7. System Needs and Project Costs

7.1. Introduction

Each year the South Dakota Department of Transportation Office of Aeronautics Services (SDDOT) develops a statewide Capital Improvement Plan (CIP) that includes projects each system airport is planning for over the next five or more years, and their associated costs. This statewide CIP is based on CIPs developed by each airport individually, as required for state and federal grant funding. The Office of Aviation aggregates all of the projects identified at each airport to identify, prioritize, and implement necessary airport development and planning projects across the state, while coordinating with the Federal Aviation Administration (FAA). This effort not only identifies the projects needed across the state to maintain, improve, and expand public aviation facilities, but quantifies the funding needed for development and enhancement. While the CIP is rather comprehensive in identifying current aviation needs in South Dakota, the 2020 SDSASP highlights other project needs that align with the long-term goals of the aviation system. This chapter summarizes the costs associated with the 2020 SDSASP recommended projects, along with the needs documented in the 2020 statewide CIP, to provide a complete picture of the resources needed to maintain the aviation system's existing infrastructure and make improvements to meet user demand. For more information on airport specific project recommendations, including those from the 2020 SDSASP and airport CIP, and cost estimates please see **Appendix F – Project Recommendations and Cost Estimates**.

7.2. SDSASP-Related Project Costs

This section includes estimated costs for projects needed to 1) meet future performance measure (PM) targets, and 2) meet Facility and Service Targets (FSTs) established for each airport role. As noted in previous chapters, each of the 2020 SDSASP PMs were established to guide future system development in a way that achieves the goals of the state aviation system. Future performance targets were set for each PM in **Chapter 6. System Recommendations** to help identify gaps in performance, and specific projects were recommended to close those gaps.

To supplement the PMs, a set of FSTs were carried forward from the 2010 SDSASP. These FSTs are dependent on an airport's role in the system and define the facilities and services that are characteristic of airports in each role. As described in **Chapter 3. Airport Roles,** these targets provide additional elements to strive for but are not required as SDDOT has limited ability to impact FST improvements with funding or policy development (as compared to system PMs). Although not required, understanding the financial resources needed for airports to achieve their FSTs is vital to providing a system of airports that work together to meet the needs of various system users.

To determine the costs to meet the future PM targets and FSTs, planning-level cost estimates were developed. While airport inventory information, Airport Layout Plans (ALPs), and Google Earth imagery provided some context for these cost estimates, some assumptions were made to develop these costs. As such, these estimates do not include the level of detail needed to design projects or prepare grants. The amounts shown in this chapter are for planning purposes only and should not be used in any other manner. Standard unit costs were utilized where applicable to provide continuity between similar projects at airports. Specific considerations used in the development of project costs are featured in **Table 7-1**.

Table 7-1: Planning Assumptions Made During Cost Development

Project Type	Assumptions and Additional Notes
• Pavement Maintenance/Rehabilitation • Runway Widening/Lengthening	Pavement needs, and associated costs, were airport role-dependent, with Commercial Service airports estimated to need 12" of concrete, Large GA airports estimated to need 6" of asphalt, and all other airports estimated to need 4" of asphalt.
• Land Acquisition • Obstruction Clearance	Land values and acquisition costs were airport role-dependent, with Commercial Service airports costing $12,000/acre, Large GA airports costing $6,000/acre and all other airports costing $4,000/acre plus costs for appraisal, negotiations, transaction costs, and Exhibit A updates.
• Constructing Fuel Farm Facilities	The cost of fuel facilities were based on needing a minimum quantity of 5,000 gallons of Jet A fuel.
• Certified Weather System Installation	Certified weather equipment was priced as either an AWOS III or an AWOS AV.
• Updating Critical Aircraft	Expansion of the runway for Critical Aircraft only widened the runway and replaced the medium intensity runway lighting (MIRL) but did not reconstruct the runway.
• All Projects	Costs estimates are all in current dollars. No cost estimates account for inflation.

Sources: Kimley-Horn, 2020; KLJ, 2020

It is important to note that some airport CIPs already included projects recommended to achieve PMs and FSTs. When this was the case, the project costs reported in the CIPs were maintained, and costs for recommended projects were not duplicated as being needed to achieve PMs or FSTs.

7.2.1. Performance Measure Recommendation Costs

This section identifies the costs associated with projects that are needed to help the system achieve the future performance targets established. For a detailed listing of airports currently not meeting each of the PMs, see **Chapter 6. System Recommendations**. **Table 7-2** summarizes the current performance of the system by PM and includes the cost estimates associated with projects needed to meet the future targets. Costs shown are a cumulative representation of all of the PM related project recommendations excluding those projects already accounted for individual airport CIPs.

Table 7-2: 2020 SDSASP Performance Measure Recommendation Costs (2020-2040)

2020 Performance Measure	2020 Performance	Future Target	Estimated Cost	% of Total
Clear Part 77 Approaches (Primary Rwy)	64%	100%	$580,000	2%
Clear Part 77 Approaches (Nonprimary Rwy)	88%	100%	$1,470,000	5%
RPZ Control (Primary Rwy)	63%	100%	$7,960,000	28%
RPZ Control (Nonprimary Rwy)	35%	100%	$4,350,000	15%
Meet State RSA Standards	100%	100%	$0	0%
No Substantial Operations by Aircraft with Higher ARC than Critical Aircraft	84%	100%	$13,770,000	48%
PCI of 70+ (Primary Rwy)	67%	76%	$0	0%
PCI of 70+ (Nonprimary Rwy)	56%	78%	$0	0%
PCI of 60+ (Taxiway)	89%	76%	$0	0%
PCI of 50+ (Apron)	84%	62%	$0	0%
24-Hour Fuel Availability	82%	83%	$300,000	1%
Certified Weather	70%	75%	$300,000	1%
Total Performance Measure Recommendation Costs			**$28,730,000**	**100%**

Sources: Kimley-Horn, 2020; KLJ, 2020

Notes: "2020 Performance" relates to performance of applicable airports only. PMs are abbreviated in this table. Dollar amounts and percentages have been rounded. Acronyms: Pavement Condition Index (PCI), Airport Reference Code (ARC), Runway Safety Area (RSA).

As the table shows, several PMs have no costs associated with them due to airports meeting the future performance target, as is the case for the Taxiway and Apron PCI PMs, or project costs were already accounted for in the airport CIPs, as is the case for Nonprimary Runway PCI PM. **Figure 7-1** shows the total cost of each PM comparatively.

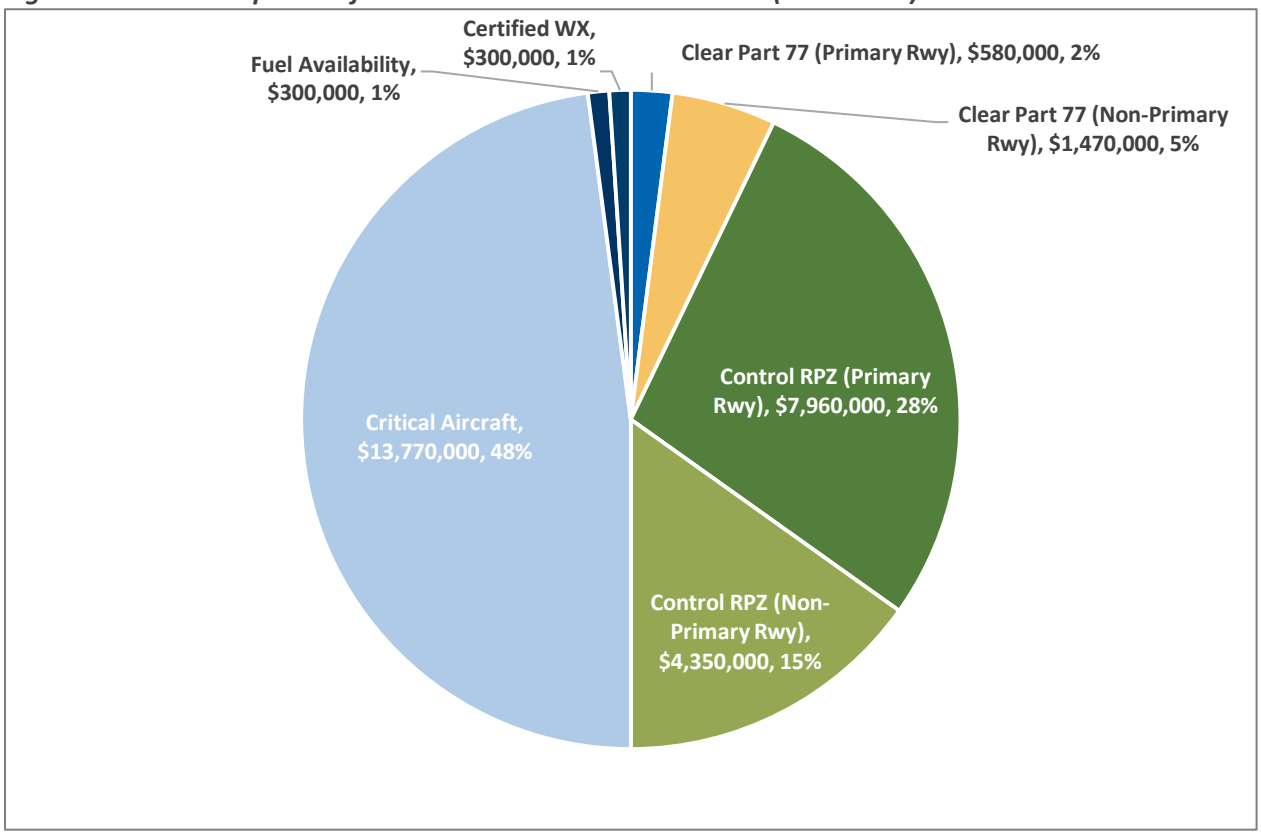
Of the 12 PMs, expanding airports to meet the design standards of the critical aircraft operating at them is the most expensive PM at roughly $14 million or 48 percent of the total cost associated with PM projects. Critical aircraft improvements include projects at the following airports (cost estimates in parentheses and a "CIP" if the cost is already accounted for in the statewide CIP):

- Britton Municipal ($600,000)
- Clark County ($1,300,000)
- Hoven Municipal ($1,100,000)
- Milbank Municipal ($2,400,000)
- Miller Municipal ($1,100,000)
- Onida Municipal ($1,100,000)
- Parkston Municipal ($1,100,000)
- Philip Municipal ($40,000)
- Sisseton Municipal ($5,200,000)
- Wall Municipal (CIP - $4,830,000)

The second most costly PM is the ownership of Runway Protection Zone (RPZ) land, with a total cost of approximately $12 million, or 43 percent, when primary and nonprimary runways are combined. Thirty-five of the 56 airports in the system were recommended for RPZ land acquisition projects in at least one of their RPZs. Removing obstructions from the primary and nonprimary runway Part 77 approaches

ranked third in terms of required resources, totaling slightly over $2 million or 7 percent when considering both primary and nonprimary runways.

Figure 7-1: Cost Comparison for SDSASP PM Recommendations (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020
Notes: PM recommendations with no associated cost estimates were removed from Figure 7-1. PMs are abbreviated in this figure. Dollar amounts and percentages have been rounded.

Costs associated with purchasing and installing weather reporting equipment are minimal in comparison to some of the other PM related costs, however this is due in part to many of the airports already accounting for these weather systems in their current CIPs and therefore those costs have not been duplicated here. After removing duplicate fuel and weather projects the cost remaining for these PMs is approximately $600,000, or 2 percent of the total.

While **Table 7-2** and **Figure 7-1** show no funding needs associated with the PCI PMs, it is important to note that this is because funding needs for these projects are being accounted for the in the statewide CIP, or because airports are meeting their future performance targets. Some of the most expensive pavement projects are currently being planned for, or currently under construction, at the following airports (cost estimates in parentheses and a "CIP" if the cost is already accounted for in the statewide CIP):

- 2019 - Chan Gurney Municipal
- 2019 - Lemmon Municipal
- 2019 - Mobridge Municipal
- 2021 - Pierre Regional (CIP - $7,300,000)
- 2024 - Parkston Municipal (CIP - $700,000)
- 2023 - Chamberlain Municipal (CIP - $8,100,000)
- Sisseton Municipal (cost accounted for in the critical aircraft project)

Additional Considerations for PM Cost Estimates

Some of the projects recommended to achieve future PM targets required unique approaches in the development of cost estimates. For example, while the future performance target for RPZ ownership is 100 percent, it is recognized that this target can be difficult to achieve when a public roadway exists within an RPZ. Several system airports are not achieving 100 percent control because a portion of an RPZ includes a public road. The SDSASP target is based on the FAA requirement to protect people on the ground in the RPZ area by not allowing incompatible uses such as public assemblies, residences, roads or other uses that would put people in aircraft and on the ground at risk. However, according to current FAA guidelines, roads are not required to be removed from RPZs, although it is strongly recommended that they are where possible. If it is not feasible to relocate the road, it is the recommended that airports acquire an easement if possible. The easement should stipulate three specific items, including 1) height restrictions to protect approaches; 2) coordination requirements regarding road construction or improvements; and 3) provisions to not allow areas of public assembly such as parking or rest areas within the RPZ.

The second PM requiring special consideration is the percentage of airports experiencing substantial operations by an aircraft more demanding than the airport is designed to accommodate based on its Airport Reference Code (ARC). The intent of this PM overlaps with the ARC targets established for each airport as a part of the FSTs. While a similar assessment was completed for these projects, some costs are identified with meeting PM targets, and others are identified with meeting FSTs. **Table 7-3** shows the list of airports that received project recommendations related to their ARC and the future ARC used in each cost estimation.

Table 7-3: Airport Recommended ARC Changes

Associated City	Airport Name	FAA ID	PM/ FST	Existing ARC	Future ARC
Belle Fourche	Belle Fourche Municipal	EFC	FST	B-I (S)-5000	B-II (S)-5000
Britton	Britton Municipal	BTN	PM	B-II (S)-5000	B-II-5000
Clark	Clark County	8D7	PM	B-I (S)-5000	B-II-5000
Gregory	Gregory Municipal	0D8	FST	A-I (S)-5000	B-II-5000
Hoven	Hoven Municipal	9F8	PM	A-I (S)-Visual	A-II (S)-Visual
Madison	Madison Municipal	MDS	FST	B-II-5000	C-II-4000
Milbank	Milbank Municipal	1D1	PM	A-I (S)-5000	A-II (S)-5000
Miller	Miller Municipal	MKA	PM	B-I (S)-5000	B-II-5000
Onida	Onida Municipal	98D	PM	A-I (S)-5000	B-II-5000
Parkston	Parkston Municipal	8V3	PM	A-I (S)-5000	A-II (S)-5000
Philip	Philip Municipal	PHP	PM	A-I (S)-5000	A-II (S)-5000
Sisseston	Sisseton Municipal	8D3	PM	A-I (S)-5000	A-II (S)-5000
Spearfish	Black Hills-Clyde Ice Field	SPF	FST	B-II-5000	C-II-4000
Sturgis	Sturgis Municipal	49B	FST	A-I (S)-5000	B-II (S)-5000

Associated City	Airport Name	FAA ID	PM/ FST	Existing ARC	Future ARC
Tea	Marv Skie-Lincoln County	Y14	FST	B-I-Visual	C-II-4000
Wagner	Wagner Municipal	AGZ	FST	B-I (S)-5000	B-II (S)-5000
Wall	Wall Municipal	6V4	PM	B-I (S)-Visual	B-II-5000
Yankton	Chan Gurney Municipal	YKN	FST	B-II-2400	C-II-2400

Sources: Kimley-Horn, 2020; KLJ, 2020

7.2.2. Facility and Service Target Recommendation Costs

While the PM projects presented in the previous section include high-priority actionable recommendations, the FSTs carried forward from the 2010 SDSASP offer suggested facilities and services that airports within each role would ideally have. As such, deficiencies in meeting the FSTs are given a lower priority when compared to deficiencies in meeting PMs. Individual assessments of each airport in meeting their assigned FSTs can be found in **Appendix D – Airport Report Cards.** Airports, SDDOT, and the FAA can use these FSTs to guide future projects when airports have achieved their PM targets. The following sections look at airside facilities, landside facilities, and services separately.

7.2.2.1. *Airside Facility Target Recommendation Costs*

Table 7-4 presents the airside facility targets by respective airport role and the estimated costs to achieve each target. **Figure 7-2** shows total costs for each airside facility target comparatively and outlines the percentage of total cost for each target. Airside targets that do not have costs associated with them have been excluded from **Figure 7-2**.

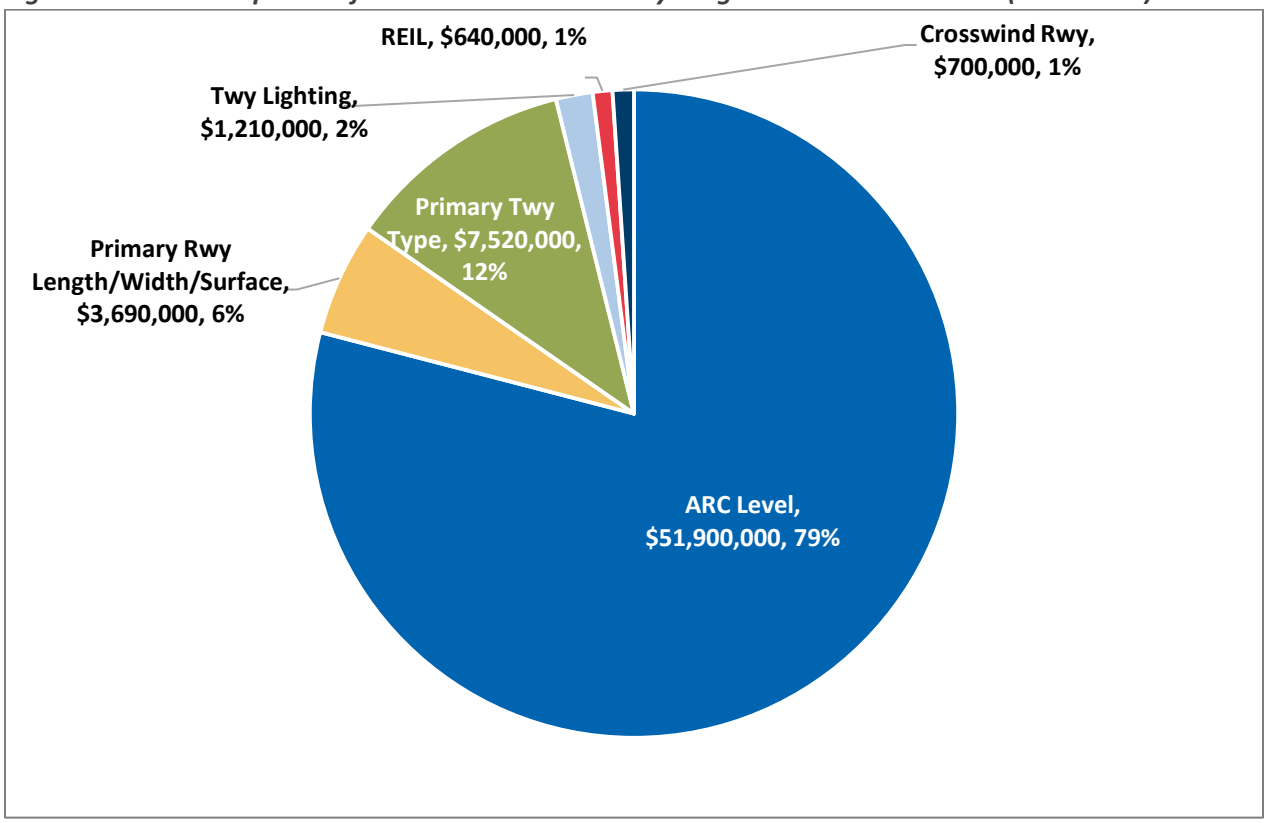
Table 7-4: Airside Facility Targets and Estimated Costs (2020-2040)

Description	Commercial Service	Large GA	Medium GA	Small GA	Basic Service	Estimated Cost	% of Total
Airside Facilities							
ARC	**C-II**	**C-I**	**B-II**	**B-I or Below**	**A-I**	$51,900,000	79%
Primary Runway Length	**Minimum 6,500'**	**Minimum 5,000'**	**Minimum 4,200'**	**Minimum 3,000'**	**Not a Target**	$3,690,000	6%
Primary Runway Width	Minimum 100'	Minimum 100'	Minimum 75'	Minimum 60'	Minimum 50'		
Primary Runway Surface	Paved	Paved	Paved	Paved	Not a Target		
Primary Taxiway Type	Full Parallel	Full Parallel	Turnarounds (Both Ends)	Exits as Needed	Not a Target	$7,520,000	11%
Primary Runway Approach	**PI**	**NPI**	**NPI**	**Visual**	**Visual**	$0	0.0%
Runway Lighting	MIRL	MIRL	MIRL	LIRL	Not a Target	$0	0%
Taxiway Lighting	MITL	MITL	MITL	Not a Target	Not a Target	$1,210,000	2%
VGSI	Both Runway Ends (or PI)	Both Runway Ends (or PI)	Both Runway Ends	Not a Target	Not a Target	$0	0%
REIL - as required	Both Runway Ends (or PI)	Both Runway Ends (or PI)	Both Runway Ends	Not a Target	Not a Target	$640,000	1%
Rotating Beacon	Yes	Yes	Yes	Yes	Not a Target	$0	0%
Lighted Wind Indicator	Yes - Multiple as Needed	Yes	Yes	If Open at Night	If Open at Night	$0	0%
RCO Facilities	Tower or RCO	Not a Target	Not a Target	Not a Target	Not a Target	$0	0%
Wind Coverage or Crosswind Runway	Crosswind Runway or 95% Wind Coverage	Crosswind Runway or 95% Wind Coverage	Crosswind Runway or 95% Wind Coverage	Not a Target	Not a Target	$700,000	1%
					Airside Facilities Total	**$65,660,000**	**100%**

Sources: Kimley-Horn, 2020; KLJ, 2020

Notes: Targets in bold text indicate criteria used to assign airport roles. Dollar amounts and percentages have been rounded. Acronyms: Airport Reference Code (ARC), Precision Instrument (PI), Non-precision Instrument (NPI), Medium Intensity Runway Lighting (MIRL), Medium Intensity Taxiway Lighting (MITL), Visual Glide Scope Indicator (VGSI), Runway End Identifier Lights (REIL), Remote Communications Outlet (RCO).

Figure 7-2: Cost Comparison for SDSASP Airside Facility Targets Recommendations (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020

Notes: Airside facility recommendations with no associated cost estimates were removed from Figure 7-2. Dollar amounts and percentages have been rounded.

As shown in **Figure 7-2**, the ARC-related improvements require the most funding compared to other airside facility targets. Airports included in the ARC level cost estimate are shown here, with individual costs per airports included in parenthesis:

- Belle Fourche Municipal ($1,200,000)
- Black Hills-Clyde Ice Field ($5,800,000)
- Chan Gurney Municipal ($500,000)
- Gregory Municipal-Flynn Field ($1,000,000)
- Madison Municipal ($12,400,000)
- Marv Skie-Lincoln County ($28,100,000)
- Sturgis Municipal ($1,500,000)
- Wagner Municipal ($1,400,000)

If an airport received a project recommendation pertaining to the Critical Aircraft PM and was also identified as having an ARC lower than recommended for its role, then the cost for the ARC improvement was not double counted as a need in the airside FST cost estimate. Moreover, if the runway needs to be widened as an FST but there was also a need to increase the ARC, the cost of widening was only included in the ARC increase. **Table 7-5** features the improvement needs at select airports with special circumstances that would limit their ability to meet the design standards of a higher ARC.

Table 7-5: Additional Project Needs for ARC Related Projects

Associated City	Airport Name	FAA ID	Current ARC	Future ARC	Improvement Needs
Madison	Madison Municipal Airport	MDS	B-II-5000	C-II-4000	Runway shift, land acquisition, road realignments, and hangar replacements for larger RPZ and Object Free Area (OFA)
Spearfish	Black Hills-Clyde Ice Field	SPF	B-II-5000	C-II-4000	Creek realignment and hangar removals for increased RSA and OFA
Tea	Marv Skie-Lincoln Coutny	Y14	B-I-Visual	C-II-4000	Potential option for airport reconstruction at a new site*

Sources: Kimley-Horn, 2020; KLJ, 2020
**Note: The option of constructing a new airport to replace Marv Skie-Lincoln County and Canton Municipal airports was examined in 2007 but not pursued.*

The second most expensive airside facility need is that of primary taxiways at $7.5 million or 11 percent of total airside target costs. There are three projects associated with parallel taxiways:

- Madison Municipal ($2,900,000)
- Mitchell Municipal ($930,000)
- Watertown Regional ($3,700,000)

Additional Considerations for Airside Facility Target Cost Estimates

When airports do not achieve adequate crosswind coverage on their primary runway, it is sometimes necessary to consider construction of a crosswind runway. The needs for crosswind runway construction will vary from airport to airport and are largely dependent on the type of aircraft operating and the role an airport plays in the system. As such, airports in the Commercial Service or Large General Aviation (GA) classifications were anticipated to need a paved crosswind, and a turf crosswind runway was considered sufficient for airports in all other classifications. All crosswind runway lengths were calculated as the lesser of approximately 66 percent of the length of the primary runway or the length that could be suitably constructed without road realignments. Crosswind runway projects only account for approximately one percent of the airside facility related costs and **Table 7-6** shows the airports identified as benefitting from a paved or turf crosswind runway.

Table 7-6: Crosswind Runway Improvements

Associated City	Airport Name	FAA ID	Turf or Paved Crosswind Runway
Gregory	Gregory Municipal-Flynn Field	9D1	Turf
Rosebud	Rosebud Sioux Tribal	SUO	Turf
Tea	Marv Skie-Lincoln County	Y14	Paved (Cost accounted for in ARC airside target)
Vermillion	Harold Davidson Field	VMR	Turf

Sources: Kimley-Horn, 2020; KLJ, 2020

While many of the system airports are either achieving minimum wind coverage on their primary runway, or using a crosswind runway, it is important to continue monitoring crosswind coverage across system airports. SDDOT should continue to closely examine any efforts made by the FAA to eliminate funding opportunities for certain crosswind runways in the future. Elimination of federal funding for crosswind runways could result in a decrease of crosswind coverage performance across the system.

7.2.2.2. *Landside Facility Target Recommendation Costs*

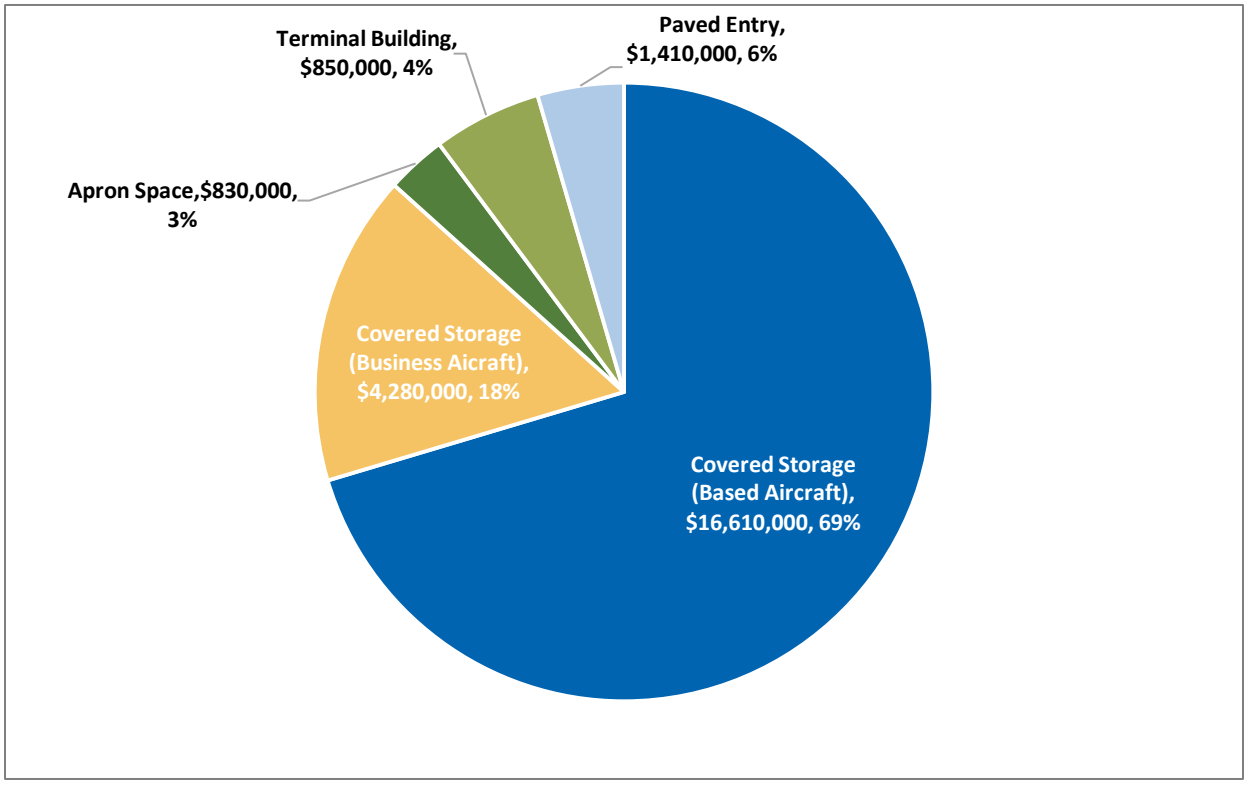
Similar to the assessment of airside facilities, it is important to identify areas of improvement and estimated costs related to landside facilities. The landside component is focused on the facilities used to accommodate based and transient aircraft as well as flight crews and passengers. **Table 7-7** shows the landside facility targets by role and the estimated costs to achieve each one, while **Figure 7-3** shows the comparison of costs for each landside facility.

Table 7-7: Landside Facility Targets and Estimated Costs (2020-2040)

Description	Commercial Service	Large GA	Medium GA	Small GA	Basic Service	Estimated Cost	% of Total
Landside Facilities							
Covered Storage	100% of Based Aircraft	100% of Based Aircraft	100% of Based Aircraft	100% of Based Aircraft	Not a Target	$16,610,000	69%
Overnight Storage for Business Aircraft	Typical average aircraft/ business user demand	Typical average aircraft/ business user demand	Typical average aircraft/ business user demand	Not a Target	Not a Target	$4,280,000	18%
Aircraft Apron	100% of Average Daily Transients	100% of Average Daily Transients	100% of Average Daily Transients	50% of Average Daily Transients	Not a Target	$830,000	3%
Terminal/ Administration Building	Yes	Yes	Yes	Waiting Area	Not a Target	$850,000	4%
Paved Entry/Terminal Parking	Yes	Yes	Yes	Not a Target	Not a Target	$1,410,000	6%
					Landside Facilities Total	**$23,980,000**	**100%**

Sources: Kimley-Horn, 2020; KLJ, 2020
Notes: Targets in bold text indicate criteria used to assign airport roles. Dollar amounts and percentages have been rounded.

Figure 7-3: Cost Comparison for SDSASP Landside Facility Targets Recommendations (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020
Notes: Dollar amounts and percentages have been rounded.

Hangars for based aircraft had the highest cost estimates amongst other landside facility targets, accounting for approximately $16.6 million or 69 percent of the need associated with landside facility targets. The airports that were identified as needing hangars for based aircraft are as follows, with parentheses showing cost associated with SDSASP identified projects and costs previously identified in the airport CIP (in some cases, the cost is split between portions of the project recommended in the 2020 SDSASP and portions identified in the CIP):

- Aberdeen Regional ($1,290,000)
- Black Hills-Clyde Ice Field (CIP $4,440,000)
- Canton Municipal ($624,000 + CIP - $740,000)
- Cheyenne Eagle Butte (CIP $830,000)
- Edgemont Municipal ($160,000)
- Faith Municipal ($470,000)
- Gregory Municipal-Flynn Field ($310,000 + CIP $720,000)
- Harold Davidson Field ($1,160,000 + CIP $220,000)
- Highmore Municipal (CIP $1,000,000)
- Hot Springs Municipal (CIP $2,140,000)
- Madison Municipal ($310,000)
- Marv Skie-Lincoln County ($3,860,000)
- McLaughlin Municipal (CIP $650,000)
- Mitchell Municipal ($310,000)
- Parkston Municipal ($310,000 + CIP $850,000)
- Pierre Regional ($620,000)
- Platte Municipal ($1,290,000)
- Rapid City Regional ($940,000)
- Springfield Municipal (CIP $450,000)
- Wagner Municipal ($310,000 + CIP $400,000)

- Wall Municipal ($1,000,000 + CIP $560,000)
- Winner Regional ($1,290,000 + CIP $550,000)

Hangars for business (transient) aircraft followed with needs accounting for $4,300,000 or 16 percent. The airports that needed hangar space for business aircraft are as follows, with costs and whether the project was identified in the airport CIP in parenthesis:

- Belle Fourche Municipal ($714,000)
- Britton Municipal (CIP $500,000)
- Chamberlain Municipal ($714,000)
- Clark County ($714,000)
- Harold Davidson Field ($714,000)
- Milbank Municipal ($714,000)
- Wagner Municipal ($714,000)

Additional Considerations for Landside Facility Target Cost Estimates

Cost estimates for based aircraft covered storage were based on housing single-engine aircraft with 1,300 square feet of space, while the estimates for business aircraft storage were based on needing a 60'x80' hangar which can accommodate a King Air 250. Looking at the landside facility targets, there were no Commercial Service, Large or Medium GA airports that required terminal improvements. For Small GA airports, the terminal was determined to include a waiting area (300 square feet), restroom (70 square feet), and pilot area (150 square feet). Since the terminal/administration buildings typically include restrooms and pilot areas, the cost for these were included in the total building cost and are not duplicated as service target costs.

7.2.2.3. *Service Target Recommendation Costs*

The final component of the FSTs is the service targets for SDSASP airports. Most of the service target recommendations are based on services that would be provided or available at the airport, such as restrooms, pilot areas, flight training, and ground transportation. Service targets also include certain planning efforts, such as emergency plans, Airport Layout Plans (ALPs) and whether airports were included in their local comprehensive plan. **Table 7-8** shows the cost estimates for capital projects related to SDSASP service targets. **Figure 7-4** shows the cost comparison between service target needs. Please note that projects with zero-dollar cost estimates indicate that either no improvements are needed, or costs related to these improvements are accounted for in CIP cost estimates. However, "N/A" indicates that the project recommendations are not considered capital projects, and therefore cost estimates were not generated.

Table 7-8: Service Targets and Estimated Costs (2020-2040)

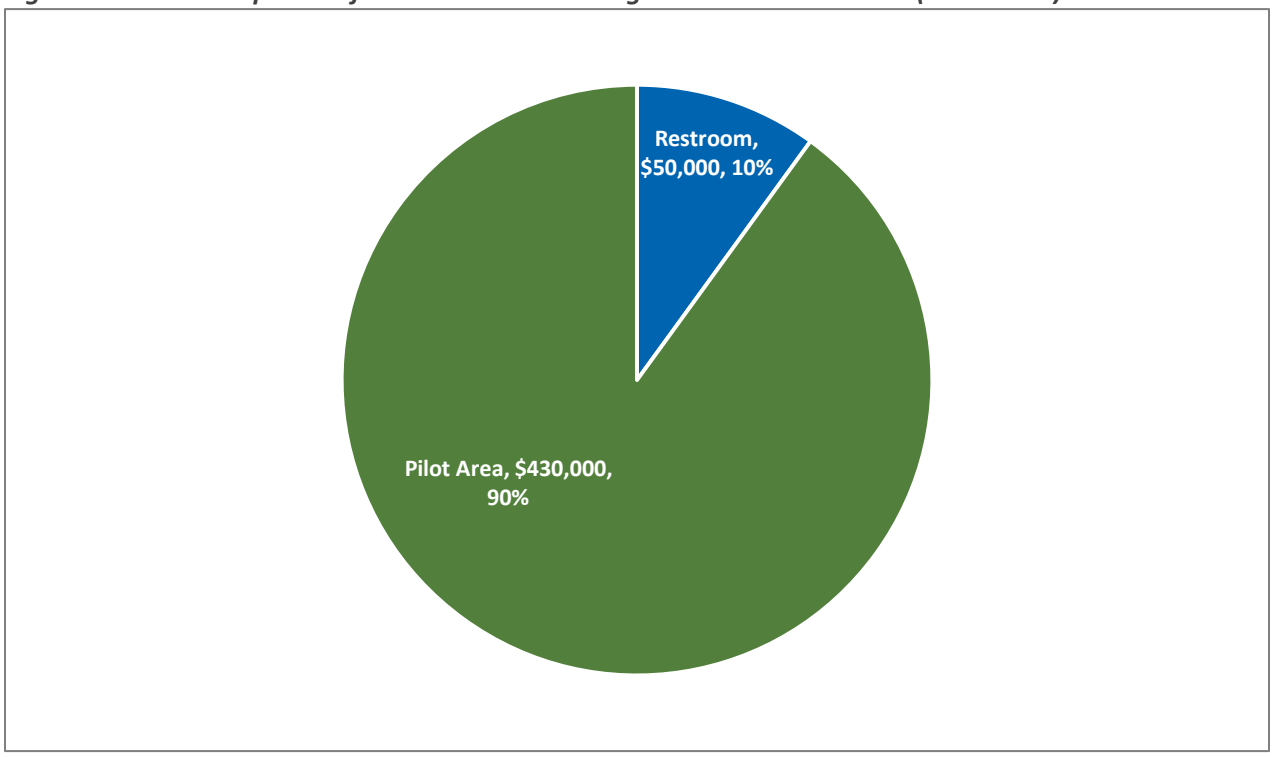
Description	Commercial Service	Large GA	Medium GA	Small GA	Basic Service	Estimated Cost	% of Total
Services							
Fuel	**100LL & Jet A**	**100 LL & Jet A**	**100LL**	**Not a Target**	**Not a Target**	**$0**	0%
Comprehensive Plan Define Land Uses	Yes	Yes	Yes	Yes	Yes	N/A	N/A

Description	Commercial Service	Large GA	Medium GA	Small GA	Basic Service	Estimated Cost	% of Total
Services							
Emergency Plan	Yes	Yes	Yes	Yes	Yes	N/A	N/A
Airport Layout Plan	ALP Update within Last 8 Years	ALP update within Last 10 Years	ALP Update within last 10 Years	Yes	Not a Target	$0	0%
Weekday Hours of Operation	Standard Business Hours, After Hours On-Call	Standard Business Hours, After Hours On-Call	Standard Business Hours, After Hours On-Call	On Call	Not a Target	N/A	N/A
Weekend Hours of Operation	Standard Business Hours, After Hours On-Call	Standard Business Hours, After Hours On-Call	Standard Business Hours, After Hours On-Call	On Call	Not a Target	N/A	N/A
Ground Transportation	Yes (Any Ground Transportation)	Yes (Any Ground Transportation)	Yes (Any Ground Transportation)	Not a Target	Not a Target	N/A	N/A
Food & Beverage	Yes (Vending)	Yes (Vending)	Yes (Vending)	Not a Target	Not a Target	N/A	N/A
Posted Contact Info	Yes	Yes	Yes	Yes	Yes	N/A	N/A
Internet Access	Yes	Yes	Yes	Not a Target	Not a Target	N/A	N/A
Restroom	Yes	Yes	Yes	Yes	Not a Target	$50,000	10%
Pilot Area	Yes	Yes	Yes	Not a Target	Not a Target	$430,000	90%
Security	Security Plan	Security Plan	Security Plan	Security Plan	Security Plan	N/A	N/A
Rental Aircraft	Based	Available	Available	Not a Target	Not a Target	N/A	N/A
Flight Training	Available	Available	Available	Available	Not a Target	N/A	N/A
Aircraft Maintenance/ Repair	**Major**	**Minor**	**On-Call**	**Not a Target**	**Not a Target**	N/A	N/A
Aircraft Charter	Based	Available	Available	Available	Not a Target	N/A	N/A
FBO Minimum Standards	Yes	Yes	Yes	Not a Target	Not a Target	N/A	N/A
Weather Reporting	**Yes**	**Yes**	**Yes**	**Not a Target**	**Not a Target**	$0	0%
					Services Total	**$480,000**	**100%**

Sources: Kimley-Horn, 2020; KLJ, 2020

Notes: Targets in bold text indicate criteria used to assign airport roles. N/A indicates that projects are not capital projects and therefore do not have applicable project costs associated with recommendations. Dollar amounts and percentages have been rounded. Acronym: Fixed-based Operator (FBO).

Figure 7-4: Cost Comparison for SDSASP Service Targets Recommendations (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020
Notes: Landside facility recommendations with no associated cost estimates were removed from Figure 7-4. Dollar amounts and percentages have been rounded.

As shown, the majority of costs associated with the service targets is allocated to pilot area improvements, representing 90 percent of total service target costs. The other 10 percent is comprised of costs associated with adding public restrooms on airport properties. These projects are largely associated with Medium and Small GA airports and account for approximately $50,000.

Additional Considerations for Service Target Cost Estimates

When estimating costs associated with pilot area projects the estimate included a total of 150 square feet including a room for flight planning and a room for a pilot rest area. A restroom used a 70 square foot area. As noted previously, whenever a terminal waiting area was identified as a landside target, the pilot area and restroom were included with the terminal based on the specific facilities existing at each airport.

7.2.2.4. *Total Facility and Service Target Recommendation Costs*

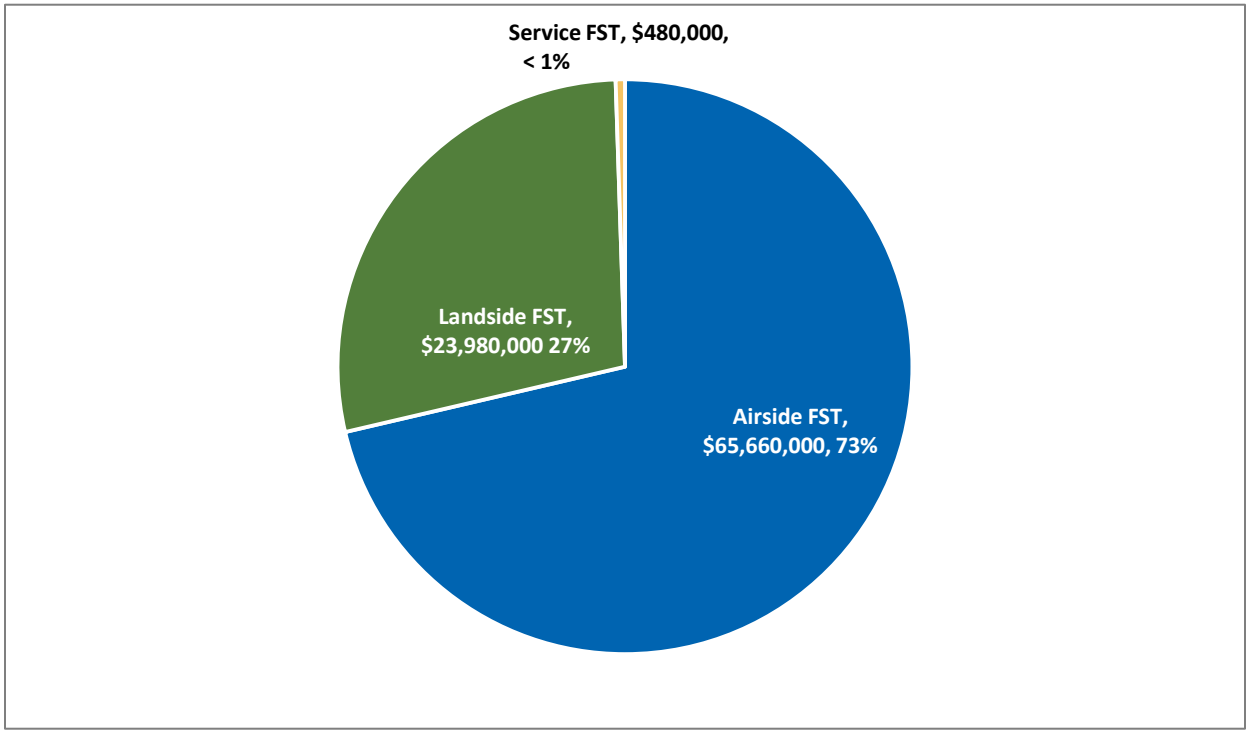
To understand the totality of the needs associated with all FSTs combined, the costs for airside facilities, landside facilities, and services are combined in **Table 7-9**. **Figure 7-5** shows the cost comparison between airside and landside facility targets and service targets. As a whole, the FSTs equate to a cost estimate of slightly more than $90 million which is roughly three times greater than the costs to achieve the PMs, at $28 million. While this is a large sum it is important to remember that FSTs are not required improvements but will help airports achieve optimal performance within their SDSASP role as resources allow.

Table 7-9: Total Facility and Service Recommendation Costs (2020-2040)

Recommendation	Estimated Cost (000's)	% of Total
Airside Facility Targets	$65,660,000	73%
Landside Facility Targets	$23,980,000	27%
Service Targets	$480,000	< 1%
Total	**$ 90,120,000**	**100%**

Sources: Kimley-Horn, 2020; KLJ, 2020
Notes: Percentages and dollar amounts have been rounded.

Figure 7-5: Cost Comparison for SDSASP Facility and Service Targets Recommendations (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020
Notes: Percentages and dollar amounts have been rounded.

As shown, the highest FST costs are associated with airside facilities, representing approximately $66 million or 73 percent of total FST costs followed by landside facilities accounting for almost $24 million or 27 percent of the total. The majority of the service targets do not have an associated capital project or related cost and therefore make up the least costly of the three categories.

When combined, the three most expensive FST needs are for ARC at approximately $52 million; hangars for based aircraft at $16.6 million; primary taxiways at $7.5 million; then hangars for transient aircraft at slightly more than $4 million.

7.3. Existing Statewide CIP (Non-SDSASP-Related Project Costs)

While **Section 7.2** focused on the project recommendations and cost estimations that came directly from the 2020 SDSASP through system analysis of PMs and FSTs, this section contains the projects included in the individual airport CIPs. As noted previously, several of the PM and FST identified projects were already accounted for in the statewide CIP. Most of the projects in the 2020 statewide CIP are planned to occur within the next five to 10 years, however a few outlier projects were listed out to 20 years. For the purpose of the 2020 SDSASP and assessing funding needs, projects planned for the next 11 years were considered (2020-2030). Needs beyond this timeframe can be challenging to anticipate as many factors can change.

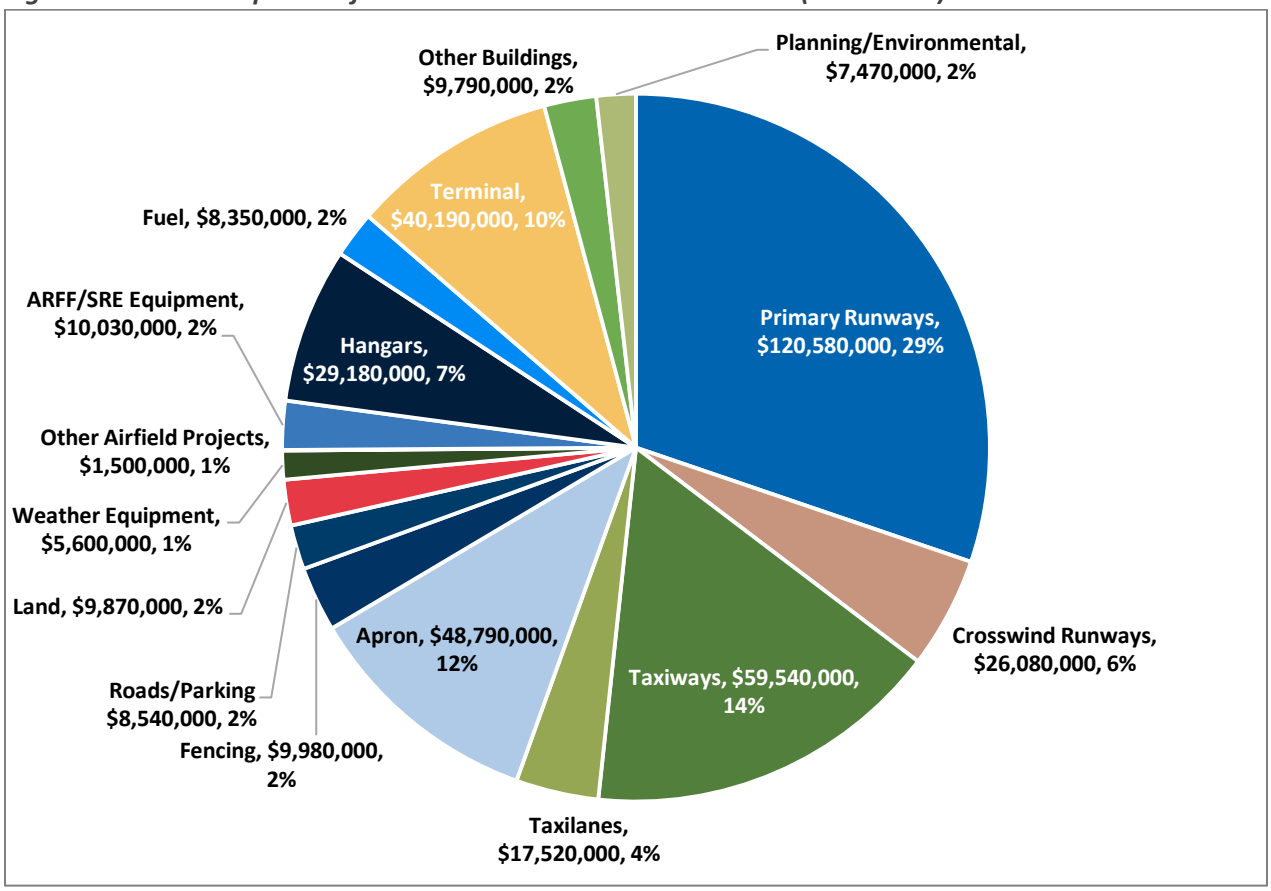
Table 7-10 shows the total estimated cost for each project type and the percent of total funding those projects may require and **Figure 7-6** shows the cost comparison for all statewide CIP project types.

Table 7-10: Existing Statewide CIP Project Costs (2020-2030)

Project Type	Cost	% of Total
Primary Runways	$120,580,000	29%
Crosswind Runways	$26,080,000	6%
Taxiways	$59,540,000	14%
Taxilanes	$17,520,000	4%
Apron	$48,790,000	12%
Fencing	$9,980,000	2%
Roads/Parking	$8,540,000	2%
Land	$9,870,000	2%
Weather Reporting Equipment	$5,600,000	1%
Other Airfield Projects	$1,500,000	1%
ARFF/SRE Equipment	$10,030,000	2%
Hangars	$29,180,000	7%
Fuel	$8,350,000	2%
Terminal	$40,190,000	10%
Other Buildings	$9,790,000	2%
Planning/Environmental	$7,470,000	2%
Total	**$413,010,000**	**100%**

Sources: Kimley-Horn, 2020; KLJ, 2020; Airport CIPs; SDDOT (2020-2030 CIP)
Notes: Dollar amounts and percentages have been rounded. Acronyms: Aircraft Rescue and Firefighting (ARFF), Snow Removal Equipment (SRE).

Figure 7-6: Cost Comparison for Statewide CIP Recommendations (2020-2030)



Sources: Kimley-Horn, 2020; KLJ, 2020; Airport CIPs; SDDOT (2020-2030 CIP)
Notes: Percentages and dollar amounts have been rounded. Acronym: Aircraft Rescue and Firefighting (ARFF), Snow Removal Equipment (SRE).

The project types with the highest associated costs in the statewide CIP are related to pavement including primary runways, crosswind runways, taxiways, taxilanes, and aprons at almost $273 million or 65 percent of the total. The high cost associated with pavement related projects is not surprising considering that every airport, excluding three, indicated some type of pavement related project on their CIP. However, some projects were more extensive than others and the following list shows the 18 airports with the highest costs related to pavement projects, with costs in parenthesis:

- Aberdeen Regional ($15,710,000)
- Black Hills Airport - Clyde Ice Field ($9,780,000)
- Chamberlain Municipal ($8,600,000)
- Cheyenne Eagle Butte ($4,830,000)
- Custer County ($9,180,000)
- Faulkton Municipal ($4,490,000)
- Flandreau Municipal ($5,710,000)
- Gregory Municipal-Flynn Field ($3,950,000)
- Hot Springs Municipal ($3,350,000)
- Miller Municipal ($2,870,000)
- Mitchell Municipal ($7,000,000)
- Onida Municipal ($6,700,000)
- Philip Municipal ($4,720,000)
- Pierre Regional ($22,300,000)
- Redfield Municipal ($4,550,000)

- Sioux Falls Regional-Joe Foss Field ($10,650,000)
- Wall Municipal ($4,830,000)
- Wessington Springs Municipal ($2,500,000)

The project type with the second highest cost estimate is for terminal building projects at slightly more than $40 million or 10 percent. Terminal related projects are included in following airport's CIPs with estimated project costs in parenthesis:

- Brookings Regional ($1,200,000)
- Cheyenne Eagle Butte ($300,000)
- Sturgis Municipal ($500,000)
- Watertown Regional ($27,000,000)

7.4. Total Identified Needs

This section provides an overview of the total estimated cost when SDSASP-related projects (to achieve PMs and FSTs) and CIP projects are combined (removing any duplication). The total estimated cost associated with the projects identified as a result of combining SDSASP and CIP projects total approximately $1 billion over the next 20 years. While 2020 SDSASP related costs were developed with a 20-year planning horizon in mind, CIP project costs were only consistently available through 2030 – or ten years.[1] Therefore, in order to estimate total needs over the 20-year planning horizon, CIP costs were averaged to determine an estimated amount per year, then that annual average was multiplied according to projected years, which generated estimates for CIP costs through 2040. **Table 7-11** shows the breakdown of costs between sources and the percentage of total costs over the 20-year planning period.

Table 7-11: Total Cost Estimates for PM, FSTs, and Airport CIP Project Recommendations (2020-2040)

Planning Effort Type	Cost Estimate	Percent of Total Costs
2020 SDSASP PMs	$28,730,000	3%
2020 SDSASP FSTs	$90,120,000	8%
Airport (Statewide) CIPs	$983,650,000	89%
Total Cost	**$1,102,500,000**	**100%**

Sources: Kimley-Horn, 2020; KLJ, 2020
Note: Dollar amounts and percentages have been rounded.

Table 7-12 shows PM, FST, and statewide CIP recommendations by project type and estimates total cost by airport role, and system wide. **Figure 7-7**, **Figure 7-8**, and **Figure 7-9** graphically show the distribution of projects across the airport roles in each of the respective project groups. It is important to note that the costs associated with the Basic Service role is significantly less than other airport roles because the Basic Service role only includes one airport and several PMs and FSTs did not apply to this airport role.

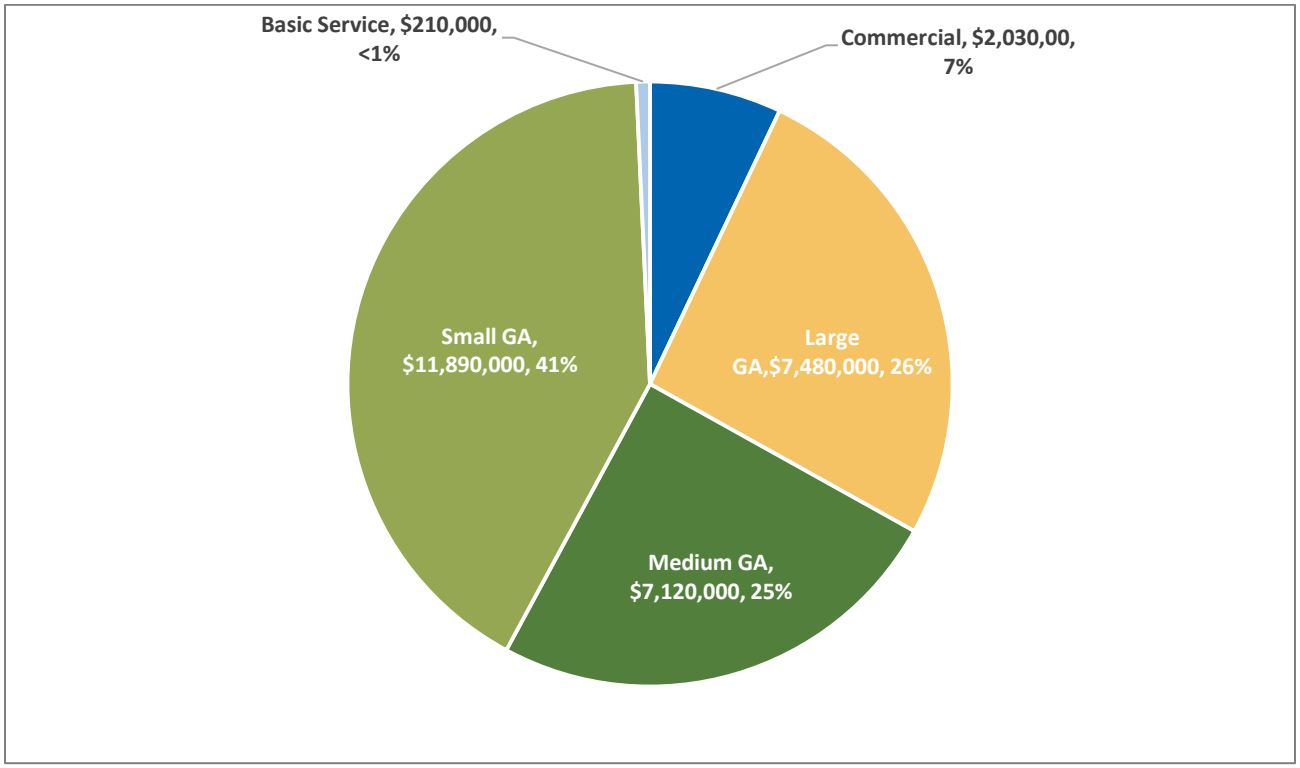
[1] Some system airports programmed projects past a 10-year planning horizon; however, this was only a select few. Therefore, CIP costs past 2010 were truncated to remain consistent.

Table 7-12: Statewide Project Costs (2020-2040)

Project Type	Commercial (5)	Large GA (7)	Medium GA (16)	Small GA (27)	Basic Service (1)	Total
Performance Measures						
Sub-Total PMs	$2,030,000	$7,480,000	$7,120,000	$11,890,000	$210,000	$28,730,000
Facility & Service Targets						
Sub-Total FSTs	$6,580,000	$57,670,000	$20,700,000	$5,170,000	$0	$90,120,000
Statewide CIP						
Sub-Total Statewide CIP	$326,090,000	$132,570,000	$204,830,000	320,160,000	$0	$983,650,000
Performance Measures, FSTs, and Airport CIPs						
Total	**$334,700,000**	**$197,720,000**	**$232,650,000**	**$337,220,000**	**$210,000**	**$1,102,500,000**

Sources: Kimley-Horn, 2020; KLJ, 2020; Airport CIPs; SDDOT (2020-2030 CIP)
Notes: Dollar amounts and percentages have been rounded. Performance Measure and Facility & Service Targets costs represent need for 2020-2040; however, the CIP costs presented in Table 7-12 are only showing need for 2020-2030.

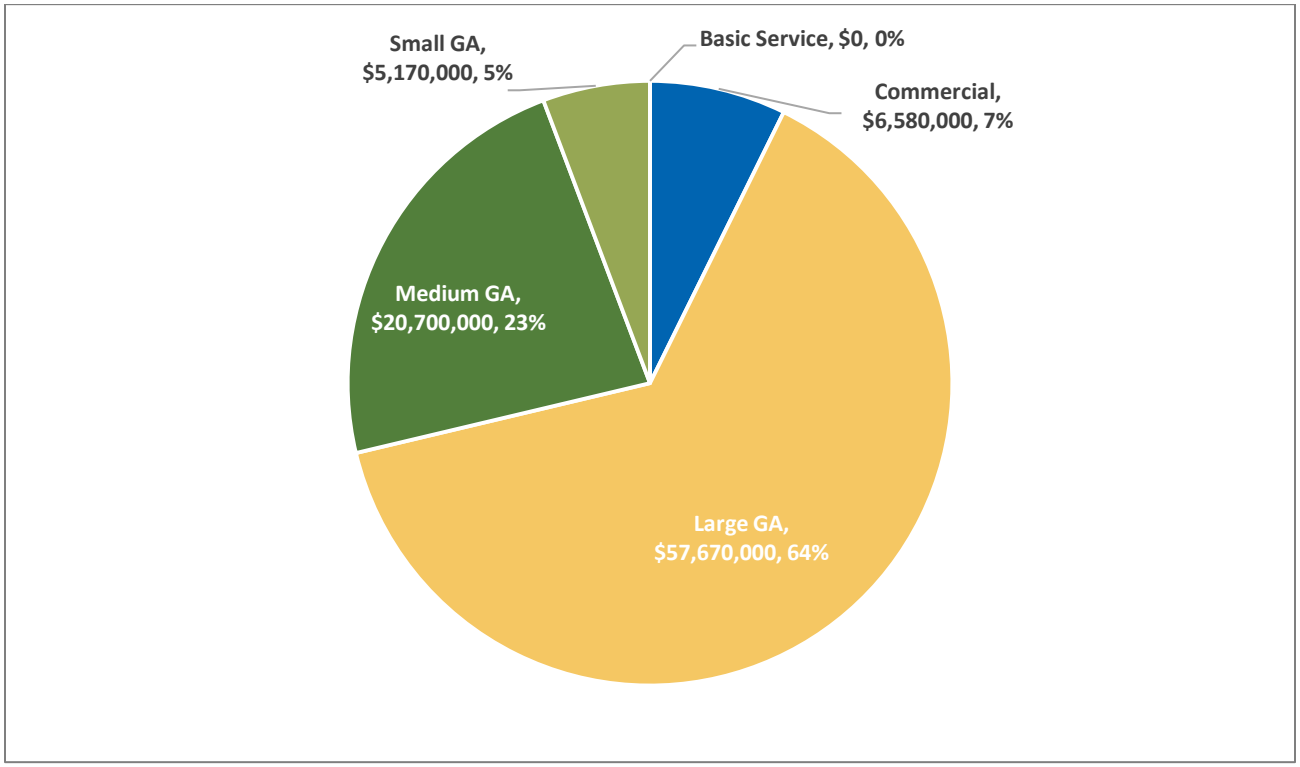
Figure 7-7: Performance Measure Costs by Airport Role (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020; Airport CIPs; SDDOT (2020-2030 CIP)
Notes: Percentages and dollar amounts have been rounded.

When evaluating cost estimates from the SDSASP PMs, the Small GA airports have the highest funding need of approximately $12 million to reach future performance targets. However, considering the 27 airports in this role, the cost is roughly $400,000 per airport, which is closely comparable to the cost for each of the Commercial Service and Medium GA airports. The Large GA airports have the highest funding need per airport, with slightly over $1 million needed for each of the seven airports in that role.

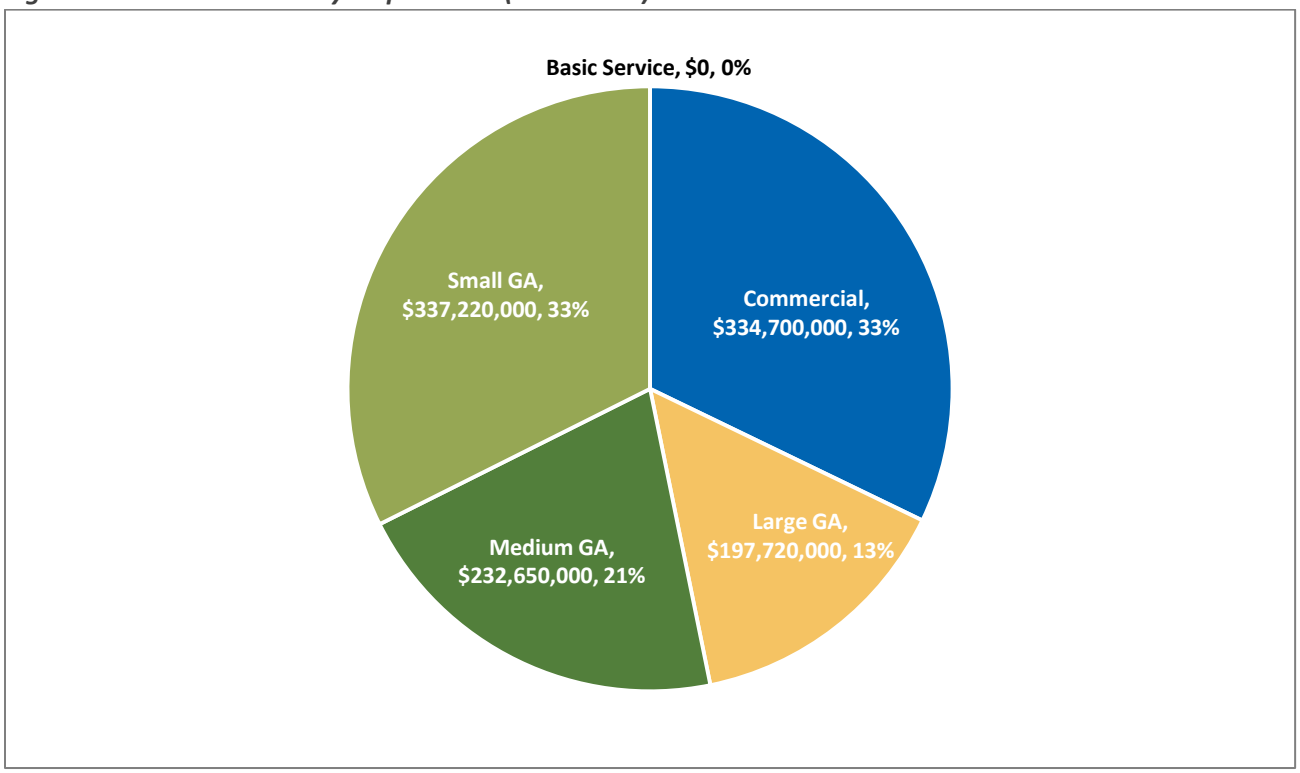
Figure 7-8: Facility and Service Targets by Airport Role (In 2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020; Airport CIPs; SDDOT (2020-2030 CIP)
Notes: Percentages and dollar amounts have been rounded.

For the FSTs, the Large GA airports have the highest need at approximately $58 million, which is an average of $8 million per airport for the seven airports in that role. Commercial Service airports with a total need of nearly $7 million and Medium GA airports with a total need of approximately $20 million average needs of slightly more than $1 million per airport in their respective roles. Small GA airport needs are considerably lower than other roles, with a total need of approximately $5 million for all 27 airports in that role combined, or approximately $200,000 per airport.

Figure 7-9: Statewide CIP by Airport Role (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020; Airport CIPs; SDDOT (2020-2030 CIP)
Notes: Percentages and dollar amounts have been rounded.

Commercial Service airports have a funding need of approximately $335 million from their airport CIPs, and generally these needs are met through access to primary airport entitlement funds and Passenger Facility Charges (PFC).[2] The funding needs for the Large, Medium, and Small GA airports are still significant, with average costs ranging from approximately $12 million to $19 million per airport for these 50 airports. Most of these project costs are pavement-related (runways, taxiways and aprons).

7.5. Historical Funding Levels & Sources

Projects are funded from four primary sources: federal, state, local, and private funding. The federal portion is provided by the FAA's Airport Improvement Program (AIP) which derives its funding from excise taxes and fees on aviation. The state portion is provided by the SDDOT Office of Aeronautics which derives its funding from taxes on aviation fuels, taxes on aircraft sales and aircraft registrations. The local funding is provided by the local jurisdictions that own and operate the airports and is often derived from fees and charges for using the airport and local tax revenues. Local funding fills the remaining gap in funding for projects after federal and state resources are contributed. Private funding is used occasionally, largely for projects related to hangars. Projects that are AIP eligible are typically funded at a 90% federal/3.5% state/6.5% local split. Projects that are not eligible for AIP funding are funded entirely at the local level or are split between the state and local levels.

[2] PFC projects are funded by the airport directly through debt financing or pay-as-you-go funding, so the costs of these projects are not in the statewide CIP.

7.5.1. Federal Funding

FAA grant history was reviewed from 2015 through 2019 to identify the funding amounts provided to SDSASP airports through the Airport Improvement Program (AIP). AIP funds are supplied by money collected from users of the nation's airport system and is used to fund eligible airport improvements. Only National Plan of Integrated Airport Systems (NPIAS) airports are eligible for FAA funding. FAA funding is generally divided into two categories: entitlement funds (consisting of primary entitlement funds, nonprimary entitlement funds (NPE), and state apportionment funds), and discretionary funds. Primary entitlement funds are distributed to commercial service airports only and funding levels are allocated based on number of passengers enplaned during the prior calendar year. Primary commercial service airports receive entitlement funds based on enplanement volume and range from slightly less than $1 million to a maximum of around $25 million per airport, depending on overall levels of AIP funds available. Nonprimary airports also receive entitlement funds; however, they are referred to as state apportionment and NPE funds. NPE funds are less than 1/5 of an airport's anticipated five-year CIP needs, or roughly $150,000. Airports must have a five-year CIP prepared that includes eligible AIP projects to be allocated these funds. Any remaining funds are then allocated to states through the state apportionment funds, and distribution of this funding is based on a formula using size and population of the state. States can then choose where to distribute these funds, and it typically goes to GA airports with the highest needs. The funding that remains after entitlement funds are distributed (including primary, nonprimary, and state apportionment funds) are referred to as discretionary funds. Discretionary funds are allocated to eligible airport projects at the discretion of the FAA based on a national priority system.

While entitlement and discretionary funds are the main funding categories provided by the FAA, an additional funding source referred to as "supplemental appropriations" were distributed one time as part of the "Consolidated Appropriations Act, 2019". This law resulted in the addition of $500 million of discretionary grants that could be distributed to any NPIAS airport. However, the supplemental funds were not subject to the same prioritization model as traditional AIP funds. Instead, these funds followed the guidance of the FAA Reauthorization Act 2018, which prioritized small airports and expanded eligibility requirements for terminal-related projects.

Table 7-13 shows the categories of FAA funding that have been received in grants for airports in South Dakota.

Table 7-13: FAA Funding from 2015 to 2019

Airport Type	Entitlements	Discretionary	Supplemental	Total
Nonprimary	$49,310,000	$19,800,000	$4,100,000	$73,220,000
Primary	$46,260,000	$22,900,000	$0	$69,160,000
State	$4,280,000	$0	$0	$4,280,000
Total	**$99,850,000**	**$42,700,000**	**$4,100,000**	**$146,660,000**
Average Annual	**$19,970,000**	**$8,540,000**	**N/A**	**$29,330,000**

Sources: FAA Grant History Reports
Note: Dollar amounts have been rounded.

On an average annual basis, airports in South Dakota have received slightly over $29 million in grants each year with approximately half of this money going to the five primary airports in the state. The available grant history data provided by the FAA does not separate State Apportionment money from Entitlements and Discretionary funds. Therefore, that amount, which is approximately $3 million per year, appears in the State Entitlement grants and the Discretionary grants.

7.5.2. State Funding

The state tax from aviation use generates an average revenue of approximately $2 million per year which fluctuates based on aircraft sales and fuel sales. **Table 7-14** provides the details of fuel volume in the state and the taxes derived from fuel and aircraft sales. These state funds are used to cover the operations of the Office of Aeronautics Services as well as capital projects and has historically contributed five percent match to AIP projects. In 2019, the state Aeronautics Commission adjusted the contribution down to 3.5 percent of AIP projects and determined that "revenue producing" projects such as hangars and fuel facilities will no longer receive state funding. The approximate two percent reduction in state match funds means that the local match needed across the system will increase from five percent to roughly seven percent, which will be challenging for some airports and their communities. Excluding the funding used for Office of Aeronautics operations and state matching, a portion of the fuel tax revenues are allocated to the specific airport where the fuel was delivered. Airport sponsors who receive an allotment of funding based on their fuel sales can use this money for any project identified at the airport. In instances where a state may have revenue over and above what is needed to match AIP funded projects, the state may choose to use the money to either establish revolving loan programs or grant programs for projects that are high priority in the state, but not a priority from a federal standpoint.

Table 7-14: State Aviation Revenues from 2015 to 2019 (000's)

State FY	Gallons of Fuel Sold		Taxes Collected		
	AV Gas	Jet Fuel	Fuel Collections	Tax on Aircraft	Total
FY 2015	1,080,000	16,450,000	$730,000	$1,260,000	$1,990,000
FY 2016	1,020,000	16,680,000	$710,000	$800,000	$1,510,000
FY 2017	1,040,000	16,540,000	$760,000	$1,200,000	$1,960,000
FY 2018	1,780,000	16,890,000	$780,000	$1,530,000	$2,310,000
FY 2019	940,000	16,300,000	$700,000	$1,740,000	$2,440,000
2015-2019 Average	**1,170,000**	**16,570,000**	**$740,000**	**$1,300,000**	**$2,040,000**

Source: SDDOT Aeronautics Commission Report to the Governor for 2019
Note: Dollar amounts have been rounded.

In addition to the state funding sources outlined, a one-time source of State funding can come from a repayment to Aeronautics from the General Fund. In FY 2010, the State Legislature transferred $3.5 million from the Aeronautics Fund to help balance the state budget. In FY 2014, the State Legislature returned $500,000 to the Aeronautics Fund. The South Dakota Aeronautics Commission continues to lobby for the return of the remaining $3 million to the Aeronautics Fund. When this one-time money is repaid, the Aeronautics Commission can decide whether to distribute the money toward projects as

they are currently funded, change the state contribution or set up a revolving loan program like many other states have to fund projects like hangars, fuel services, and other revenue-producing projects.

The Office of Aeronautics utilizes AIP funds and the state aviation taxes to address pavement maintenance across the state in a comprehensive manner. SDDOT contracts with a consulting firm to conduct Pavement Condition Index (PCI) inspections at all airports every three years. These inspection efforts result in obtaining PCI values for runways, taxiways, aprons, and other pavement. In conjunction with these efforts, SDDOT Airport Construction Specialists conduct surface inspections to determine what surface treatments may be needed, like crack sealing. Using PCI data and data obtained from surface inspections, pavements that could benefit from surface treatments are programmed into the state's pavement maintenance program for the following year. It is common for states across the country to establish pavement maintenance programs so that a certain amount or percentage of state aviation funding is allocated to pavement maintenance projects annually. Often, pavement maintenance programs support on-going pavement maintenance efforts by earmarking a set amount of funding each year that is directed toward pavement maintenance projects, without those projects needing to compete with other projects during project prioritization and selection. Programs such as these motivate airport sponsors to keep up on pavement maintenance because they have access to funding needed to support it.

7.5.3. Local Funding

Airport sponsors use a variety of funds to pay for the local share of capital projects. This includes rates and charges for the use of the airport as well as general tax dollars. The smaller airports have less revenue potential from airport users and therefore often rely more on tax dollars than larger airports with more activity.

For those airports with scheduled airline service, the FAA allows the imposition of a PFC. All five of the Commercial Service airports in the system are approved for PFCs at $4.50 per enplaned passenger. The airports use this money to pay for projects similar to AIP funded projects either on a pay-as-you-go basis or to pay back bonded indebtedness which financed the project. According to FAA records, these airports have collectively raised approximately $57 million from PFCs which are authorized from August 1997 through April 2042 for projects.

7.5.4. Private Funding

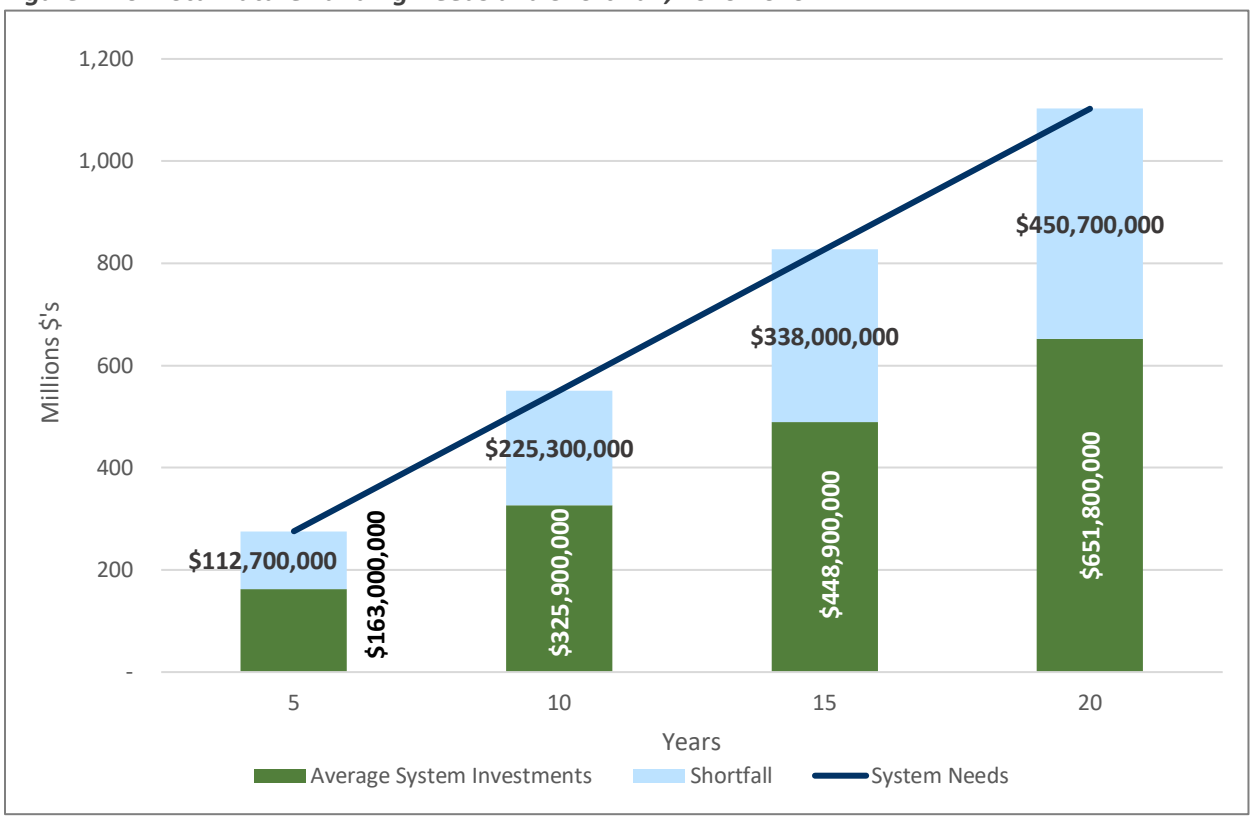
Private funding is most often used for hangars. At an airport, a private party may choose to construct a hangar on leased airport land with the ability to use these improvements exclusively for a certain period of time. After the private party has been able to fully amortize their investment, the use of these facilities would no longer be considered exclusive, and the facilities should be available for lease at the going market rate. This is typically called 'reversion' and by going through this process, the airport can begin to increase the revenue generated from airport users through the lease of these facilities and be in a better position to locally support capital projects and pay for the operations of the airport.

7.5.5. Anticipated Funding and System Needs

The Office of Aeronautics works hard to allocate available funds, from all sources, to the airports and parts of the system that need it most. They use their institutional knowledge, FAA guidance, results of data analysis, and other inputs to determine a priority for implementing airport improvements when

funding is limited. However, despite how effectively the Office of Aeronautics is able to distribute available funding, there is not always enough funding to account for every project identified in airport CIPs. Adding in the additional projects being recommended from the 2020 SDSASP further strains the funding typically available to system airports. Looking at CIP projects and 2020 SDSASP projects over a 20-year planning horizon it is clear that there is an imminent shortfall between the funding that the Office of Aeronautics anticipates receiving, and the amount of funding they will need to meet system needs. **Figure 7-10** shows the total shortfall of available funds compared to anticipated system need over the 20-year planning horizon. As the figure shows, the funding shortfall over the next five years is approximately $112 million but overtime as system needs grow so too does the shortfall. Over the next 20 years it is estimated that the shortfall will reach almost $450 million. By the year 2020 there is an estimated 41 percent shortfall in the total funding needed for future system investments. Projections shown in the following figures were estimated using annualized cost estimates of 20-year costs for PM and FSTs projects and 10-year CIP costs. Anticipated funding levels were estimated using historical funding from 2015-2019 to estimate an average annual funding amount per year and using that estimate to project funding amounts for five-, ten-, 15-, and 20-year horizons.

Figure 7-10: Total Future Funding Needs and Short Fall, 2020-2040

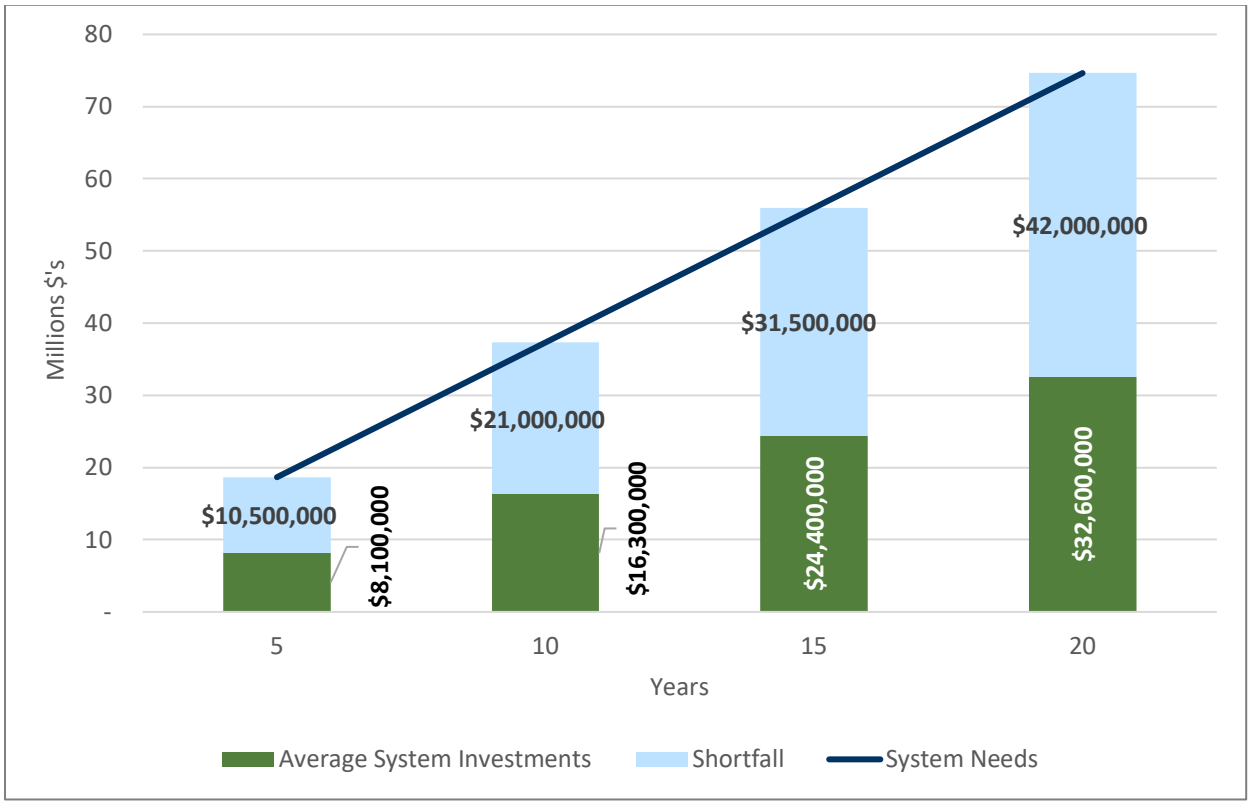


Sources: Kimley-Horn, 2020; KLJ, 2020; SDDOT Historical Funding; FAA Grant Histories
Note: Dollar amounts have been rounded.

The total funding shortfall is demonstrated at the local, state, and federal levels in **Figure 7-11**, **Figure 7-12**, and **Figure 7-13**. As these figures show, the greatest discrepancy between system need and system investment is occurring at the local level, with a funding gap that accounts for over half of the total local system needs over twenty years. The funding shortfall at the federal level accounts for 41 percent of the

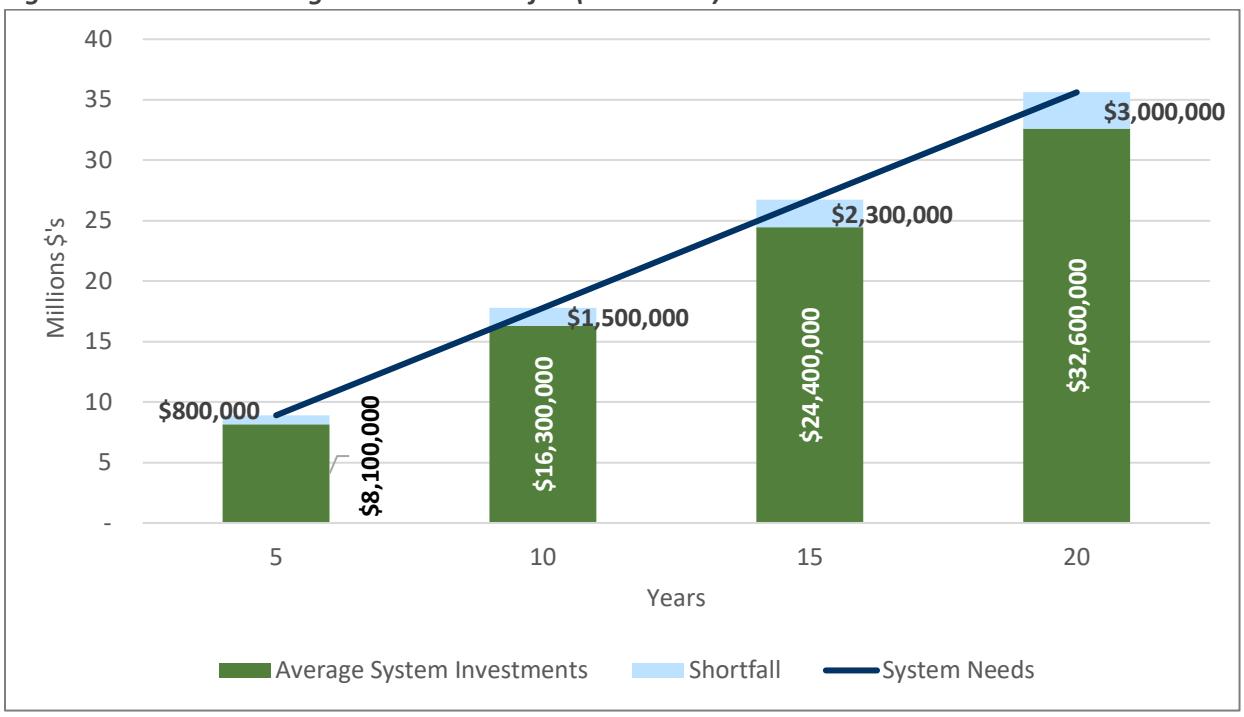
total federal funding needs over twenty years. Both the federal and local shortfalls are significantly larger than the shortfall at the state level, which accounts for only eight percent of state funding needs over the twenty-year planning period. This is due in part to the change in the state match percentage from five percent to 3.5 percent, shifting more of the financial burden to the local level. These shortfalls indicate at which level of government there is the most need of funding to support aviation improvements and enhancements over the next planning period.

Figure 7-11: Local Funding Needs and Shortfall (2020-2040)



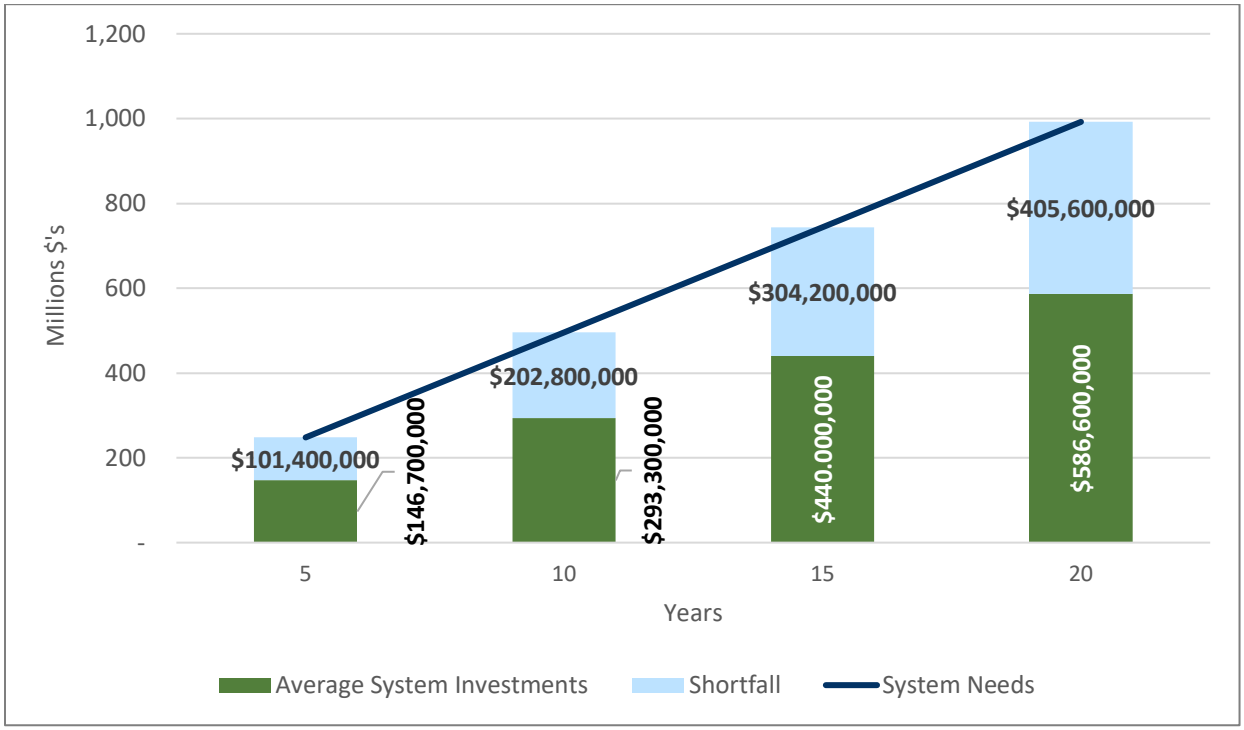
Sources: Kimley-Horn, 2020; KLJ, 2020; SDDOT Historical Funding; FAA Grant Histories
Note: Dollar amounts have been rounded.

Figure 7-12: State Funding Needs and Shortfall (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020; SDDOT Historical Funding; FAA Grant Histories
Note: Dollar amounts have been rounded.

Figure 7-13: Federal Funding Needs and Shortfall (2020-2040)



Sources: Kimley-Horn, 2020; KLJ, 2020; SDDOT Historical Funding; FAA Grant Histories
Note: Dollar amounts have been rounded.

7.6. Prioritization of Needs

In order to most effectively plan for aviation development and enhancements over time, a Priority Rating Model (PRM) was established as part of the 2020 SDSASP. The PRM is a tool that can be used by SDDOT Office of Aeronautics Services to prioritize capital projects based on a consistent rating system that is applied to each project. Projects are allocated points based on certain project attributes in the following categories:

- Project Purpose
- SDSASP Performance
- Associated Facility
- Timing Considerations
- Airport Role
- Funding Source

Each category is assigned a weight indicating rank of importance or relevance to the performance and vitality of South Dakota's aviation system. Within each category, a specific number of points are awarded to a project based on its characteristics (e.g. a project will be assigned a higher point value if it achieves an SDSASP goal, versus a project that doesn't under the "SDSASP Performance" category). That score is then multiplied by the weight of the criteria. Each project is run through the PRM to determine a final score, and the scores are then ranked highest to lowest, with highest scores receiving higher priority. The highest score a project can receive is 84 points.

SDDOT can use the results of the PRM to help determine prioritization of needs when funding resources are limited and not sufficient to fund each capital project. The criteria established, including the ranking, weight, and point allocation were established through a detailed review of peer state prioritization models, and existing priority documents and processes used by SDDOT. For more information about the PRM, including a detailed description of each criteria, weighted scores, and allocation of points and project examples see **Appendix G – SDSASP Priority Rating Model**.

7.7. Summary

This chapter builds upon the recommended projects identified in **Chapter 6. System Recommendations** to increase system performance by estimating the costs associated with those projects and with projects needed for airports to meet their FSTs. This chapter not only presents the cost estimates associated with recommended projects identified in **Chapter 6,** but it considers the entirety of the system's needs based on current airport CIPs. Together, project recommendations identified in the 2020 SDSASP and airport CIPs provide a comprehensive look at where the system needs improvements in order to achieve optimal performance. Understanding anticipated funding levels and current and future system needs helps to identify the shortfall in funding that exists over time. While the financial investment is significant, it is important that SDDOT work towards implementing necessary development projects in order to maintain an aviation system that meets current and future needs.