



CHAPTER 6: IMPLEMENTATION PLAN

Introduction

A plan for the recommended future airport development was identified in **Chapter 5: Alternatives Analysis** based on the existing conditions, aviation forecasts and facility requirements. The improvements needed at the Black Hills Airport - Clyde Ice Field over the next 20-year period have been determined.

The implementation plan provides guidance on how to implement the preferred development recommendations from this Master Plan. This chapter includes the following sections:

- Considerations
- Project Phasing & Descriptions
- Financial Overview
- Capital Improvement Plan

Considerations

Each project is sequenced to balance demand, schedule, other projects, environmental/agency approval, funding and financial constraints. The project plan may change over time to react to changing conditions, but is flexible so that the airport can react to change and re-prioritize projects based on actual demand.

The implementation plan is divided into two phases:

- Near-Term
- Long-Term

The near-term phase accounts for the first ten years of projects. Many of these projects are in process. A more detailed facility implementation and financial feasibility plan is identified for the near-term as the project needs can be more realistically anticipated based on available funding and actual activity demand. After this phase there is more uncertainty in project funding, demand and local project importance.

All planning-level project costs developed are in 2020 dollars. Final project costs are subject to change based on actual construction and project formulation needs.

Many of the projects identified are demand-driven based on the Planning Activity Levels (PALs) from the approved aviation forecasts. Each PAL corresponds to an estimated year. The timing of implementation is estimated from the FAA-approved activity forecasts. Any change in the actual airport activity and forecasts may affect the timing of these improvements. For example, a higher design hour departing passenger count from changes in flight schedule may require terminal expansion planning to begin sooner than anticipated requiring a quicker implementation schedule than anticipated. Projects are implemented based on actual demand.

The development strategy is vital to creating a realistic implementation plan. These considerations for the Black Hills Airport - Clyde Ice Field include:

- Maintain a safe airport. Address key safety/standards projects while providing adequate funding for other necessary improvements.



- Maintain airport pavements and facilities in a functional condition. Priority projects in the near-term includes the reconstruction of taxiways and some apron areas and replacement of apron/building areas.
- Build capacity at the airport to meet growing demands. Key projects include the construction of the crosswind runway 8-26 and modifications to Runway 13-31 to handle Aircraft Approach Category C aircraft.
- Sequence airport improvement projects considering a realistic funding plan with a mix of federal, state and local funds.

Implementing a Project

The airport must go through an established process to receive the federal funds to complete an airport development project. FAA requires long lead times to complete all project steps and incorporate projects into federal funding plans. Additional coordination is required to prepare National Environmental Policy Act (NEPA) environmental documentation. Common steps in the project implementation process for a complex project include (steps may be shorter or longer based on complexity):

Professional Services: Select a qualified consultant for the project planning, environmental reviews, survey, engineering design, and construction administration for the project. The FAA recommends a distinct selection process for both planning and engineering services.

Five (5) Years Prior to Construction: Identify the project on the Airport Layout Plan, complete necessary airport planning studies and collect supporting documentation to demonstrate the project is justified for AIP funding, and is compatible with the Airport Layout Plan.

Four (4) Years Prior to Construction: Update the Capital Improvement Plan (CIP) to identify the project scope, eligibility, justification, and funding. Close coordination with FAA is required.

Three (3) Years Prior to Construction: Initiate any aeronautical surveys, navigational aid agreements (reimbursable agreements) or special FAA coordination for flight procedures which may be necessary prior to construction. Solidify project funding plan and final justification with FAA.

Two (2) Years Prior to Construction: Complete required NEPA environmental documentation and analysis for the proposed action. Prepare 30 percent project design, refine cost estimates, and prepare benefit/cost analysis as necessary. Acquire land for project and initiate airspace studies.

One (1) Year Prior to Construction: Obtain environmental clearance and permits for the proposed action. Prepare funding pre-application, detailed project plans and specifications including design report, airspace studies, Safety Management Systems (SMS) and construction safety/phasing plan. Finalize project schedule.

Year of Construction: Complete final design. Solicit bid proposals from companies engaged in the project construction. Prepare grant application and accept Federal grant. Issue notice to proceed and monitor construction. Maintain FAA grant compliance and payments.

After Construction: Submit final report and close out the AIP grant.

For complex projects requiring federal discretionary funding such as runway extensions, these steps may take up to five years prior to the issuance of an AIP grant for construction. Less complex projects using entitlements such as pavement rehabilitation will require less lead times, typically no less than three years prior to grant issuance.

Based on the PALs and other regular pavement and safety needs, some airport development capacity projects may not be able to be sequenced to meet PALs within a realistic funding plan. These projects are initiated within a few years of their PAL demand trigger to account for anticipated available funding.

Project Phasing & Descriptions

Summary

The recommended project phasing at Black Hills Airport - Clyde Ice Field is based on anticipated needs and available funding. A more detailed review of the short-term and mid-term is completed as airport standards, demand and local priorities change over time which require updated planning and re-evaluation. Long-term projects are identified for airport planning purposes based on forecasted needs.



Near-Term Projects

These projects cover the first half of the planning period for the next 10 years or forecasted to PAL 2. The identified sequencing is based on years because activity and funding can be reasonably anticipated.

Projects in this phase are primarily sequenced based on demand. Projected funding sources are based on current legislation and forecasted activity levels including FAA AIP (entitlement and discretionary at 90 percent), State funding (AIP match at 3.5 percent) and local airport funding. Local funds are allocated to match AIP funds and the highest priority projects which are not eligible for AIP funding.

Table 6-1 – Notable Near-Term Projects

Year	Project	Scope		Estimated Cost		
2021-22	Terminal Area Improvements	Prelim	Design	\$6.43 m	Trigger	Current Demand and Major Maintenance Needs
			New terminal building with parking and access road.		Justification	Improve terminal area and provide adequate space considering Object Free area for future Runway 13-31 improvements to AAC C-II standards.
2024-26	Crosswind Runway 8-26	Prelim	EA and Land Acquisition	\$10.95 m	Trigger	Current Demand Needs
			Construct Runway 8/26 to 4,900'x60'; Connector Taxiway to 8 and 26		Justification	Runway length and width justified by critical design aircraft and crosswind conditions.

Source: KLJ Analysis



Long-Term Projects (PAL 3-4 and beyond)

Long-term projects cover the remainder of the planning period for the next 11 to 20 years through forecasted PAL 3 and 4. Projects are identified based on forecasted project activity and funding. The project sequencing for demand driven projects in this phase may change as a result of change in aviation activity, new standards, funding or even new local priorities. Long-term projects are important to consider in airport master planning so that appropriate steps, funding and resources can be allocated. Additionally, it allows the ability for the airport to react to changes in airport activity.

In this phase, only significant pavement reconstruction projects are described as their schedules are not typically flexible and funding needs tend to be higher. Projects in this phase are based on future standards and anticipated demand-driven needs. Demand projects are required to adequately meet activity thresholds triggered between PAL 3 and PAL 4. Projected Federal, State and local funding sources continue to be based on current legislation and forecasted activity levels. Local funds are allocated to match AIP funds and the highest priority projects not eligible for AIP funding. Because of changing considerations, actual funding needs are likely to vary between the completion of this master plan study and the long-term.

Long-term project priorities tend to change over time. A change in activity from the forecasts, for example, will require modification to the demand/capacity projects implementation schedule and available funding. It is important however for the airport to identify potential needs and be prepared to react accordingly.

At Spearfish the notable long-term projects, many of which will be demand driven, are as follows:

Table 6-2 – Notable Long-Term Projects

Year	Project	Scope		Estimated Cost		
2030 -32	Improve Runway 13-31 to AAC C Standards	Prelim	EA	\$23.7 m	Trigger	Increased C and D category aircraft
			Widen Runway 13-31 from 75' to 100' and relocate lights; improve Runway Safety Area by extending culvert, realigning False Bottom Creek and cut/fill; improve Object Free Area with cut/fill and removing/relocating hangars to meet standards for AAC C aircraft		Justification	Meet design FAA standards for AAC C and D aircraft operating at Spearfish
-	Terminal Area Improvements	Prelim	Design		Trigger	Demand for Space
			Expand Apron and Hangar Areas		Justification	Transient aircraft parking and hangar.

Source: KLJ Analysis



Financial Overview

The implementation plan considers the airport's ability to fund the projects identified in the master plan. Projects in the short-term and mid-term are discussed in more detail for realistic project sequencing based on identified needs, airport priorities and available funding. Financial feasibility is a major consideration in developing the implementation plan and Capital Improvement Plan (CIP).

Sources of Funding

Airport funding for projects is derived from many sources. Funding sources can be categorized into three main categories:

- Federal funding
- State funding
- Local or Private funding
- Non-traditional funding

A detailed description of each of these funding sources is provided in **Appendix E - Airport Funding**. The funding that is planned for Spearfish is summarized as follows:

FEDERAL

Most funding for airport development comes from federal government programs. Currently the most predominant program is the Airport Improvement Program, commonly referred to as AIP, managed by the Federal Aviation Administration (FAA). Although there are some exceptions, the current legislation limits the federal share of allowable AIP costs at 90 percent for most non-hub primary or smaller airports. The remaining 10 percent is considered the local share. In South Dakota, the State provides a 4 percent match with all AIP funds leaving the airport sponsor with a 6 percent share of the project cost.

Non-Primary Entitlements

These funds are available to general aviation airports in the National Plan of Integrated Airport Systems (NPIAS) with less than 10,000 passenger enplanements per year. Black Hills Airport - Clyde Ice Field is eligible to receive non-primary entitlements which is \$150,000 per year based on the current AIP legislation.

Discretionary

Discretionary funding is used for higher priority AIP funded projects where passenger entitlements are not sufficient to cover the total federal share. Most AIP-eligible projects would be eligible for discretionary funding. However, the assignment of discretionary funds is determined by the FAA, and extensive coordination with the FAA is required to determine the potential availability of discretionary funding for specific projects. Individual projects are given a weighted National Priority Rating based on project purpose, type, component and airport type. In-depth discussions with FAA representatives are necessary to determine the potential availability of discretionary funding for an AIP-funded project.

STATE

State funding for airport development is managed by the South Dakota Department of Transportation's Office of Aeronautics, under the direction of the South Dakota Aeronautics Commission. This funding, held in the South Dakota Aeronautics Fund, comes primarily from aviation fuel taxes and aircraft registration fees.

Airports may apply for funds to cover up to 3.5 percent of the federal AIP-funded projects. Airports are also allocated a portion of the aviation fuel taxes collected from fuel sales on their airport and may request those funds for airport development projects including equipment.



The State of South Dakota currently provides a 35 percent match for AIP funded projects. This funding source has been factored into AIP-funded projects. Additional funding opportunities for airport improvements is available through the State. This funding source is recommended to be utilized for non-AIP eligible equipment.

LOCAL

An airport does not typically satisfy its capital development needs with internal funding sources alone. Federal, state, and private funding, together with airport funds, are usually combined to produce the total funds required for capital projects.

A local match will be needed for the AIP funded projects. This requirement will be at least 5% of the project cost but could vary depending on project eligibility and the structure of the State and Federal funding programs.

Hangar and Terminal projects will occur in the near future for Spearfish and there are two options the city should consider related to existing and future hangar projects. These are either land lease or airport funded hangars.

Land Lease is a common method for allowing hangar construction. This is where a tenant will lease a tract of airport land that is connected to the airfield and public access. The tenant will construct a facility at their own expense and pay a land lease rate to the airport through a term of the lease sufficient for the tenant to amortize their investment. An important element to consider is reversion of the improved property to the airport following the initial term of the lease. The reason to consider reversion is addressed in more detail in this section and would be instituted equally for any person and varies only based on the level of investment made into the facility.

Why Reversion is Important

This question is posed quite often. Why should an airport expect a tenant to build a facility on the airport then revert ownership of that facility after the term of a lease expires? The underlying question is, “Does the airport owner have a compelling need to control the airport?”

The primary issue that drives this discussion is that an airport and its associated facilities (runways, taxiways, aprons, etc.) are constructed on a finite piece of public property. With limited access and ability to expand, is it in the public’s interest to allow tenants to control the use of that finite property into perpetuity?

Reversion solves this potential issue and maintains the public’s ability to control the airport by allowing the airport to redevelop portions of the airport after a notable period of time (usually 30 - 40 years). An airport may choose to redevelop for a variety of reasons, including conformity with current design standards, repurposing areas for changing demands, or renovation or upgrading existing structures. Airports are quite unique in that even though there are large amounts of acreage for an airport, there are only certain areas that have the proper access to both the airside and landside to make a facility functional. Airports generally have broad impacts on communities ranging from improved medical services to stimulation of economic develop and as such, often have millions of public dollars spent to make these areas as functional as possible for all airport users.

The general argument against reversion is that it stifles tenant’s ability to maximize the value of their investment, and as such, may prevent the airport from getting development that will allow it to be as self-sustaining as possible.

These arguments have been greatly simplified for this discussion, but this decision is one that each airport owner should consider carefully to determine what is best for them to meet demand and comply with grant conditions and local, state, and federal laws.



A guideline for setting the initial lease term with reversion is to expect an investment of \$25 to \$35 per square foot for every 10-years of lease. The lower rates would be given to those who are providing services at the airport and higher rates to those just storing personal/company aircraft but not providing aviation services. A depreciation schedule for a facility can also be used to determine the proper term. These are not absolute rules but are tools to use to determine the lease term. Here is an example of the calculation of lease term.

$$\frac{\$400,000 \text{ investment}}{5,000 \text{ sf hangar}} = \$80 \text{ per SF} \quad \frac{\$80 \text{ per SF}}{\$35 \text{ per 10 Years}} = 22 \text{ years}$$

Please note that a person constructing a facility will often be interested in leasing the improved property after the original lease term expires. This is often done by negotiations to establish a new rental rate commensurate with the improved value of the property. Assuring that individuals are paying the improved value of the property, puts the proper economic incentive in place so the airports finite property is used to the best of its ability.

Airport Funded Hangars is the other option for the airport to maintain control and provide facilities for aircraft storage. Providing airport funding depends first on whether the airport has the funds to construct a hangar and second on the confidence the airport has in being able to lease the facility at a sufficient rental rate. The FAA allows airports to use non-primary entitlements for revenue producing facilities, such as hangars, but only if all other airport needs for federal funding have been met and no other projects are foreseen in the next three years.

Table 6-3 – Hangar Funding Options

Land Lease	
Pros	Only private funds at risk, No public funds at risk
Cons	Individual hangars use more space than group hangars
Typical Uses	Individual Hangars, Specialized Facilities, Large Investments, Businesses
Airport Funding	
Pros	Can use Non-Primary Entitlement funds Airport maintains control immediately
Cons	Requires up front public funds Public money at risk if there are no tenants
Typical Uses	Small Hangars, Group Hangars such as T-Hangars

Source: KLJ Analysis

Ownership of Hangars - Whether the City chooses Land Lease or Airport funding to construct hangars, the hangars will still at some point become property of the airport as a result of reversion. When the hangar is not owned by the airport, the hangar is subject to property taxes as an improvement to the property. Since airports are public entities, the property and improvements owned by airports are not subject to property taxes. An advantage to the tenant of reversion is not paying property taxes. An option is to revert the property sooner than a land lease term with the tenant transferring ownership early but still paying minor/major maintenance for the facility.



Capital Improvement Plan

The Capital Improvement Plan (CIP) is the key outcome of the implementation plan. The CIP as prepared based on the Airport Master Plan is provided in **Table 6-4**. The CIP is subject to change on an annual basis and it is recommended in subsequent years to the Master Plan being completed that a reader contact Black Hills Airport - Clyde Ice Field for the most current CIP.

Table 6-4 – Capital Improvement Plan

SPF Capital Improvement Program (ACIP)						
8/20/2020						
Starting funds	Year	Total Cost	PROJECT			SPF
			FAA AIP	State		
Construct taxiway behind FBO to large hangar development	TBD	\$ 640,000	\$ 576,000	\$ 22,400	\$ 41,600	
Reconstruct three taxilanes (Taxilane 1)	TBD	\$ 200,000	\$ 180,000	\$ 7,000	\$ 13,000	
Reconstruct three taxilanes (Taxilane 2)	TBD	\$ 200,000	\$ 180,000	\$ 7,000	\$ 13,000	
Reconstruct three taxilanes (Taxilane 3)	TBD	\$ 200,000	\$ 180,000	\$ 7,000	\$ 13,000	
Terminal Apron Design	TBD	\$ 150,000	\$ 135,000	\$ 5,250	\$ 9,750	
Terminal - Design*	TBD	\$ 200,000	\$ 162,000	\$ 6,300	\$ 31,700	
Access Road and Terminal parking lot - Design	TBD	\$ 75,000	\$ 67,500	\$ 2,625	\$ 4,875	
Terminal/GA Apron Construction	TBD	\$ 3,300,000	\$ 2,970,000	\$ 115,500	\$ 214,500	
Terminal - Construction*	TBD	\$ 1,800,000	\$ 1,458,000	\$ 56,700	\$ 285,300	
Access Road and Terminal parking lot - construction	TBD	\$ 900,000	\$ 810,000	\$ 31,500	\$ 58,500	
Crosswind Runway/parallel taxiway (Environmental Assessment)	TBD	\$ 300,000	\$ 270,000	\$ 10,500	\$ 19,500	
Crosswind Runway/parallel taxiway (Land)	TBD	\$ 250,000	\$ 225,000	\$ 8,750	\$ 16,250	
Crosswind Runway/parallel taxiway (design)	TBD	\$ 650,000	\$ 585,000	\$ 22,750	\$ 42,250	
New Taxilanes for T-hangar	TBD	\$ 200,000	\$ 180,000	\$ 7,000	\$ 13,000	
Crosswind Runway/parallel taxiway (Construction)	TBD	\$ 9,750,000	\$ 8,775,000	\$ 341,250	\$ 633,750	
Reconstruct 13-31 for Group C (Environmental)	TBD	\$ 350,000	\$ 315,000	\$ 12,250	\$ 22,750	
Reconstruct 13-31 for Group C (Design)	TBD	\$ 750,000	\$ 675,000	\$ 26,250	\$ 48,750	
Reconstruct 13-31 for Group C (Construction)	TBD	\$ 11,300,000	\$ 10,170,000	\$ 395,500	\$ 734,500	
Reconstruct 13-31 for Group C (Construction)	TBD	\$ 11,300,000	\$ 10,170,000	\$ 395,500	\$ 734,500	