

Chapter Four

Development Alternatives



INTRODUCTION

The preceding discussion of facility needs provides the basis for formulating project development concepts. Chapter 3 provided recommended development for the majority of needs for the airport. This chapter will focus on the logical projects the sponsor should consider for the existing and future configuration of the airport.

DEVELOPMENT CONCEPTS

The overall objective of the alternatives analysis is to 1) Review the facility requirements that have been determined necessary to safely and efficiently service aviation demand over the future 20-year period; and 2) Through investigation of available projects and options (where applicable) to determine the best way to implement the facility requirements as determined in Chapter 3 of this report.

In some situations, various alternatives exist for implementing facility requirements. In other cases, the selection of a favored project can result from a straightforward and logical discussion of the options at hand. Consultant analysis and correspondence with the sponsor has indicated that improving the existing airport is the preferred option. After reviewing the current conditions, the future development options and recommendations are based on a logical discussion of where and how they can best be planned. This alternatives analysis discusses recommendations for implementing facility requirements as determined in Chapter 3 of this report.

DEVELOPMENT PROJECTS

TABLE 4-1 DEVELOPMENT PROJECTS

Project	Description
1	Reconstruct/Shift Runway
2	Reconstruct Apron
3	Vehicle Parking and Terminal/Snow Equipment Building
4	Install GPS Approach
5	Install AWOS
6	Construct Taxiway

Airside development is the most critical factor in airport development planning. Airside facilities are those used during takeoff or landing of aircraft. Landside facilities generally support aircraft after they exit the runway and consist of a system of taxilanes, apron area, fuel systems and parking areas. Recommended development projects for the Kayenta Airport are found in Table 4-1. Each project is depicted graphically at the end of this chapter.

Project 1 would reconstruct the runway and shift it 1,190 feet to the northeast as well as construct by-pass taxiways at each runway end. The shift to the northeast will increase the buffer between the existing trailer park and the runway and will allow room for a possible arterial road to pass between the end of runway 5 and the trailer park. The existing runway would be pulverized, reshaped and reconstructed. The bypass taxiways will allow for efficient traffic flow and provide room for aircraft engine run-up. The runway length is to remain at the existing 7,100'.

Project 2 would relocate the apron area closer to midfield; the new apron area will provide adequate separations and aircraft circulation. Phase I will include 15 tie-downs, helicopter parking and a partial parallel taxiway to Runway 5.

Project 3 would provide 3 hangars, fuel, a terminal building, enhanced security fencing and vehicle parking. An ultimate upgrade would provide an additional 15 tie-downs 1-box hangar, 2 T-hangar units, 1 box hangar unit, extra vehicle parking and a snow removal equipment/maintenance building. Several different apron layout configurations were reviewed with the goal of efficiently providing transient and based aircraft parking for a combination of small piston and light to medium sized business jet aircraft.

Project 4 would provide a GPS nonprecision approach into Kayenta. This would enhance the safety and utility of the airport, by providing aircraft the ability to land during inclement weather conditions or periods of low visibility. Providing an instrument approach is very important for air medivac operations, which need to be able to use the airport under less favorable weather conditions.

Project 5 would provide the airport with an Automated Weather Observation System, which would allow pilots to check current weather conditions before departing, as well as provide real time weather conditions for pilots landing at the airport.

Project 6 would construct the remaining length of parallel taxiway. This would enhance ground safety by eliminating the need for aircraft to back taxi on the active runway as well as increase traffic flow on the ground therefore reducing the risk of runway incursions.

Additional development items include the installation of utilities to the airport, the construction of a new access road and the rehabilitation of the runway lighting system and visual aids including replacement of MIRL, signage and PAPI's.

ACCOMMODATION OF AVIATION DEMAND LEVELS

Each development project would meet the FAA safety and design standards for an Airport Reference Code of B-II. This will allow the airport to accommodate the current and projected type of aircraft that are expected to use the airport.

AIRSIDE OPERATIONAL CONSIDERATIONS

Each project would provide adequate runway length and an object free area clear of obstructions for aircraft. The addition of a full-length parallel taxiway will enhance the safety of the airport by eliminating the need for aircraft to back taxi on the active runway. The initial project will include the bypass taxiways on both runway ends allowing aircraft an area to run up without occupying the active runway.

AIRSPACE IMPACTS

Development Project 4 would impact airspace surfaces. Development of a nonprecision GPS approach would provide new airspace surfaces for the runway consistent with a nonprecision utility runway. This effectively increases the FAR Part 77 Airspace Surfaces. Airspace impacts are summarized in Table 4-2.

The traffic pattern for Runway 5 should be changed from a standard left hand traffic pattern to a right hand traffic pattern. Shifting the traffic pattern will move noise away from residential areas as well as increase the safety. An FAA Form 7480-1, Notice of Landing Area Proposal, is required to initiate the traffic pattern change.

TABLE 4-2 PART 77 AIRSPACE SURFACES

	Existing	Future
Primary Surface width	250'	500'
Primary Surface length beyond runway ends	200'	200'
Approach Surface Dimensions	250' x 1,250' x 5,000'	500' x 3,500' x 10,000'
Approach Surface slope	20:1	34:1
Transitional Surface slope	7:1	7:1

ENVIRONMENTAL IMPACTS

The Development Projects will likely cause short-term construction impacts, including mitigatable impacts to air quality. No project is expected to cause significant environmental impacts based on the Federal Aviation Administration's Order 5050.4A, the Airport Environmental Handbook or FAA Order 1050.1E. Environmental impact categories and potential impacts are further evaluated in Chapter 6.

DEVELOPMENT COSTS

Estimated development costs for each project are depicted in Table 5-1. Costs are primarily related to construction, engineering and administration.

Phasing is recommended to accommodate budgetary constraints. In addition, phasing should mirror, to the extent practical, the requirements of users at the airport by phasing according to known and forecast operations referenced in Chapter 2.

OTHER ALTERNATIVES CONSIDERED

DEVELOP NEW AIRPORT SITE

This alternative would allow the Kayenta Township to consider the possible relocation of the Kayenta Airport to new a location which would meet FAA standards for aircraft having an ARC of B-II. The existing Kayenta Airport would be closed if this alternative were chosen. A new airport would require the construction of needed infrastructure such as utility lines and access roads to the selected site. At the minimum, approximately 180 acres would need to be acquired to construct a runway/taxiway system, which would have an initial length of 7,000 feet along with aircraft parking aprons, T-hangar and box hangar development and an FBO/Executive Terminal facility.

Initially, only a runway would be constructed, with the addition of a full-length parallel taxiway when demand warrants. It may be possible that the existing airfield pavements at the Kayenta Airport could be rotomilled and used as base course for the parallel taxiway. This would aid in reducing the loss of existing capital investment at the Kayenta Airport. A Site Selection Study of several potential sites would be required should this option be implemented.

The process of a site selection includes the following.

1. Identify basic airport facilities and land area requirements
 - A. Establish the Airport Reference Code for the facility to determine lateral clearance requirements.
 - B. Determine the number and length of runway(s).
 - C. Identify the type if any of instrument approach in order to find the RPZ and other facility design standards.
 - D. Determine the requirements for terminal area facilities such as (hangars, fuel storage, aircraft tiedown, auto parking).
2. Develop strategic plan
 - A. Prepare construction budget cost estimate.
 - B. Identify funding sources (federal, private).
 - C. Determine how to acquire the land until reimbursement from the FAA is obtained and how to use the land acquisition cost to match future federal grants for construction.
 - D. Decide on how to structure leases with the FBO and other private interests to encourage and amortize their investment. Consider competing airports and their rates and charges in the analysis.
 - E. Confirm that a new airport is financially feasible (operating expenses and revenues and ability to fund debt service requirements for both the public and private sector investors). Consider direct, indirect and induced economic impacts that accrue to the local community in considering financial viability.
3. Conduct site selection analysis
 - A. Identify selection criteria and relative weighting factors.
 - B. Identify potential sites and rank their suitability as an airport with respect to the evaluation criteria.
 - C. Select the best site.
4. Prepare Airport Layout Plan Set and Report
 - A. Consistent with applicable FAA standards.
5. Conduct Environmental Assessment and Environmental Impact Statement (EIS) if considered necessary.
 - A. Consistent with applicable FAA standards and orders.
 - B. Afford opportunity for public hearing.
6. Maintain an active and responsive public information program and identify a planning advisory committee representing the airport users, business leaders, environmental interest groups and the general public to be involved throughout the planning process. Build local support to obtain political support.
7. Prepare minimum standards document for use in the future leases.

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8. Assess best means to manage and operate the new airport.
 9. Prepare lease agreements.
 10. Prepare zoning and land use management regulations for the airport environs.

Upon close evaluation of this alternative it is not considered to be a viable option at this time. There is very little justification for the movement of the airport other than moving the airport away from the Township and allowing new development to take place. The current airport provides adequate service to the area, provides users with close convenient access to Kayenta and meets FAA design standards and compatible land use criteria according to FAA standards.

PROVIDE SERVICE FROM ANOTHER AIRPORT IN THE REGION

The Kayenta Airport was constructed primarily to serve general aviation interests and business needs of Kayenta and the surrounding region. The alternative of providing aviation services from another airport is considered impractical due to the lack of another airport close enough to Kayenta which possesses adequate facilities to meet the aviation demands of the area. The nearest airports providing facilities to accommodate the aircraft activity that takes place at the Kayenta airport are located 74 surface miles southwest at Tuba City and 70 surface miles southeast at Chinle. Neither airport would serve the aviation needs of Kayenta Township. Providing service from another airport would not be economical or feasible. Service from these locations would result in increased time, energy and additional travel expense to aviation users that would otherwise be unnecessary. This alternative ignores the existing goal of providing safe and efficient service to the Kayenta Community.

NO ACTION ALTERNATIVE

The no action alternative would include leaving the airport in its current condition including the OFA, RSA, RPZ, Runway and Apron area. This alternative does not meet the objectives for the future increased operations including the possibility of attracting an air tour operator. This alternative would eventually result in the closure of the airport and the relocation of operators such as Eagle Air Med, which would have a negative impact on Kayenta Township.

CONCLUSIONS AND RECOMMENDATIONS

A planning meeting was held in Kayenta on January 24, 2005 to discuss potential development projects, land use compatibility zoning and to solicit feedback from the Township. The Township has selected the projects to be carried forward. Recommendations from the Arizona Department of Transportation Aeronautics Division are to have the runway reconstruction/shift done as the 2006 project, and add a snow removal equipment building.

These projects will accommodate existing and forecast traffic utilizing the airport by providing increased safety, providing adequate landside space and a nonprecision instrument approach into the airport. Each project meets the required criteria for accommodation of existing and expected aviation demand. An environmental overview of the proposed projects is included in Chapter 6. In addition, no significant impacts are expected with regard to airspace.