the more compatible it will be with the Airport environment.

Moreover, the light industrial and light commercial uses envisioned for the Airport environment are considered compatible, so future ordinances that are established won't currently impact development but will protect the Airport from future incompatible uses that may occur in the future.



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Figure 1. Oak Ridge Airport Conceptual Land Use Map



Source: Kimley-Horn, 2023

### FAR Part 77 Surfaces

Federal Aviation Regulation (FAR) 49 CFR Part 77 establishes standards and notification requirements for objects that affect navigable airspace. There are five different surfaces recognized within Part 77:

- Primary Surface
- Transitional Surface
- Conical Surface
- Horizontal Surface
- Approach Surface



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These surfaces extend up from the ground into the navigable airspace and are often referred to as imaginary surfaces. The FAA does not play a large role in monitoring or restricting the type of land uses that can surround an Airport environment; however, the FAA does restrict building height within these Part 77 surfaces. Prior to any development occurring within these surfaces, a developer must complete a Notification of Proposed Construction or Alteration (Part 77 Form 7460-1) in conjunction with the FAA to determine if the proposed development creates an obstruction within one of the imaginary surfaces. If an obstruction exists, actions to mitigate the safety hazard may be required.

While the FAA monitors the building height of new development it does not regulate other types of incompatible land uses, such as dense multifamily homes, event centers, landfills, heavy industrial uses that emit smog or create other visual obstructions, and so on. **Figure 2** presents the conical surface boundary, which is inclusive of all other Part 77 surfaces and demonstrates the land and airspace that the Airport should aim to protect from incompatible uses. Due to the coverage of land under the conical surface, protecting this land from incompatible development will require coordination with multiple divisions within the City of Oak Ridge, as well as other counties since the conical surface extends beyond city limits.

Figure 2. Proposed Oak Ridge Airport Overlay District



Source: Kimley-Horn, 2023

### 6.1.2.1. Action Plan

Successful implementation of this objective includes:



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- **Necessary Actions:**
  - The Airport sponsor should begin coordination with the local planning authority as soon as possible to update or amend the area’s comprehensive plan zoning map (and zoning ordinance) to establish land use controls that limit or restrict incompatible uses within the RPZ (if not owned by the Airport) and Part 77 surfaces. This will also ensure that approved land uses are represented in the zoning code.
  - The local land use authority can work to establish an Airport overlay district or special districts within the Part 77 boundaries to help prevent incompatible uses. **Figure 2** provides an overview of the recommended overlay district, which is wholly inclusive of the Part 77 conical surface. This surface was selected as it is the most expansive and comprehensive Part 77 surface associated with Oak Ridge Airport and includes all other Part 77 surfaces as well as both Airport RPZs.
  - The local land use authority can develop design standards for approved and special uses within the Airport environment to limit incompatible designs within the Airport overlay district.
- **Responsible Party:** Though identification of the RPZs and Part 77 surfaces have been included as a component of the Airport Master plan, the City, and local land use authorities, are ultimately responsible for establishing compatible land use controls within the Airport environment. This will include coordination with various city departments as well as external coordination with other jurisdictions impacted by the Airport environment.
- **Timeframe:** All activities associated with the preservation of adjacent land (shown in the overlay district in **Figure 2**) should be accomplished in the Near-Term (next 5 Years), to avoid situations of incompatible development in the future, which may work to jeopardize Airport operations.
- **Resources Needed:** Resources associated with this objective will include human capital, as it will require coordination on behalf of the Airport sponsor and work from the local planning authority to update or amend the existing zoning map and ordinance. This objective may also require funding, which is dependent on a variety of factors.

## 6.2. Goal 2: Prioritize Business and Corporate Use – Objectives & Recommendations

The following sections detail the objectives associated with Goal 2: Prioritize Business and Corporate Use, which evaluates opportunities to attract an FBO and other service providers to the Airport. Recommendations, roles, and responsibilities, as well as resources needed and timeframe for implementation are included in the Action Plan associated with each of the objectives.



### 6.2.1. Attract a Premium Fixed-Base Operator (FBO) to Accommodate Business/Corporate Users

Through conversations with the City of Oak Ridge and the Stakeholders, the future Oak Ridge Airport has a desire to become a Regional Service or Community Business airport. An integral component in establishing an Airport to serve in that role is the inclusion of a premium FBO that can attract and service jet traffic. As part of the stakeholder outreach effort, several local and regional businesses and organizations indicated a need for FBO services to support their operations, including the Oak Ridge National Lab (ORNL), Y-12 National Security Complex, Coqui Pharma, and Cirrus Aircraft. Currently, these organizations rely on the Nashville International Airport (BNA) and McGee Tyson Airport (TYS) for these services, an approximate 2.5-hour drive or 40-minute drive, respectively.

A premium FBO should provide full-service fueling, including fuel trucks and self-service fuel with credit card readers for payment options. Once the runway is active, flight students from Cirrus Aircraft out of TYS could immediately use the Oak Ridge Airport for flight training and refueling. Additionally, the FBO should include facilities, such as a pilot lounge area, flight planning area, public phone, Wi-Fi, food and beverages, mothers' room, and restrooms, as well as automobile parking, courtesy cars, or other ground transportation options. Though it may not be directly associated with the FBOs services, the Airport should also consider including a community meeting space that could be leased to members of the aviation and non-aviation community. This would create an opportunity for additional revenue and a positive way to integrate the Airport and the overall community.

#### 6.2.1.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:**
  - Coordination between Airport sponsor, local economic development organizations such as the East Tennessee Economic Council (ETEC), and other private firms with an interest in using services provided by an FBO.
  - Develop a marketing strategy to attract a national FBO, like Signature, Atlantic Aviation, or other.
- **Responsible Party:** While there is room for coordination and strategy development among various stakeholder groups, marketing, identification, and contracting an FBO service provider will ultimately be the responsibility of the Airport sponsor.
- **Timeframe:** Selection of an FBO should occur in the Mid-Term (6-10 years), and the FBO should ideally be selected prior to or during the initial phases of Airport construction.
- **Resources Needed:** Resources needed include human capital to identify opportunities and market the Airport to the FBO. If applicable, financial incentive programs at the local or state level could be applied.



### 6.2.2. Attract a Charter Operation to Accommodate Local Business Travel

As mentioned, the future Oak Ridge Airport aims to serve the Regional Service or Community Business role within the Tennessee Aviation System. Through the stakeholder outreach effort, several Oak Ridge businesses such as the ORNL, Coqui Pharma, and Y-12 National Security Complex indicated a need or desire for a charter operation out of Oak Ridge Airport.

- **ORNL.** Executives at ORNL indicated a desire for charter operations out of Oak Ridge Airport. Before the COVID-19 pandemic, ORNL spent over \$22 million on air travel using traditional air service. According to the Lab, company travel needs have returned to pre-pandemic levels and as such, a portion of their business travel would be better served by way of charter operations out of the Oak Ridge Airport.
- **Y-12 National Security Complex.** Y-12 has a large workforce of approximately 8,500 who require occasional business travel. Their corporate parent companies, Leidos and Bechtel, require monthly corporate flights which could be supported out of Oak Ridge Airport.
- **Coqui Pharma.** Coqui Pharma purchased a large swath of land to the west of the Airport and need shipping and transport services to support their operation. Coqui Pharma plans to be frequent users of the Airport, operating once or twice per day out of Oak Ridge Airport for cargo shipping and corporate travel.

Offering charter services, as well as other FBO services, could also have future economic development benefits, as large employers are often attracted to regions with business airports that offer a full range of services to meet their needs. A business airport is typically a strong selling point that can be used to attract business in the future. Several opportunities identified in the SWOT analysis were related to economic development, such as emerging as a “statewide economic driver”, “workforce development & increase jobs”, and “diversity in new businesses/business attraction”

#### 6.2.2.1. Action Plan

Attracting a charter operation to support a business-class airport could be accomplished in conjunction with the establishment of an FBO, as FBOs oftentimes partner with aircraft charter companies and serve similar clients. Successful implementation of this objective includes:

- **Necessary Action:** Identify an appropriate charter service. This may require marketing efforts and coordination with planned future users such as ORNL, Y-12, and Coqui Pharma to ensure services provided align with their needs.
- **Responsible Party:** Selecting and contracting a charter operation is the responsibility of the Airport sponsor, however other stakeholders, such as the city’s economic development firm, can play a role in attracting the right service provider.
- **Timeframe:** Attracting a charter service should be completed in the mid-term (six-10 years) and should run parallel to activities associated with attracting an FBO to the Airport.



- **Resources Needed:** Resources needed include human capital to identify opportunities and market the Airport to the charter operation. If applicable, financial incentive programs at the local or state level could be applied.

### 6.3. Goal 3: Support Small Cargo Transport – Objectives & Recommendations

The following sections detail the objectives associated with Goal 3: Support Small Cargo Transport, which evaluates opportunities to partner with a small cargo transport firm, identifying the most efficient protocols for Airport access, and ensuring land is preserved for future air cargo use. Recommendations, roles, and responsibilities, as well as resources needed and timeframe for implementation is also included in the Action Plan associated with each objective.

#### 6.3.1. Partner with a Small Cargo Transport Firm

The City of Oak Ridge is home to several research and development organizations, many of which who ship products to other company locations or directly to customers. Based on interviews from the stakeholder outreach process, a few organizations local to Oak Ridge may benefit from the Airport partnering with a small cargo transport firm.

- **Coqui Pharma.** Coqui Pharma does not currently ship isotopes by air but has plans to ship their isotopes via aircraft in the future. The isotopes can be shipped on commercial flights, but the company would prefer to ship them via small, cargo-specific jet aircraft.
- **ORNL.** Like Coqui Pharma, ORNL develops radioisotopes and radiopharmaceuticals which have short half-lives. This presents a unique supply chain issue as they require expeditious transport to the customer. Shipping the radioisotopes and radiopharmaceuticals directly from Oak Ridge reduce transport time compared to transport out of TYS by approximately one and a half to two hours.
- **Y-12 National Security Complex.** Y-12 frequently ships enriched uranium product via TYS but indicated a desire to ship directly out of Oak Ridge due to convenience if the service was available.

##### 6.3.1.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Action:** Collaborating between the City, Airport, and organizations utilizing the service to identify common needs and potential opportunities. The planned 5,000-foot runway may be a challenge for some operators.
- **Responsible Party:** While engagement across public and private agencies will help in finding the most appropriate small-scale cargo operator, it will ultimately be the Airport sponsor's responsibility to create a leasing agreement with the cargo operator.



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- **Timeframe:** Implementing this strategy should occur in the mid-term (six-10 years) horizon.
- **Resources Needed:** Resources will include human capital for creating the partnership and potentially financial resources to create an Airport environment that is appealing to a small-scale cargo operator.

### 6.3.2. Plan for Airport Security Access Controls that Provide Badged Access

A portion of the Oak Ridge Airport's future activity is planned to accommodate shipping needs of local R&D organizations, transporting isotopes with short half-lives. These isotopes are not meant to be stored in a warehouse; they are required to be shipped once made available and as quickly as possible.

It is typically recommended for public-use airports to maintain secured access to the airside environment, commonly known as the Air Operations Area (AOA). There are several access-control devices that an airport may choose to implement, including fenced and locked gates, key-pad access with a secure code, and using radio-frequency identification (RFID) technology. RFID technology allows a user to be given a photo-identification key card fitted with a microchip that is touched or swiped against an RFID reader, triggering a secured gate or door to unlock.

An RFID reader system to gain access ramp or loading area of the Airport is recommended. The RFID reader system is more efficient than other access-control solutions, which makes it the preferred access-control system to facilitate the quick shipping and delivery of medical isotopes. Given the transportation urgency of these products, specific individuals at these organizations may require badged access to the ramp area to deliver products and have them loaded on the cargo aircraft.

It should be noted that secure access for fast-time shipping operations can be achieved using the same access controls implemented for Airport tenants and other users. While the airside portion of the Airport should remain secure, the landside portion of the Airport (future terminal building, restaurant, park, etc.) should remain open to the public without secured access.

#### 6.3.2.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:**
  - Coordinate with future users to identify the best location for access control gates to ensure access to the airfield is safe, secure, and efficient. Secure the remainder of the Air Operations Area (AOA) with a security fence with specifications that align with TDOT Aeronautics. Work with airport planning consultants to determine other necessary access controls.
  - Develop a list of individuals that require controlled access privileges. These individuals may be Airport employees, air cargo employees, as well as employees of Coqui Pharma,





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ONRL, and other Airport tenants that work behind the access control gates. Provide these individuals with a RFID badge for access.

- **Responsible Party:** Final decisions on location of access points and individuals who will be given access controls is the responsibility of the Airport sponsor.
- **Timeframe:** This objective should be addressed in the near-term (1-5 years), overlapping with the design and construction of the Airport.
- **Resources Needed:** Implementation will require financial resources as there will be a cost associated with setting up the RFID system, RFID cards and touchpads. The City of Oak Ridge should include appropriate security access controls in the Airport Capital Improvement Plan (CIP) and secure funds for this project via FAA Airport Improvement Program (AIP) funds as well as TDOT Aeronautics State Grant Program, or other sources based on eligibility. A local match to fund this project will also be required.

### 6.3.3. Ensure Adequate Airfield and Associated Landside Design to Accommodate Anticipated Cargo Usage

With an emphasis on the need to support air cargo activity, it is imperative that adequate airside and landside space is set aside for existing and future air cargo needs at the Airport. Successful planning, design, and engineering will be required to support the anticipated cargo needs of the surrounding businesses and organizations relying on the Airport. Cargo usage will require apron space for loading and unloading, appropriate airfield design to support the aircraft conducting the cargo operations, aircraft storage to park cargo aircraft between operations, and adequate ground transportation access so that the trucks can efficiently access the airfield for loading and unloading.

The objectives presented in **Sections 6.3.1 and 6.3.2** demonstrate the importance of securing an air cargo transport service that is easily accessible to necessary users to support air cargo needs at the Airport and reserving adequate space for these operations is the first step.

The ALP is a useful tool in identifying where air cargo space can be set aside for existing and future need. Land will need to be preserved on the ALP for future private investment. It will be the Airport sponsor's responsibility to identify land for preservation and the Airport will need to work with a design and engineering firm to develop the land to suit air cargo needs.

#### 6.3.3.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:** Ensure appropriate space is designated on the ALP for future small cargo use. Partner with airport planning consultants to determine exact spatial, land, and facility needs to accommodate this activity. Consult with the selected small air cargo transport operator to ensure adequate development of Airport facilities infrastructure.
- **Responsible Party:** Ultimately, the Airport sponsor, with assistance from an Airport planning and design engineering consultant, is responsible for planning and design.



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- **Timeframe:** Planning to meet this objective should be addressed in the near-term (0-5 years), however, design and construction will likely be in the mid-term (6-10 years).
- **Resources Needed:** The City of Oak Ridge should include appropriate infrastructure in the Airport CIP and secure funds for these projects via FAA AIP funds as well as TDOT Aeronautics State Grant Program, or other sources based on eligibility. A local match to fund these projects will also be required.

## 6.4. Goal 4: Accommodate GA Activity – Objectives & Recommendations

The following section details the objectives associated with Goal 4: Accommodate GA Activity, which evaluates opportunities to preserve space for GA aircraft storage and leveraging partnerships with local and regional aircraft businesses. Recommendations, roles, and responsibilities, as well as resources needed and timeframe for implementation is also included for each associated objective.

### 6.4.1. Preserve Space for GA Aircraft Storage

As previously discussed, a significant motivating factor for developing the Oak Ridge Airport is to relieve GA congestion at surrounding Airports in Tennessee, predominately at McGhee Tyson Airport (TYS). To establish the Airport as a successful GA reliever facility, planning and preserving adequate space for GA aircraft storage is imperative.

According to information gathered during the stakeholder engagement process, Cirrus Aircraft, indicates that the Oak Ridge Airport is a promising location for a reliever Airport to TYS and as a business-class airport for the region. While Cirrus Aircraft currently have no plans to relocate their investments from TYS to Oak Ridge, they note that, overall, Tennessee is a very favorable location for developing business partnerships, and if they ever were to invest in expanding their business to Oak Ridge, they would require both amenities and facilities, like GA aircraft storage. Cirrus Aircraft also noted that there is a shortage of hangar space in the region currently, with people actively looking to store Cirrus aircraft in hangars across the state but finding limited to no availability. It is evident that preserving space for GA aircraft storage would not only fill a need in aviation services across the state, but it could also attract new users to the Airport.

Acreage for dedicated land to be preserved for GA aircraft storage should be determined through a needs assessment of GA activity in Tennessee and based on the master plan forecast findings or letters of intent from businesses or individuals. Approximate estimates regarding total space available and total space required for GA aircraft storage, as well as an analysis of storage provided at other GA airports, should be examined. The needs assessment should also consider the fleet mix of the aircraft that are anticipated to use the Airport as that will indicate the type of aircraft storage that will need to be built. Smaller GA aircraft, like those used for flight training, may have different aircraft storage needs than larger corporate/business jets. Determining the number of t-hangars, number and dimension of conventional hangars, and number of aircraft tie-downs should be included in the process of preserving space for GA aircraft storage.



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#### 6.4.1.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Action:** Conduct a GA needs assessment and compare findings to other like airports in Tennessee. Refer to forecast findings in Master Plan and use the ALP as a tool for preserving space necessary for existing and future activity.
- **Responsible Party:** The Airport sponsor should coordinate with existing and future Airport tenants, such as Coqui Pharma, ONRL, Cirrus, and others.
- **Timeframe:** Conduct implementation process in the near-term (five years), though storage facilities required may increase in the years following.
- **Resources Needed:** Resources required include financial resources to conduct needs assessment and work with consultants (if needed) as well as human capital for the planning and coordination tasks involved. Funds to plan, design, and construct necessary infrastructure is FAA-eligible. Hangars to accommodate needs rank low on project prioritization. Once constructed, hangar rates should be coordinated with TDOT Aeronautics.

#### 6.4.2. Leverage Partnerships with Local/Regional Aircraft Businesses

Leveraging partnerships with local and regional aircraft businesses may prove to be an important component in growing the Oak Ridge Airport. There are several businesses that Oak Ridge could target for partnerships. One of these businesses is Cirrus, a global leader in aircraft manufacturing and offer a variety of services within the aviation industry. Currently, they have a successful facility and operation at TYS, though it has been determined that hangar availability is extremely limited. A facility at the Oak Ridge Airport would work to alleviate the GA storage constraints at TYS and establish Oak Ridge as a hub for GA, creating investment opportunity and business activity. Additionally, Cirrus offers flight training, which could be accommodated in the form of touch-and-go's and aircraft fueling at Oak Ridge Airport once the runway is activated.

There are many other aviation businesses that the City should consider for future operations at the Airport. Those include companies like Garmin, Honeywell, Duncan Aviation, and many more.

#### 6.4.2.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Action:** Establish effective partnerships with Cirrus and Garmin to understand their needs to ultimately accommodate activity.
- **Responsible Party:** The Airport sponsor should continue discussion with Cirrus and Garmin, as they could be a realistic and tangible first Airport user.
- **Timeframe:** Coordination with Cirrus and Garmin should occur in the near-term (0-5 years) but relationships should be maintained.



- **Resources Needed:** Resources needed to accomplish successful implementation include human capital throughout the planning phase.

## 6.5. Goal 5: Enhance the Innovation Corridor – Objectives & Recommendations

The following section details the objectives associated with Goal 5: Enhance the Innovation Corridor, which evaluates opportunities to support emerging aviation technologies, such as drones, advanced air mobility (AAM), and electric aircraft. This goal also evaluates opportunities to further the aviation industry by way of career training. Recommendations, roles, and responsibilities, as well as resources needed and timeframe for implementation is also included for each associated objective.

### 6.5.1. Identify Space for Future Drone Operations to Test and/or Provide Package Delivery Services

Throughout numerous conversations with stakeholders, there was clear excitement regarding the emergence of uncrewed aircraft systems (UAS) technology. While Oak Ridge was noted as a great location for drone development due to its rich history of innovation, there are still challenges regarding implementation. The FAA has yet to establish broad guidance related to UAS aircraft operating within navigable airspace and on airport property. This brings about concerns regarding compatibility between UAS operations and traditional airport functions. A collaboration between the FAA and industry users resulted in the development of the Low Altitude Authorization and Notification Capability (LAANC) program, which is the current program used for facilitating the use of drones in navigable airspace. Users must request authorization to use their drone and may only conduct their operation after receiving authorization through the LAANC application. Other restrictions on drone usage are related to certification. The FAA requires that all commercial drone users acquire Part 107 certification. This certification would be required for any potential UAS operators flying out of the Airport for medical isotope transportation or other commercial uses.

#### 6.5.1.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:** The Airport sponsor should coordinate with TDOT for support or guidance on UAS and drone usage. Currently, drones cannot operate near airports, so this should remain as a planning item until more guidance is available. The Airport sponsor should also collaborate with the FAA UAS office to pursue this option further.
- **Responsible Party:** The Airport sponsor is ultimately responsible for the safe and efficient operation of aviation activity. The Airport should monitor all drone activity requests.
- **Timeframe:** Implementing drone activity should be planned for in the near term (0-5 years), but implementation is likely to occur in the mid-term (6-10 years) to long-term (11-20 years).



- **Resources Needed:** Resources needed to plan and implement this type of activity is human capital. Planning for future use cases should be initiated by the Airport sponsor and likely users once demand is realized.

### 6.5.2. Preserve Space for Future Vertiport to Accommodate Advanced Air Mobility (AAM) Operators

The Oak Ridge Airport is being planned as a major addition to the City's already established Innovation Ecosystem. As such, the City of Oak Ridge should consider Advanced Air Mobility (AAM) in future planning documents and exercises. AAM is a broad term to describe the use of automated aircraft to transport passengers, cargo, military, and/or medical supplies at low altitudes within urban and suburban areas. While passenger transport by way of electric vehicle takeoff and landing (eVTOL) aircraft is unlikely in the near-term, initial use cases are anticipated to include cargo and medical delivery, both services and industries widely supported in the area.

AAM will likely remain a small portion of aviation, at least until the FAA certifies the aircraft and guidance is published that defines the infrastructure needed to support this activity. Due to the Airport not being constructed yet, the City of Oak Ridge has an opportunity to identify and preserve space for the development of a vertiport to support AAM operations. The Airport sponsor should not design or construct a vertiport, but they should consider identifying and preserving space for when it may be needed. Vertiport siting should be planned in conjunction with the electric charging station siting.

#### 6.5.2.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:**
  - The Airport sponsor should work with a consultant to identify a location and preserve space at the Airport for a future vertiport.
  - The Airport sponsor should coordinate with the local land use authority to begin coordination on zoning regulations that may impact eVTOL and AAM operations.
- **Responsible Party:** The Airport sponsor.
- **Timeframe:** Activities related to developing partnerships and preserving land for AAM infrastructure should be conducted in the near-term (five years).
- **Resources Needed:** Resources required will include human capital to implement coordination efforts, as well as funding to hire a consultant to identify and preserve space on the ALP.



### 6.5.3. Preserve Space to Accommodate Continued Aviation Education via the Oak Ridge High School and Other Surrounding Higher Education Centers

The Oak Ridge High School offers a Transportation Academy which includes both automotive and aviation curriculum. Approximately 120 students are enrolled in the program, and it is divided into six sessions, three per semester. Currently, students enrolled in the program are assembling a small aircraft on school grounds, however, students and faculty indicated a preference to work on aviation-related projects at the Airport, where the educational opportunities are more hands-on and reminiscent of real-life experience. The City of Oak Ridge is dedicated to creating an airport environment that supports all facets of community, including the local schools. As such, the City of Oak Ridge should partner with the Oak Ridge Schools Administration to relocate a portion or all of its Transportation Academy to the Airport. To accommodate the Transportation Academy, the following facilities may be necessary:

- Hangar or warehouse to support flight simulation, aircraft assembly/storage, and classroom lessons.
- Restaurant or cafeteria to provide meals for the students but to also support other Airport patrons and the broader Oak Ridge community
- An Airport driveway, wide enough to accommodate a school bus or shuttle, with turnarounds or a cul-de-sac for school bus egress.

#### 6.5.3.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:**
  - The Airport sponsor should continue conversations with the Oak Ridge Schools Administration to identify program logistics moving forward.
  - The Airport sponsor should evaluate their ALP to identify opportunities to preserve space to expand the high school's educational program.
- **Responsible Party:** The Airport sponsor and Oak Ridge Schools Administration are responsible for ensuring successful implementation.
- **Timeframe:** This objective should be initiated in the near-term (0-5 years) but may take longer to fully implement.
- **Resources Needed:** Funding to plan, design, construct, and/or lease facility space at the Airport will be needed. Conversations with both parties must be had to ensure appropriate agreements are established.



#### 6.5.4. Plan and Implement Electric Aircraft Charging Stations

The Aviation industry is trending towards going electric due to the high level of emissions associated with traditional aircraft. Electric aircraft solutions are being developed for traditional crewed aircraft as well as eVTOL aircraft related to AAM. Therefore, there is a need to plan for and provide electric aircraft charging stations at the Airport. Some emerging electric aircraft companies, like BETA Technologies, offer a quick and efficient source for electrically charging aircraft. They also provide the option for ground EV vehicles and charging stations, which may work to enhance last-mile connectivity for the Airport.

The Airport should explore developing partnerships with companies like BETA Technologies, or similar organizations, to provide for electric charging stations on-site. Though major strides have been made in the development and implementation of electric aircraft, it is likely that a full shift to electric will be phased in over the next several years. As such, this objective should be prioritized in the Mid-Term (6-10 years).

##### 6.5.4.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:**
  - The Airport sponsor should coordinate with BETA Technologies and public utilities to understand the grid capacity for the Airport environment and how to enhance grid capacity.
  - The Airport sponsor should partner with an airport consultant to preserve space on the ALP for electric charging stations.
- **Responsible Party:** The responsible party is the Airport sponsor.
- **Resources Needed:** Local, state, and/or federal funding. Funds will be required update the ALP, and funds will be required to procure the new facilities. Federal funds to accommodate AAM do not currently exist.

#### 6.6. Goal 6: Airport Access – Objectives & Recommendations

The following sections detail the objectives associated with Goal 6: Airport Access, which evaluates accessibility to the Airport for future users, strategies to minimize disruptions to local businesses, and identifies opportunity to improve last-mile connectivity. Recommendations, roles, and responsibilities, as well as resources needed and timeframe for implementation is also included for each of the objectives in Goal 6.

##### 6.6.1. Ensure Appropriate Access to the Airport for Future Users

Though access requirements will vary based on the needs of different users, ensuring access should be a priority in the Airport planning phase. Currently, access to the Heritage Center site is provided by SR 58 and SR 327 (**Figure 3**). Within the Heritage Center, access is provided by a series of local



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roads that provide internal connections based on the historical use of the site. Most notably, an active railroad line runs directly through the Heritage Center site with a stub connection along Perimeter Road.

Figure 3. Heritage Center Existing Access Map



Source: Kimley-Horn, 2023

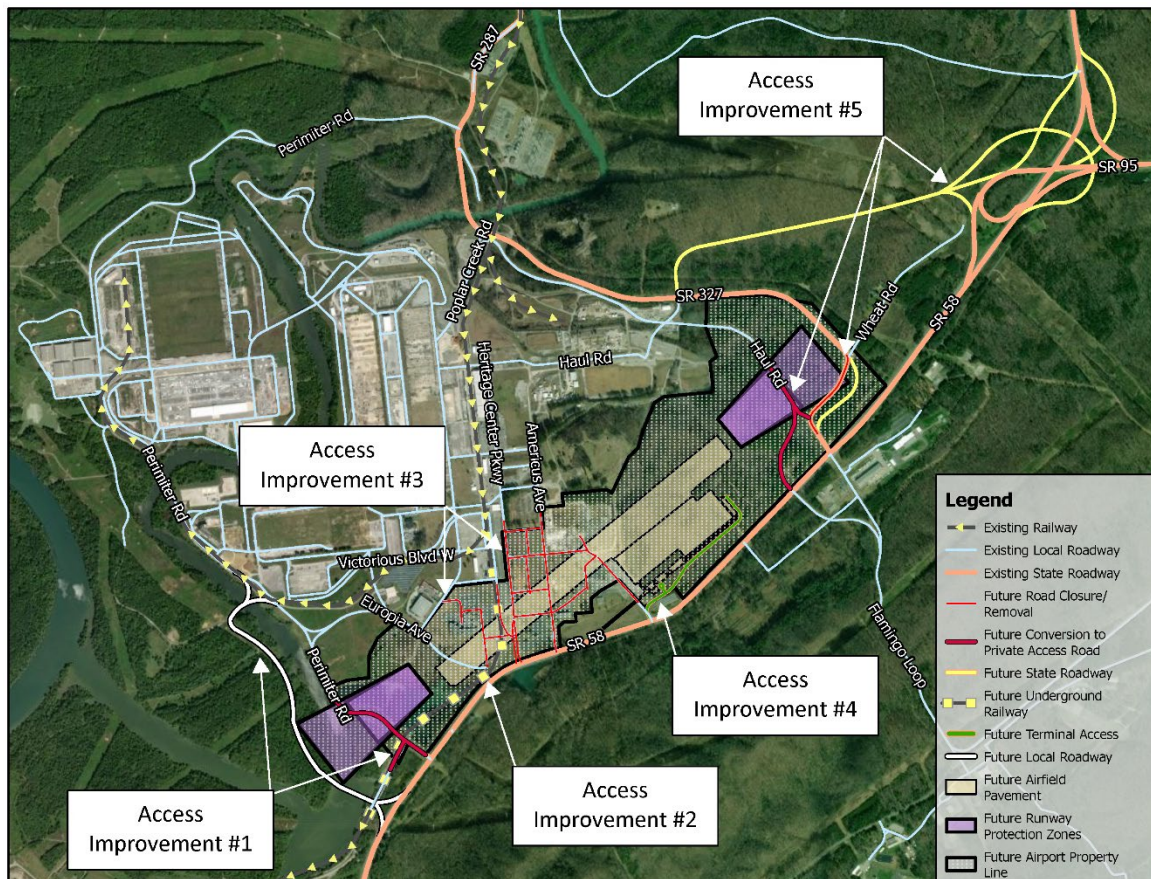
Based on the current alignment of the Oak Ridge Airport and other needed Airport support facilities, it is likely that access to the Heritage Center site will need to be re-evaluated to ensure the safe operation of the Airport as well as to provide all potential users with the access they require.

**Figure 4** provides a conceptual layout of access to the site that would accommodate users and address currently identified issues through five distinct access improvement strategies. It is important to note that road closures or changes from public to private access are subject to change based on the needs of the City and Airport.



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Figure 4. Heritage Center Conceptual Access Map



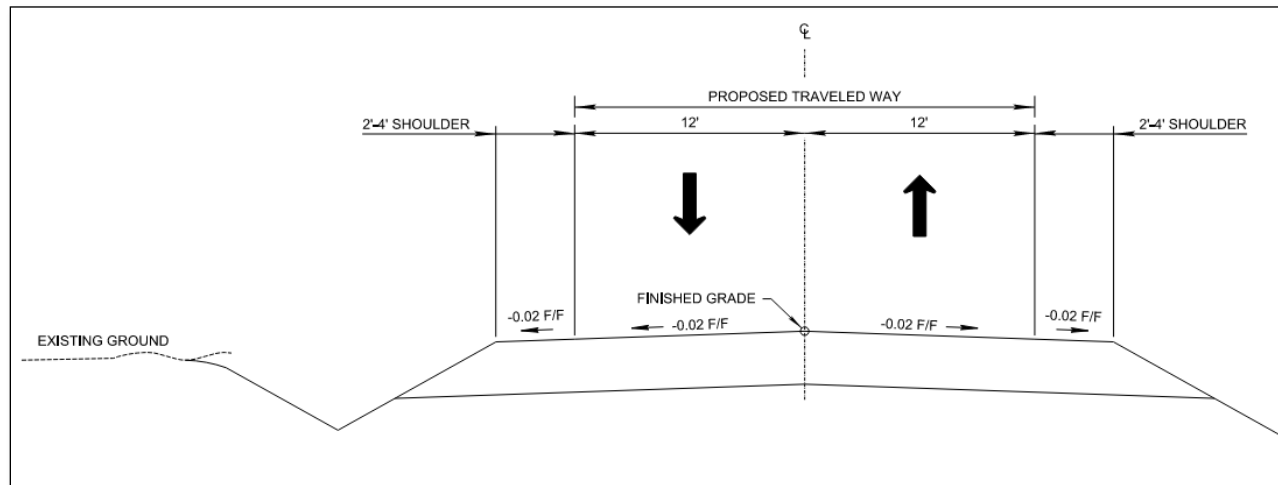
Source: Kimley-Horn, 2023

The five access improvement strategies include:

1. Proposed closure of Perimeter Road through the RPZ and new access provided via a local roadway outside of the RPZ. Considerations for this improvement include:
  - a. The proposed closure of Perimeter Road in the RPZ will help to preserve the Airport for future safe operations and allow for maximum usage of the site.
  - b. The proposed route utilizes future Coqui Pharma land and facilities.
  - c. The relocated roadway will be designed to TDOT standard drawing [RD11-TS-1A](#) for local roads. See **Figure 5** for a typical section of this roadway.
  - d. A 12' lane width is recommended for truck movements along the future local road.
  - e. May consider including curb and gutter and sidewalk based on future needs.

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Figure 5. Conceptual Terminal Access and Future Local Road



Source: TDOT Design Standards, Kimley-Horn, 2023

2. Remove conflict with the railroad line by building an underground tunnel. Considerations for this improvement include:
  - a. This recommendation will require substantial coordination to achieve. Numerous interested parties will have to be involved in this process for it to be successful.
  - b. The proposed railroad tunnel will need to be designed to allow for appropriate grading and clearances to ensure the continued safe operation of both the Airport and the railroad line.
  - c. It is understood that there have been ongoing conversations and meetings related to this topic; therefore, no additional recommendations are provided as part of this report.
  - d. If the railroad is decommissioned, the City may be able to remove the rail infrastructure and develop the area. If the railroad remains active, a feasibility assessment may be the first step in terms of integrating an active railroad and the Airport.
  
3. Proposed closure of internal access roads that would be located on Airport property. Considerations for this improvement include:
  - a. As the Airport is developed, it will be built over previously developed land, including a small number of local access roads that provide connectivity into and throughout the Heritage Center site from SR 58.
  - b. These roads will need to be closed and appropriate enhancements will need to be made to Europa Avenue, Heritage Center Parkway, and Americus Avenue to ensure these closures are done in a safe manner.

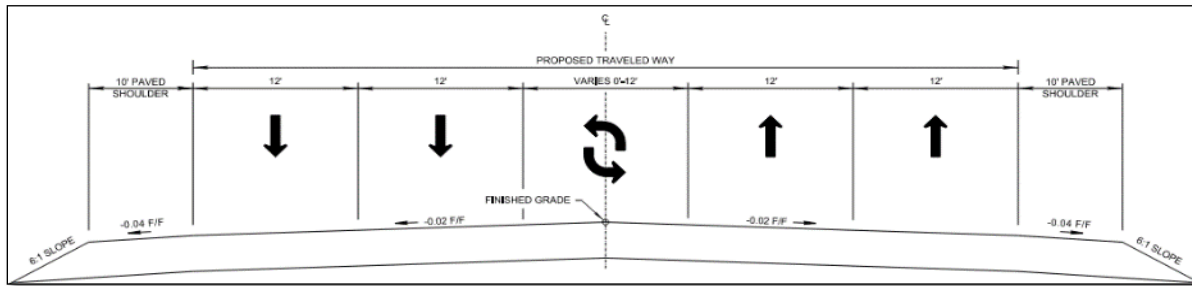
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4. Provide convenient access to the future Airport terminal. Considerations for this improvement include:
  - a. New roadway access will be required to connect SR 58 to the Airport terminal.
  - b. The relocated roadway will be designed to TDOT standard drawing [RD11-TS-1A](#) for local roads. See **Figure 5** for a typical section of this roadway.
  - c. A 12' lane width is recommended for truck movements along the future local road.
  - d. May consider including curb and gutter and sidewalk based on future needs.
5. Proposed conversion of Haul Road to private access and re-alignment of SR 327 around the RPZ, as well as enhanced site access via an extension to SR 58/SR 95. Considerations for this improvement include:
  - a. Conversion to private access of Haul Road in the RPZ will help to preserve the Airport for future safe operations and allow for maximum usage of the site.
  - b. Re-alignment of SR 327 to avoid the future RPZ will help to preserve the Airport for future safe operations and allow for maximum usage of the site.
  - c. To provide additional access to the Heritage Center site, additional access by way of an extension to SR 58/SR 95 to the north side of the site is recommended for evaluation.
  - d. All alternatives evaluated in this area will require coordination with the Wheat Church Historical Park to minimize/eliminate impacts.
  - e. Alternatives for this extension would need to ensure multi-directional access between SR 58 and SR 95.
  - f. Roadway classification for the SR 58/SR 95 extension was determined by referencing TDOT Roadway classification map, which shows SR-58 as a principal arterial road.
  - g. The future state route typical section shows a 5-lane roadway with a continuous center turn lane and 10' paved shoulders to match the existing SR-58.
  - h. **Figure 6** for typical sections per TDOT standard drawing [RD11-TS-3B](#) for arterial roads.



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Figure 6. Conceptual Future State Route



Source: TDOT Design Standards, Kimley-Horn, 2023

As previously discussed, groups requiring cargo and transport services may need continuous access to the Airport, while other users may require less frequent and more monitored access. Access to an airport includes supporting infrastructure as well, including appropriate wayfinding and signage, adequate automobile parking, and ground transportation options. All final access enhancements and alignment will need to be determined based on the needs of the Airport and the City of Oak Ridge.

An example heard from stakeholder outreach is that a shuttle bus that provides connectivity between the Oak Ridge High School and the Airport would greatly benefit the students involved in the Transportation Academy program. Through-the-fence operations may be explored to allow for continued access for those groups who may lose portions of their transportation network.

Understanding the needs associated with each is vital in providing appropriate access. Continued efforts with the City, Airport, and users will be required to examine how these needs can best be addressed.

#### 6.6.1.1. Action Plan

Successful implementation for this objective includes:

- **Necessary Actions:**
  - Ensure future public access roads are constructed outside the ultimate RPZ
  - Conduct feasibility assessment of a railroad under a runway
  - Ensure proper coordination with Wheat Church to avoid potential conflicts
  - Coordinate with Coqui Pharma to determine feasibility of a new access roadway
  - Coordinate with a transportation design engineering firm to determine roadway needs
- **Responsible Party:** Airport access for will require a joint effort between the City, TDOT, the Airport, and future Airport users.

## COMMUNITY INTEGRATION STUDY

- **Timeframe:** Timeframe will be based on the overall timing of the development of the Airport and supporting infrastructure at Heritage Park.
- **Resources Needed:** Considerable financial resources, including for land acquisition, design, and construction of any future roadway that is built.

### 6.6.2. Minimize Access Disruptions to Local Businesses and Organizations

During stakeholder outreach, there were concerns about losing access to Heritage Park during Airport construction. Kairos Power requested being kept up to date on any Airport construction activities that could impact their operations, like road closures, power outages, and traffic disruptions, however no further operational concerns were expressed. Coqui Pharma shared that they have plans to construct a bridge to their facility to connect Perimeter Road and roughly align with Europa Ave, which would improve travel safety to their facilities from Oak Ridge Turnpike (Route 58). These considerations will need to be addressed and accounted for as Airport construction begins. Through-the-fence operations may be explored to allow for continued access for those groups who may lose portions of their transportation network.

Developing the Airport may unintentionally impact existing access routes that businesses in the ETTP complex rely upon and individuals who come to the ETTP complex for business purposes may also be impacted by the Airport's development. Minimizing potential access disruptions to local businesses and organizations is an imperative component of planning for any airport. To accomplish this, planning efforts will be required to mitigate any potential impacts to surrounding infrastructure in Oak Ridge because it is important that the Airport be seen as an asset to the community. If local businesses or organizations feel that the Airport has negatively impacted their operations then there is risk that local support for the Airport will diminish.

#### 6.6.2.1. Action Plan

Successful implementation of partnering with a small cargo transport firm includes:

- The Airport sponsor should work with the City and other planning partners to conduct further outreach to ensure local businesses and organizations do not have any concerns with the proposed Airport layout and subsequent development.
- Continuous engagement with the community should remain a priority as the Airport moves from planning and design to construction, to eliminate any concerns proactively.
- Analyses of impact to traffic and local infrastructure should also be conducted prior to the development of the Airport, which will be the responsibility of city planning staff, supported by the Airport sponsor.
- Further outreach and coordination efforts should be prioritized for the near term (five years).



## COMMUNITY INTEGRATION STUDY

- Human capital and financial resources will be required to complete this objective, as it will take effort on behalf of Airport and City staff and costs may be incurred for traffic impact analyses, outreach activities, and other special studies required.

### 6.6.3. Establish Last-Mile Connection Services

A major component in establishing the Airport for business-class service is providing for last-mile connection services. Potential options include direct access to public transit, on-site rental car services, and/or a courtesy vehicle provided by the FBO. Particularly, an FBO-provided courtesy car may prove to be the most effective option for the Airport in the near-term.

#### 6.6.3.1. Action Plan

Successful implementation of this objective includes:

- **Necessary Actions:**
  - Leverage state surplus programs to acquire vehicles
  - Partner with the East Tennessee Human Resource Agency to establish the Oak Ridge Airport as a stop for the Oak Ridge Transit
  - Partner with local businesses to sponsor courtesy cars
  - Partner with local, off-Airport rental car companies to drop-off rental cars for arriving users
  - Obtain insurance from Tennessee
  - Require Airport users to have private auto coverage
  - Establish trip parameters with courtesy car users
  - Use state funds for vehicle maintenance
- **Responsible Party:** Ground transportation services for the Airport users will require a joint effort between the City, state agencies, the Airport, and the future FBO.
- **Timeframe:** This objective should be accomplished in the Mid-Term (six-10 years).
- **Resources Needed:** Human capital and financial resources will be required to identify the feasibility of different ground transportation options and acquiring those options.





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