



Minnesota  
A Collaborative Vision  
for Transportation



# State Aviation System Plan



LAST UPDATE JULY 2013

*Acknowledgements*

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*Document prepared by MnDOT Office of Aeronautics and HNTB Corporation.*

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## Chapter 7

### INVESTMENT PLAN AND SYSTEM RECOMMENDATIONS

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## INVESTMENT PLAN AND SYSTEM RECOMMENDATIONS

Investments in Minnesota airports over the next 20 years should be based on a reasonable analysis of the needs previously identified in **Chapter 5: Airport Facility Requirements** and the amount of funding that is expected to be available. In order to plan for these investments, estimated costs have been developed to meet the needs for each airport. Methods used to develop these costs, the resulting estimated system costs, current funding sources, the project prioritization process, and airport funding alternatives are presented in this chapter. It should be emphasized that the individual airport costs identified in **Appendix E: Airport Facility Needs Sheets and Report Cards** are estimates, and should only be used for system level airport funding information, rather than as a precise funding plan for an individual airport. In addition, it is noted that the amount of funds anticipated to be available over the next 20-years is significantly less than the needs identified. Therefore, the distribution of funding must be done in a way that maximizes the value of each dollar spent. Diverse aviation functions must be taken into account to ensure the aviation system is properly funded and preserved for its users. This Plan is not an implementation plan or a programming document; projects listed in this Plan are not guaranteed funding.



## Developing Costs

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To quantify the monetary needs of the aviation system, various sources of information were used. **Chapter 5: Airport Facility Requirements** and **Chapter 6: Performance Report** presented future airport needs based on minimum system objectives and performance measures. The then current (2012) Capital Improvement Program (CIP) for each airport was combined with the needs determined by this Plan to develop cost estimates. CIPs identify projects individual airports intend to achieve in the next five years to meet their own priorities.

Total cost estimates were split into time frames as follows:

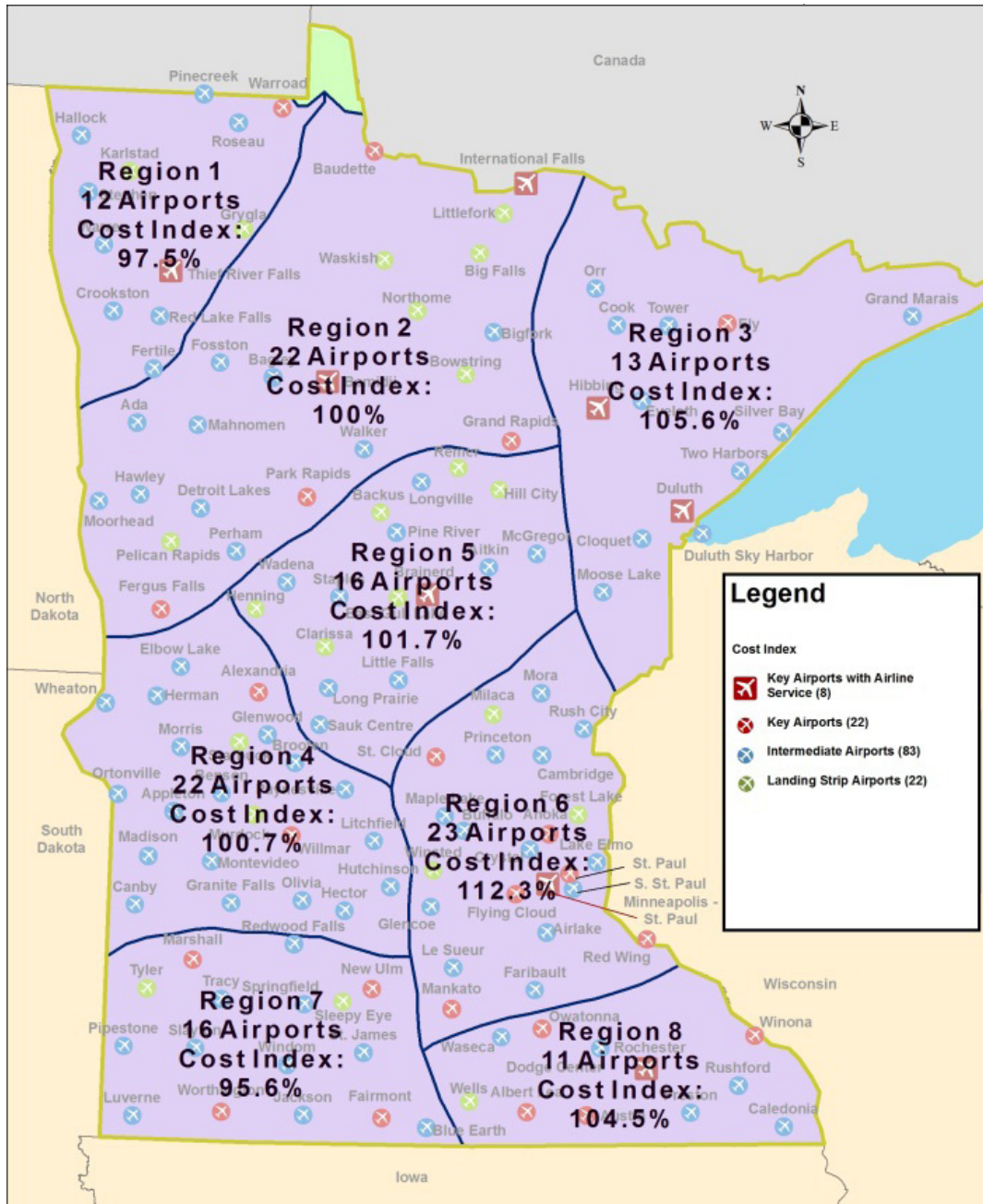
- **Short-term** (four years including 2012-2015) investment plan values include project costs from each airport's CIP plus projects that were recognized as a high priority but not indicated on an airport's CIP (i.e. planning and zoning projects required in advance of receiving funding for other identified short-term projects). Because 2012 CIPs became available mid-way through the SASP planning process, the short-term does not include 2011 costs, and is four years in length.
- **Mid-term** (five years including 2016-2020) investment plan estimates consist of costs for safety and preservation projects that will meet the objectives and measures described in Chapters 5 and 6, but which are not identified on an airport's 2012 CIP. These costs were allocated to the mid-term planning periods because of the lead time necessary to complete them.
- **Long-term** (ten years including 2021-2030) investment plan values consist of costs for infrastructure planning and preservation as well as facility expansion to meet demands based on individual airports' long-term forecasts.

Costs reported for each airport in **Appendix E: Airport Facility Needs Sheets and Report Cards** do not include an inflation factor, but an annual inflation factor of four percent (4%) was used to develop the cost summaries by project type and planning period presented later in this chapter. The Metropolitan Council is responsible for aviation planning for the Twin Cities Metro Area Airports (TCMA). Only short-term costs were included for TCMA airports, excluding MSP which is not included in any SASP cost estimates.



Cost estimates for improvements that were not in a 2012 CIP, were prepared based on industry standard units of measurement. Unit costs for specific types of improvements were established based on a blend of MnDOT average bid prices, and costs from recent airport construction projects. Unit costs and the assumptions used in cost determination are presented in **Appendix F: Unit Cost Assumptions**. A construction cost index factor was developed and applied to eight regions across the state to account for regional cost fluctuations. See **Figure 7-1**.

Figure 7-1: Cost Index Regions



**Table 7-1** lists cost index factors associated with each region. Project specific assumptions were used to finalize unit prices for each improvement. Identified improvements for each airport and associated cost estimates are included in **Appendix E: Airport Facility Needs Sheets and Report Cards**.

**Table 7-1: Construction Cost Index Factors**

REGION	ASSOCIATED CITY	CONSTRUCTION COST INDEX FACTOR
1	Thief River Falls	0.975
2	Bemidji	1.000
3	Duluth	1.056
4	Willmar	1.007
5	Brainerd	1.017
6 - Metro	Minneapolis-St. Paul	1.123
7	Windom	0.956
8	Rochester	1.045

Source: Karvakko Engineering & HNTB Analysis

## Summary of Estimated Costs

A variety of types of projects are planned and completed at Minnesota airports each year. In order to determine which projects should have priority for funding, FAA and MnDOT Aeronautics evaluate several factors to produce a ranking score for each project. During the process, projects are grouped by type. **Table 7-2** presents a summary of system costs, excluding MSP, sorted by major project type (“T”) codes. The Minneapolis-St. Paul International Airport (MSP) was treated as an exception when conducting the Plan’s financial analysis. First, because MSP annually spends a significant amount of money on airport capital investments compared to the majority of other airports in the system, and because MSP has access to unique sources of revenue not available to other airports in the state.

Table 7-2: Summary of Estimated Project Costs<sup>29</sup> (millions)

"T" CODE	PROJECT TYPE	SHORT 2012-2015	MID 2016-2020	LONG 2021-2030	TOTAL	% OF TOTAL
CO	Construction	26	47	116	189	8.67
OB	Obstruction Removal	3	19	23	45	2.06
RF	ARFF Vehicle	1	-	1	2	0.09
MA	Master Plan	28	22	62	112	5.14
SG	Signs	2	-	2	4	0.18
IM	Improvements	333	113	432	878	40.26
LI	Lighting	13	2	18	33	1.51
SZ	Safety Zone (RPZ)	1	-	-	1	0.05
VI	Visual Approach Aids	4	9	14	27	1.24
WX	Weathering Reporting	1	-	1	2	0.09
IN	Instrument Approach Aid	10	1	13	24	1.10
DV	Development Land	1	-	2	3	0.14
EX	Extension/Expansion	82	10	110	202	9.26
SE	Security Improvements	11	24	38	73	3.35
MS	Miscellaneous	180	32	274	486	22.28
FF	Fuel Farm Development	4	1	5	10	0.46
PA	Parking	11	13	31	55	2.52
NW	New Key Airport	-	33	-	33	1.51
O	Other	1	-	1	2	0.09
<b>Totals</b>		<b>\$712M</b>	<b>\$326M</b>	<b>\$1,143M</b>	<b>\$2,181M</b>	<b>100%</b>

Source: MnDOT Office of Aeronautics Project Priority System & HNTB Analysis

<sup>29</sup> Excludes MSP costs

## CAPITAL FUNDING SOURCES

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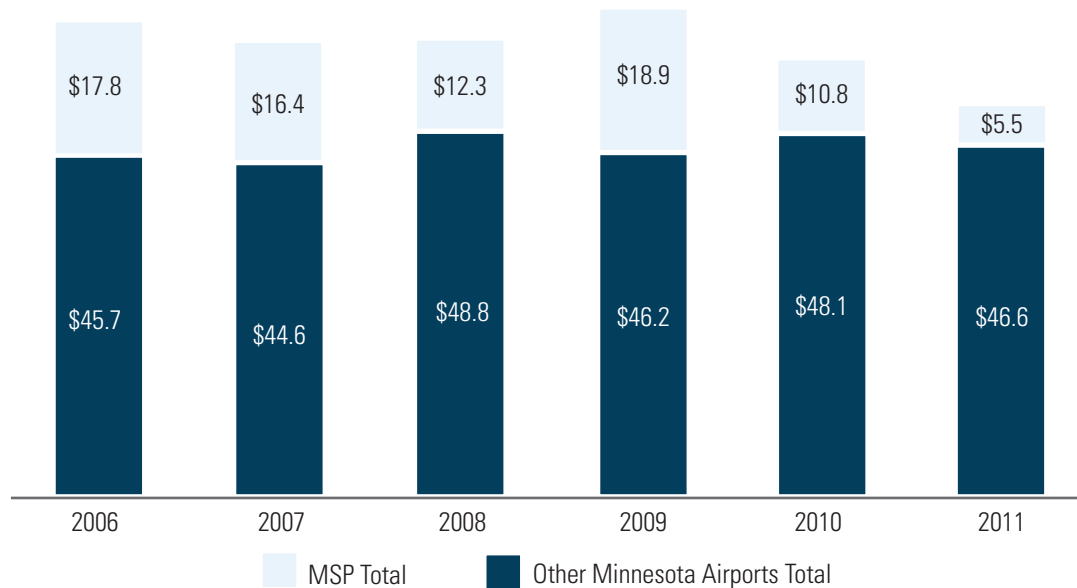
Availability of funding for capital investment projects in Minnesota’s aviation system is critical when determining the short-term and long-term financial sustainability of the system. Airport infrastructure improvements are funded by federal, state, local, and private sources. Federal funds for airports are drawn from the Airport and Airway Trust Fund (AATF) through the FAA. Income for the AATF is provided by user fees, ticket taxes, fuel taxes, and other aviation revenue sources. An airport must be included in the National Plan of Integrated Airport Systems (NPIAS) to be eligible for federal funds. In Minnesota, state funds are appropriated by the state legislature from the State Airports Fund. Income sources for the State Airports Fund are: air flight property tax (paid by airlines that use Minnesota airspace, airports, and facilities), aircraft registration fees, aviation fuel tax, and interest income. To be eligible for Minnesota state funds an airport must be: included in the State Airport System (and this Plan), owned by a municipality, zoned or in the process of zoning for airport safety, and licensed for public use. Airports are funded differently depending on each individual airport’s eligibility, needs, and characteristics. This section discusses the various funding sources available for the state aviation system.

### FEDERAL AIRPORT IMPROVEMENT PROGRAM

The FAA Airport Improvement Program (AIP) provides grants to entities owning and operating public-use airports (sponsors) for the planning and development of airports included in the National Plan of Integrated Airport Systems (NPIAS). AIP grants are available to fund projects associated with planning, development, maintenance, safety, capacity, security, and environmental concerns. In general, AIP funds must be used on airfield capital improvements or repairs and in some specific situations on terminal, hangar, and non-aviation development. Professional services necessary for eligible projects — such as planning, surveying, and design — are eligible for AIP funding. Aviation demand at the airport must justify the projects, which must also meet Federal environmental and procurement requirements. Projects related to operating the airport (e.g. salaries, equipment, and supplies) and revenue-generation are typically not eligible.

In exchange for AIP grant funding, airport sponsors must agree to certain assurances and obligations contained in the project application and grant agreement. These include obligations to operate and maintain the airport in a safe and serviceable condition, not grant exclusive rights, mitigate hazards to airspace, and use airport revenue properly. **Figure 7-2** shows the total annual AIP grant amounts in Minnesota since 2006. MSP grants are identified separately.

**Figure 7-2: Total Historical AIP Grants (millions)**



Source: FAA

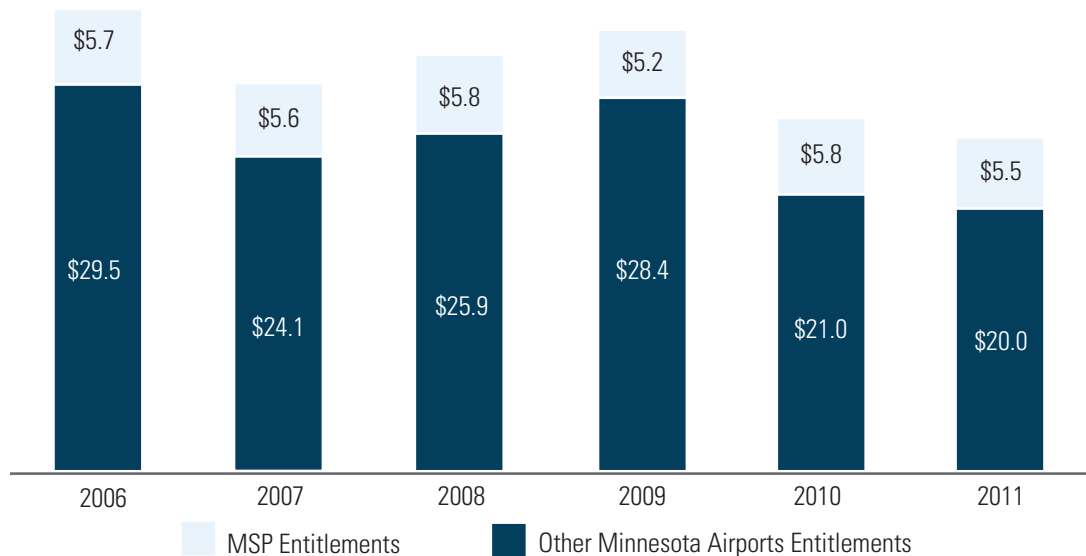
There are three categories of AIP funds available to sponsors: entitlements, discretionary, and apportionment. Each category is described in the following sections.

## ENTITLEMENTS

Each general aviation (GA) airport within the NPIAS is entitled a set amount of money annually from the FAA. The amount is determined by a formula related to the number annual operations at the airport. Entitlement funding may be increased if an airport maintains a certain level of cargo activity or passenger airline activity throughout the year. Thus, airport sponsors across the state receive different levels of entitlement grants depending on the functions of their airport.

Another type of this grant, primary entitlement fund grants, are distributed based on annual enplanements at airports with at least 10,000 annual enplanements (MSP, Duluth, Rochester, Bemidji, Brainerd, International Falls, and Hibbing qualify). Qualifying airports receive a base annual amount of one million dollars with increases based on enplanements. For fiscal year 2012, MSP's primary entitlements were approximately \$4.6 million, Duluth's were approximately \$1.5 million, and Rochester's totaled approximately \$1.4 million. Other qualifying airports received one million dollars. MSP also receives cargo entitlements of approximately \$850,000 annually. Airports with fewer than 10,000 annual enplanements are eligible to receive \$150,000 annually. In Minnesota this is a total of approximately \$14 million. To support larger projects, airport sponsors may bank entitlement funds for up to four years, while MSP can only save them for three years. **Figure 7-3** shows the yearly AIP Entitlement grant amounts in Minnesota since 2006.

Figure 7-3: Historical AIP Entitlement Grants (millions)



Source: FAA

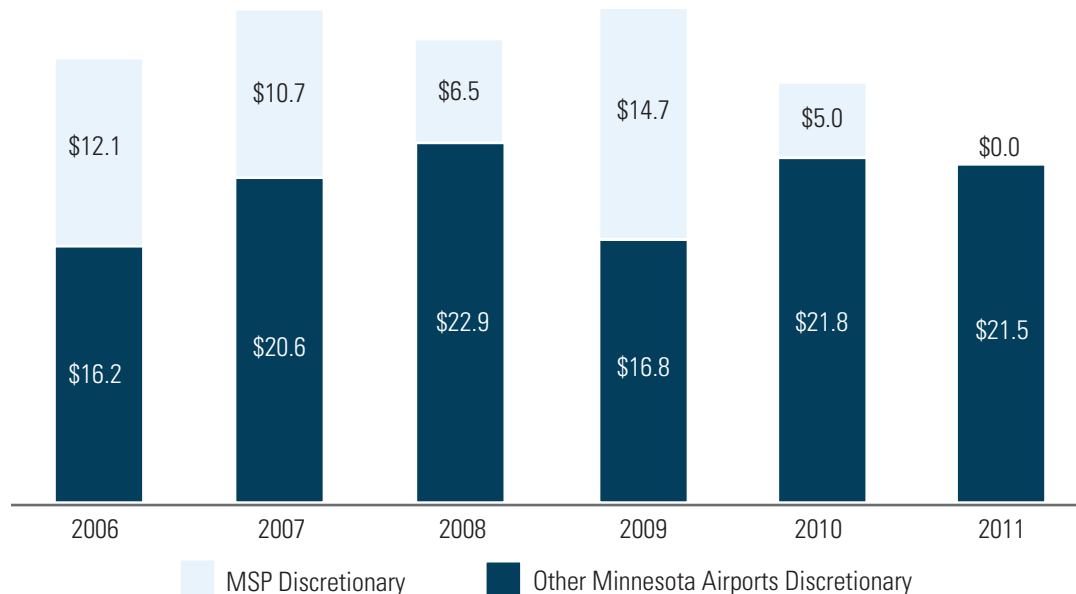
### DISCRETIONARY

The FAA provides discretionary grants from funding that has not been designated for use by entitlements, apportionment (described in next section), or used in previous grants. These funds are distributed nationwide to airports for improvement projects on a competitive basis. Certain set-aside projects (airport noise and the Military Airport Program) receive first attention from this discretionary distribution. The remaining funds are true discretionary funds distributed according to the FAA's national prioritization formula.

For large and medium primary hub airports, entitlement grants can cover 75 percent of eligible costs for most projects. MSP is the only large primary hub airport in Minnesota, and the state has no medium hub airports. For small primary, reliever, and GA airports, entitlement grants can cover 90 to 95 percent of eligible costs. The portion covered by discretionary grants may be lower depending on the amount of available discretionary funds allocated.

The annual amount of AIP discretionary funding for Minnesota airports varies year to year, and is based upon national competition and FAA priority. Some of the representative projects funded with AIP discretionary grants at Minnesota airports in recent years have included: a new terminal building expansion at Duluth International, rehabilitation projects at Blue Earth and Thief River Falls airports, and airfield expansion at New Ulm. **Figure 7-4** shows the yearly AIP Discretionary grant amounts in Minnesota since 2006.

**Figure 7-4: Historical AIP Discretionary Grants (millions)**



Source: FAA

## APPORTIONMENT

The FAA also issues state apportionment grants, which are made available for use at non-primary commercial service, general aviation, and reliever airports. Distribution is based on needs identified for NPIAS airports by MnDOT each year. The total amount of state apportionments is based primarily on state population but considers other variables. Minnesota’s apportionment for FY2011 was approximately \$5.1 million.

## Federal Funding

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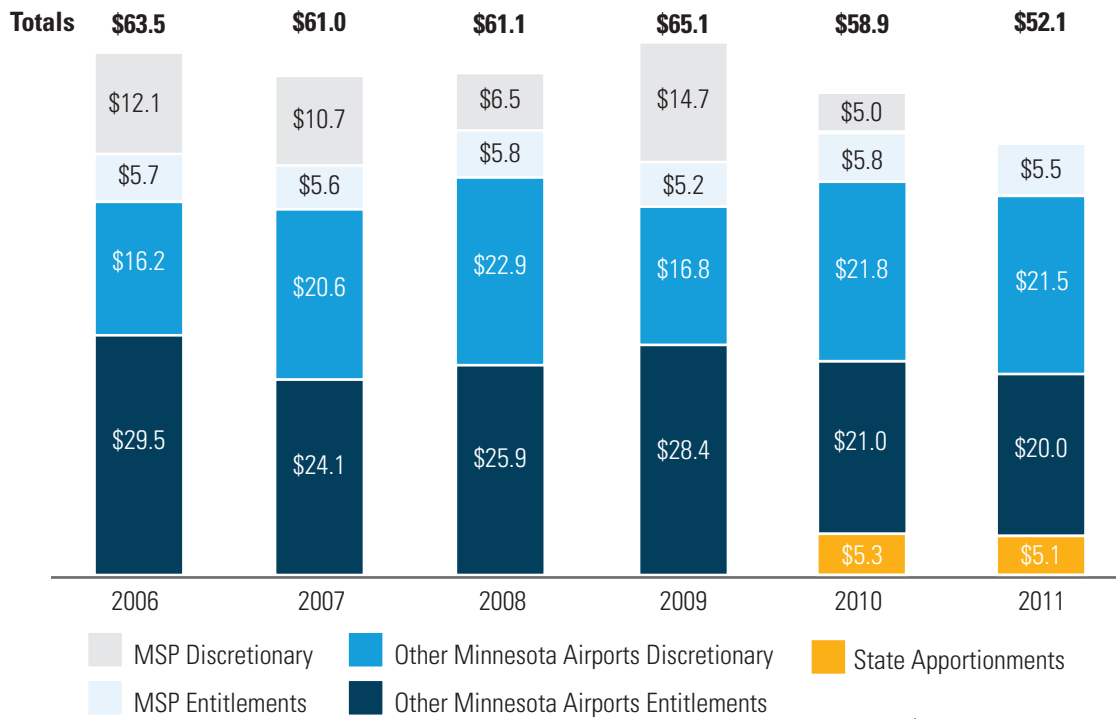
Minnesota has received \$361.7 million in FAA AIP funding over the past five years. The amount of funds has decreased over this time-frame from approximately \$60 million annually to less than \$55 million in 2011. **Figure 7-5** shows a summary of AIP funds since 2006 and the state appropriations received by Minnesota in 2010 and 2011. **Figure 7-6** shows a breakdown of the percent of total funding allocated to various project types in 2011. However, it is important to note that FY2011 had an abnormally high amount of funding (35 percent) allocated to terminal projects. This was because two airports with airline service received grants to renovate aging terminal buildings. Pavement maintenance and runways typically receive the majority of funding.

The AIP program has been in existence since 1982, and was preceded by the Airport Development Aid Program (ADAP) and the Planning Grant Program (PGP) enacted in 1970. Although the act was amended often in the 1980s and early 1990s, the general structure of the program remained the same. Commencing in 2000, the AIP's authorization substantially increased funding for airport development projects and the formula funding and minimums for primary airports were doubled starting in FY2001. Vision 100 (Century of Aviation Reauthorization Act, enacted in 2003) increased the discretionary set aside for noise compatibility projects and allowed non-primary airports to use their entitlements for revenue generating areas provided the air-side needs of the airport had been met, and permitted AIP grants at small airports to be used to pay interest on bonds used to finance an airport project.

In more recent years AIP funding has witnessed a growing wave of challenges. The multi-year authorization of the AIP under Vision 100—ended on September 30, 2007. Between 2007 and 2012 AIP continued through a series of 23 short-term extensions until the enactment of FAA Modernization and Reform Act of 2012 in February 2012. AIP funding was authorized at a reduced level of \$3.35 billion for Fiscal Years 2012 through 2015.

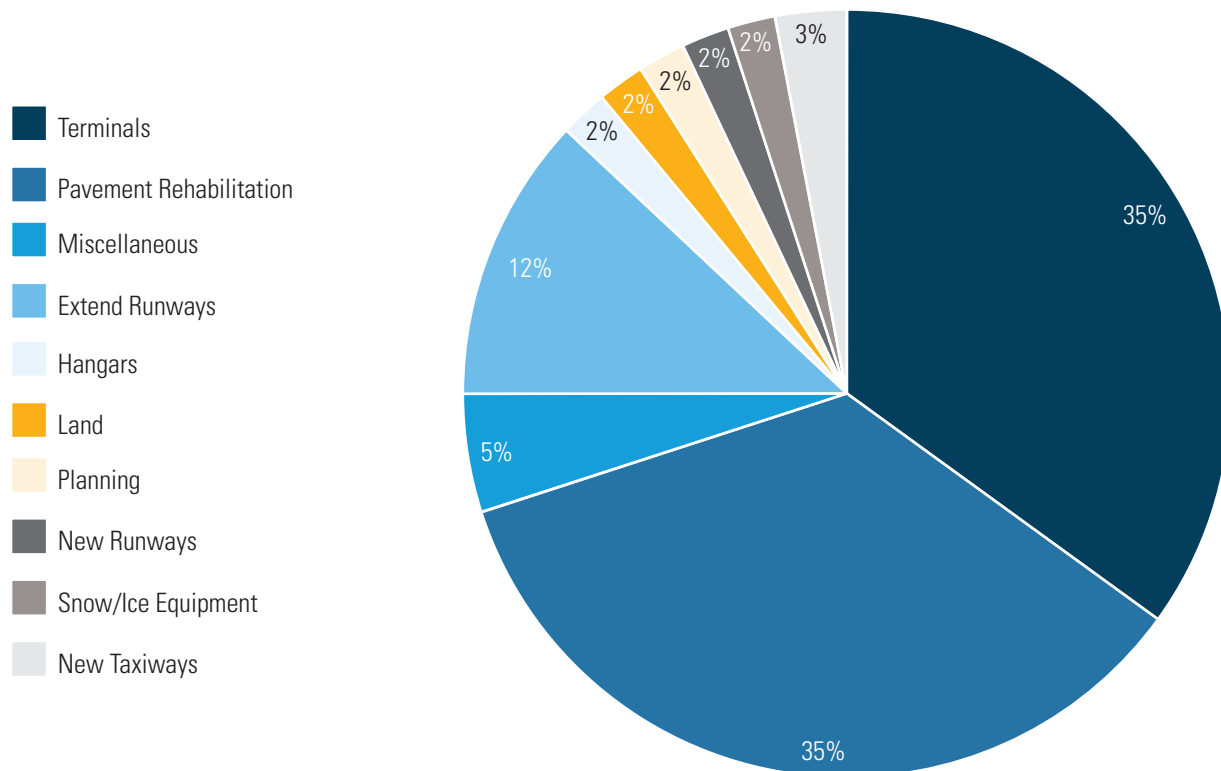


Figure 7-5: Total Historical AIP Grants by Funding Type (millions)



Source: FAA

Figure 7-6: FY2011 Minnesota Federal Airport Grants by Project Dollar Distribution



Source: FAA

Notwithstanding its long history, extended debates during the past two reauthorization efforts reflect significant ongoing policy issues with respect to AIP and Passenger Facility Charges (PFC) which are discussed in greater detail later in this chapter. These issues include the national level of need for airport development and the appropriate AIP funding level, the appropriate federal role in airport development, the criteria for the distribution of funding across airports of different types and sizes, the sufficiency of AIP discretionary funding, especially for major capacity enhancing projects, airport privatization, de-federalization of large airports, raising or eliminating the \$4.50 ceiling now imposed on PFCs, the use and tax treatment of airport bonds; and noise mitigation funding and eligibility. These issues are likely to be revisited in future reauthorizations. In addition to these ongoing policy issues, future levels of AIP will be influenced by the broader budget issues of the adequacy of trust fund revenues and the availability of money for the FAA from the Treasury general fund in the face of tremendous national deficit issues.

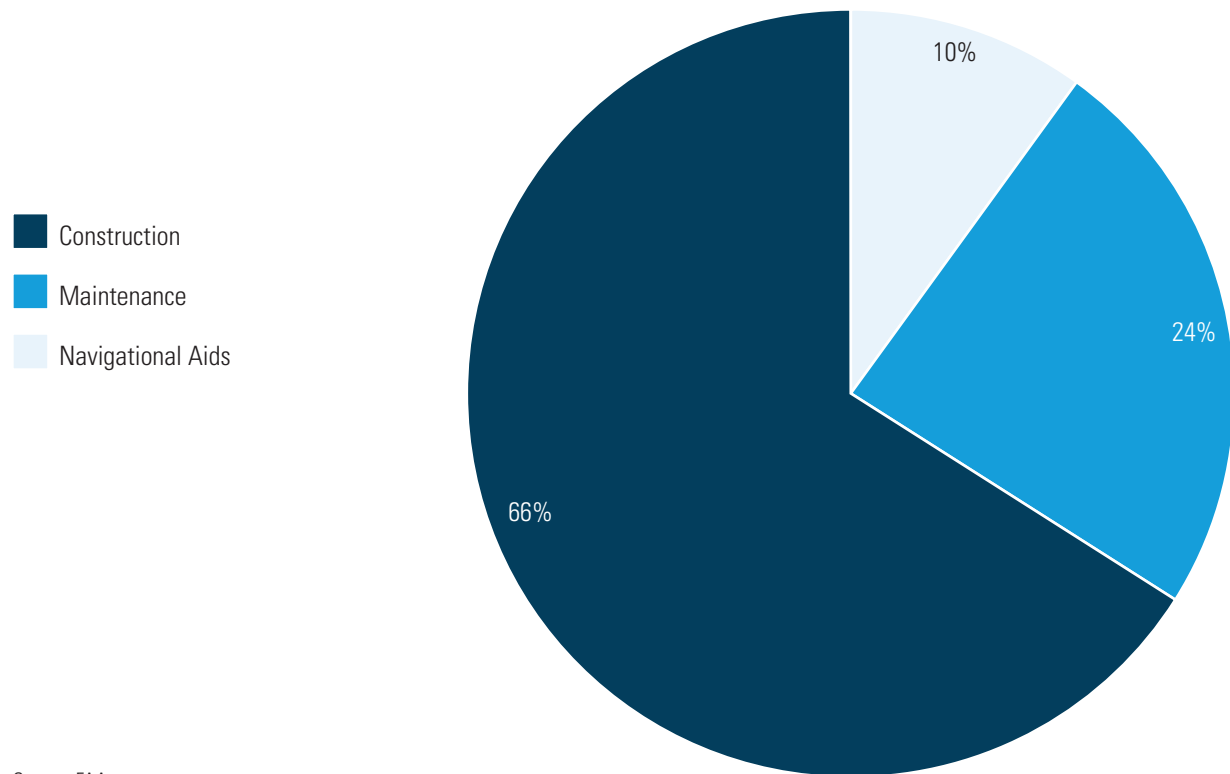
While it is possible that future reauthorizations of AIP could maintain the program's structure and funding levels, continued resistance to user fees, increased aviation taxes, the national debt, and the need to reign in budget deficits have a significant potential to result in reductions or changes. For purposes of system planning, AIP grants are assumed to continue at the FY2012 level through FY2015. After FY2015, FY2012 levels can be used as a base line; however, scenarios recognizing the potential for a significantly constrained level of AIP funding should be evaluated for their impact on the long term system plan funding.

## State Funding

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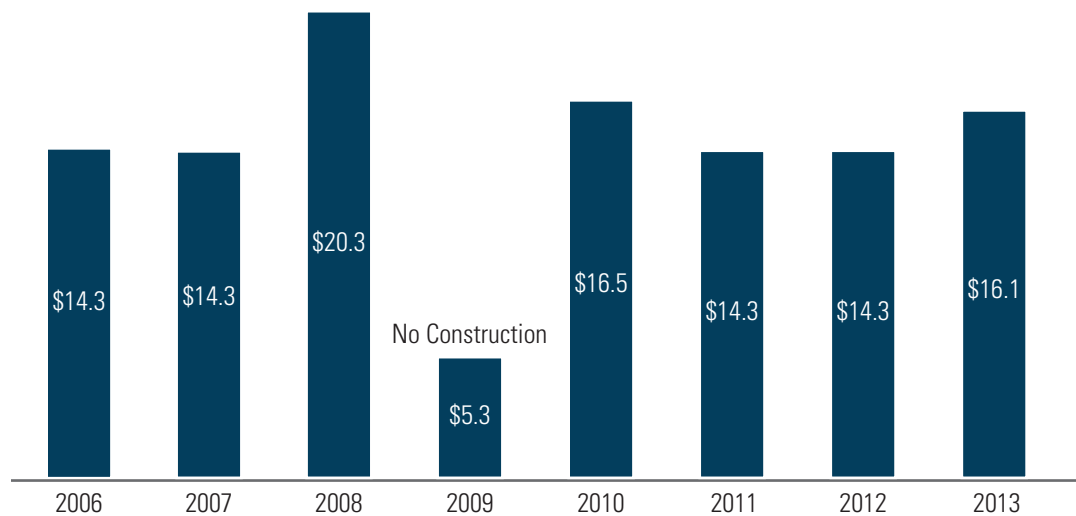
MnDOT's Office of Aeronautics administers state programs to fund airport planning, construction and management projects. Funding for these programs is matched to revenue sources from air flight property taxes, aircraft registration fees, aviation fuel tax, and interest income all of which is appropriated by the state legislature. Revenues and appropriations over the past five years have allowed MnDOT to invest in the system an average of \$14.3 million per year through the following three programs: Airport Construction Program, Airport Maintenance and Operations Program, and the Navigational Aids Program. **Figure 7-7** shows the breakdown of the programs by project dollar distribution. **Figure 7-8** shows historical MnDOT Airport Development and Assistance Appropriation.

Figure 7-7: FY2011 State Funding by Project Dollar Distribution



Source: FAA

Figure 7-8: Historical MnDOT Airport Development and Assistance Appropriation (millions)



Source: MnDOT Office of Aeronautics

## STATE CONSTRUCTION PROGRAM

The Airport Construction Program is the largest of all the state funded aeronautics programs. A baseline of \$8.2 million has been in place for several years to complete projects to develop and preserve Minnesota's publicly-owned airports. Projects eligible for funding through this program include planning, land acquisition, paving, lighting, navigational aids, obstruction removal, fencing, noise mitigation, and other needs. State construction grants have broader eligibility criteria than Federal AIP grants with the ability to rehabilitate portions of infrastructure to be used by hangars or fuel systems and to provide security in hangar areas. Eligible airport improvement projects can receive funding through the State's Airport Construction Grants program. This program funds improvement projects based on a determination that the improvement is a justifiable benefit to the air-traveling public. Funding levels vary, but all grants for eligible improvements require a local share of 30 percent at NPIAS airports and 20 percent at non-NPIAS airports. Projects that have revenue-generating potential, such as a fueling system, require at least a 50 percent local share. Under this program, planning, land acquisition and professional services of a grant are typically eligible items. Also, to be eligible for a construction grant municipalities that own airports must have zoning in place or in the process that provides for airport compatible development for adjacent properties.

## AIRPORT MAINTENANCE AND OPERATIONS PROGRAM

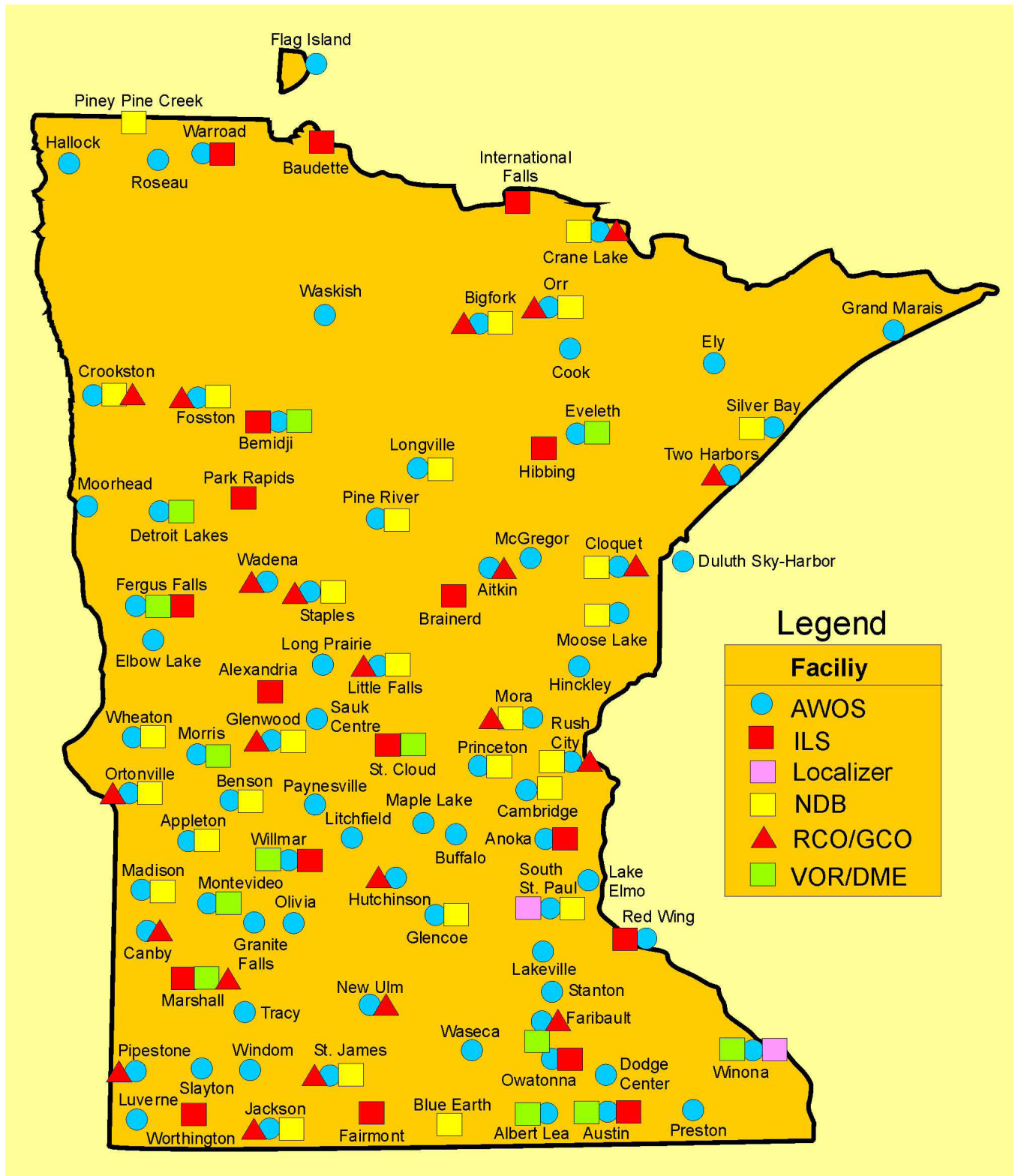
The Airport Maintenance and Operation Program generally receives approximately four million dollars annually. An airport's maintenance and operation expenses are eligible for up to two-thirds documented routine maintenance expenses. The amount of the grant depends on the size of the airport and its infrastructure that must be maintained. Examples of costs which are eligible for the reimbursement include the day-to-day labor, material, and equipment to maintain airport operations, including grounds, lighting systems, buildings, and maintenance equipment. To be eligible for the grant, the municipal owners of airports must provide safety zoning for the airport.

## NAVIGATIONAL AID PROGRAM

The Navigational Aid Program is funded by both state and federal funds. The program provides funding for infrastructure critical to safe airplane navigation. The state of Minnesota and the federal government each own and maintain portions of the navigational aid network located in the state. Though funded separately, the two systems are complementary. The State's budget to operate their network averages approximately \$2.1 million annually. **Figure 7-9** shows the state-owned navigational aids in the state.



Figure 7-9: State-Owned Navigational Aids



Source: MnDOT Office of Aeronautics

## ADDITIONAL AIRPORT ASSISTANCE PROGRAMS

Two additional programs to support aviation system airports are: the Minnesota Hangar Loan Revolving Account Program and the Air Service Marketing Program.

Minnesota’s Hangar Loan Revolving Account Program provides an 80 percent interest-free loan to airports to build new hangars. Under the loan agreements, monthly payments are made over the ten-year life of the loan. As payments are received, funds become available to make new loans to other airports with identified hangar needs. This state program was initially seeded with approximately four million dollars while annual expenditures from the fund average \$600,000. Hangars are major revenue sources for airports and can generate revenue and provide protection for the aircraft based at an airport.

The Air Service Marketing Program is a state funded program to preserve or expand airline service to Minnesota’s publicly owned airports. The program’s historic funding level is approximately \$200,000 annually.

The state has the discretion to bond for any airport related expenses. This is not a typical method for funding of airport improvements but has been and will continue to be available to those airports that pursue funding through the state’s legislative process.

For an airport to be eligible to receive funding under any of the state programs, it must meet each of the four criteria in **Table 7-3**, as set forth in [Minnesota Statute, Chapter 360](#).

**Table 7-3: State Program Eligibility Requirements**

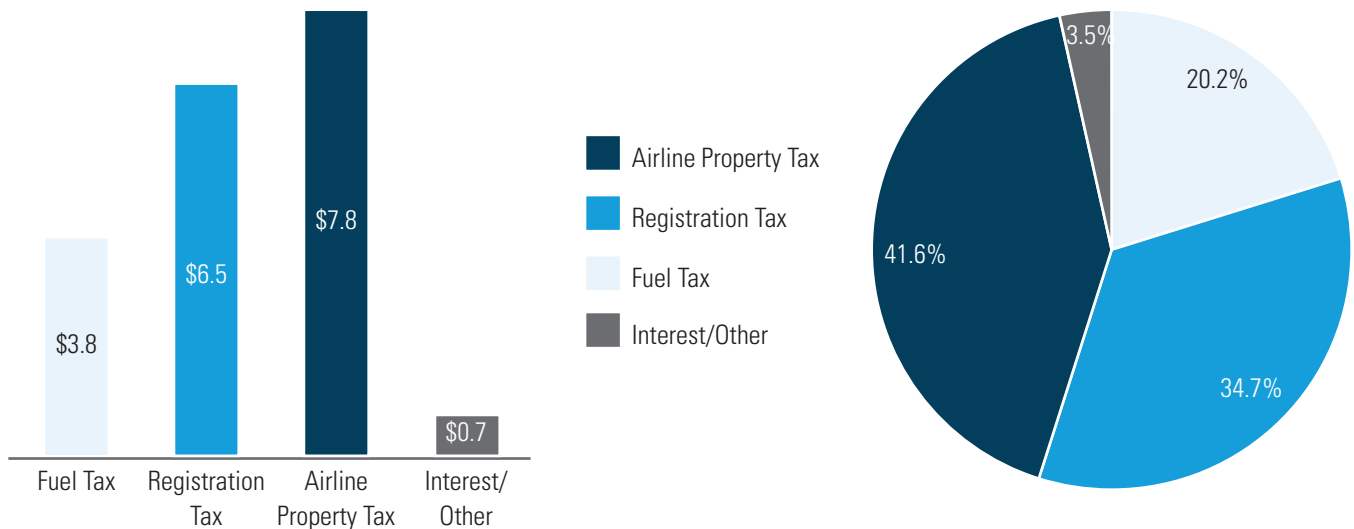
The airport must be owned by a municipality. Municipalities include cities, counties, townships, and airport authorities in Minnesota, acting individually or jointly.
The airport must be licensed for public use. The Commissioner of Transportation is responsible for licensing public airports in accordance with rules promulgated by MnDOT and administered through the Office of Aeronautics.
The airport must be in the State Airport System. This System is designated by the Commissioner of Transportation and approved by the Governor. Minnesota Statute, Chapter 360, allows for up to 195 airports to be in the State Airport System.
The airport must be zoned or in the process of being zoned.

Municipalities are given the authority to create, adopt, and enforce airport zoning. The Commissioner of Transportation is responsible for approving airport zoning ordinances prior to adoption in accordance with zoning criteria set forth in rules promulgated by MnDOT and administered through the Office of Aeronautics.

## STATE AERONAUTICAL FUNDING AND OUTLOOK

Minnesota has three main sources of state aeronautics funding, each of which is a tax on an aviation-related activity. These revenues, combined with interest and other sources, totaled \$18.8 million in Fiscal Year 2011 (see **Figure 7-10** for breakdown).

**Figure 7-10: FY2011 Aviation Revenue Amounts (millions) and Distribution**



Source: MnDOT Office of Aeronautics

**Airline Flight Property Tax:** The airline flight property tax is paid on aircraft equipment owned by commercial airlines operated or used in this state. Airlines' tax capacity is multiplied by an adjustable tax rate that is based on revenue needs for the state airports fund (calculated by appropriations from the fund less revenue from the other two taxes). By virtue of this formula, the amounts collected under this tax will remain linked to the state revenue requirement, and the rates charged rather than revenues received will fluctuate based on the level of commercial airline equipment owned in the state. There is a 50 percent reduction for air carriers who provide passenger service in six or more months during the year to three or more airports anywhere that serve small or medium sized communities and have turboprops for a majority of its aircraft operating.

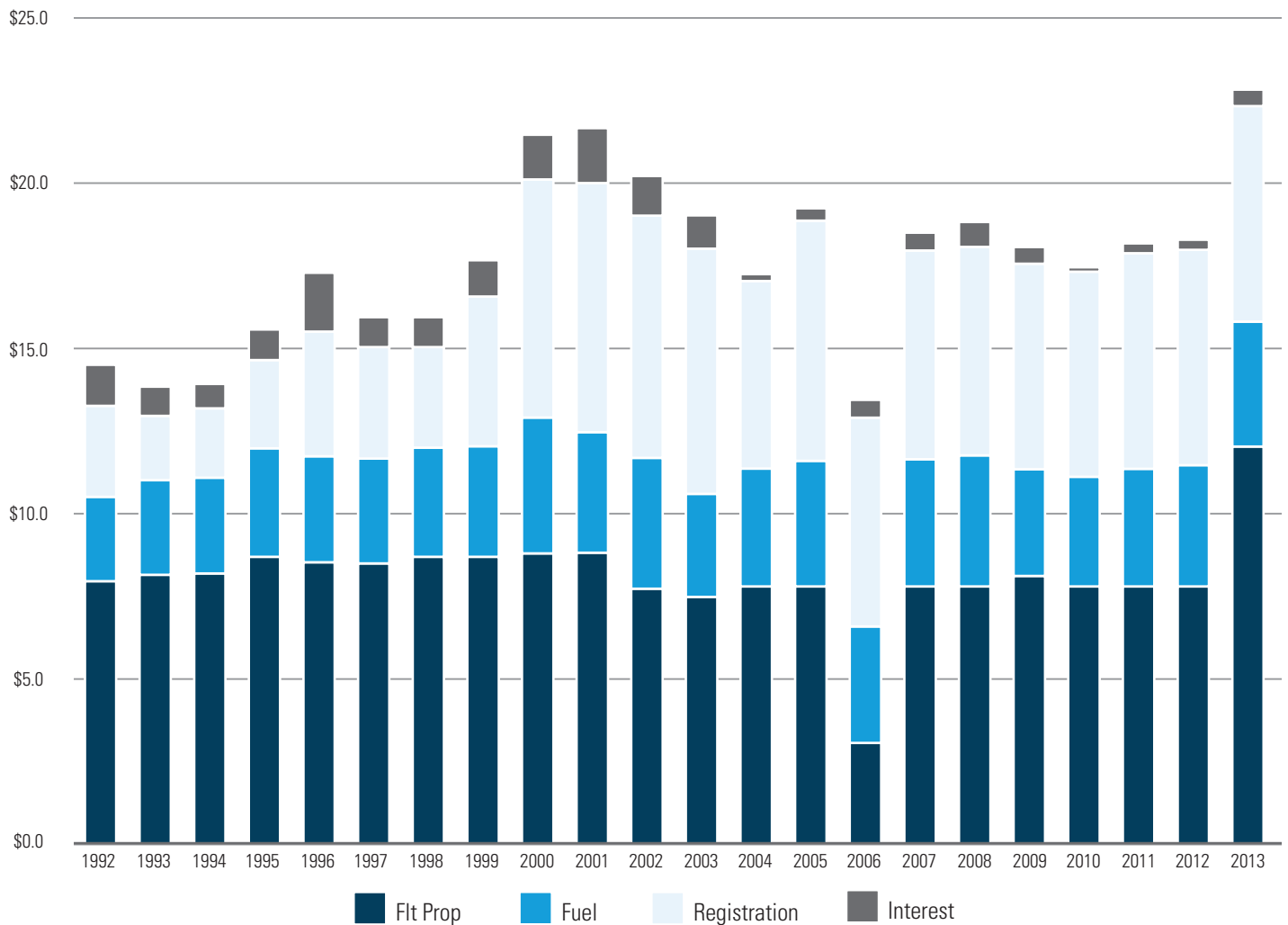
**Aviation Fuel Tax:** The aviation fuel tax applies to fuel used in aircraft. The tax rates starting at five and decline in steps from two, one, and half as more fuel is purchased. Aviation fuel tax receipts gradually grew during the 1990s. While there was some reduction in receipts beginning in 2009 with the reduction in business jet activities and reductions in commercial service operations in Minnesota, receipts have increased and are forecast to remain stable in the range of four million dollars per year through 2015, which represents approximately 20 percent of total revenues. Future levels of fuel tax receipts will be dependent largely on the level of commercial airline fueling and to a lesser degree on corporate and other general aviation activity.

**Aircraft Registration Tax:** An annual registration tax on aircraft is imposed on noncommercial aircraft based in Minnesota or used in the state for more than 60 days a year. The tax is set at a rate of one percent of the aircraft manufacturer's original list price, multiplied by a depreciation factor after the initial year of aircraft life. The depreciation factor is 90 percent of the list price in the second year of life and is further reduced by 15 percentage points per year in subsequent years. The minimum tax is the greater of (a) one percent of the list price times 25 percent, or (b) \$50. Aircraft registration fees significantly increased since 1999 with the introduction of a higher fee structure but also have shown some significant variability in the past decade and are trending significantly lower than the peak years of 2000 – 2003. However, registration fee receipts are forecast to remain in the six million dollar range through 2015, representing approximately 35 percent of total revenues. There have been some grass root initiatives calling for the reduction of those fees citing the current fee level as a disincentive for basing aircraft in Minnesota. Future levels of aircraft registration fee receipts will be dependent on the level of fee imposed and the number of aircraft based.

In addition to the above taxes, revenues include investment earnings, representing only approximately two percent of the total revenues. Investment earning has been down in recent years and will always continue to reflect the overall interest rate environment. **Figure 7-11** shows historical levels of these revenue sources during the past 20 years.



Figure 7-11: Historical Minnesota Aeronautics Funding (millions)



Source: MnDOT Office of Aeronautics

The level of State Aeronautical Funding, while linked to State revenues received for air flight property taxes, aircraft registration fees, aviation fuel taxes and investment earnings, is dependent upon appropriation by the state legislature. Facing budgetary challenges in 2003, the Legislature transferred \$15 million from the state airports fund to the general fund with a requirement that the funds be transferred back. The required return transfer took place in fiscal year 2008, but in that same year the Legislature mandated another \$15 million transfer to the general fund. As a result of the 2008 transfer MnDOT reduced funding for the Navigational Aids Program by 50 percent and canceled the entire FY2009 Construction Program. FY2009 projects were moved to FY2010. A 2009 law requires that the second transfer be restored to the state airports fund (following other priorities set in statute) once the State has a sufficient budget reserve.

## FUNDING BASELINE

State Aeronautical Revenues and the availability of State grants appear likely to remain stable at current levels through 2015. Current levels also serve as a reasonable baseline for estimating available revenues over the long-term. Inflationary pressures that would generally drive increases in future revenue sources are mitigated by the ever-continuing financial challenges in the airline industry and reluctance to consider aviation user fees. Moreover, fuel taxes pose a challenge for combating inflation because they are directly linked to gallons of aviation fuel sold and could result in a reduced revenue share in the future. Future changes in the state's aviation activity will have impacts on baseline funding assumptions, as will adjustments to revenue collection policies and mechanisms.

## Local Funding

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Even under the best of funding scenarios, local public airport sponsors such as counties, cities and airport authorities are responsible for a significant portion of the costs associated with airport development projects. Local sources of revenue may include passenger facility charges, airport-generated revenues, general fund revenues, private funding, and public-private partnerships.

## PASSENGER FACILITY CHARGES

The airport sponsors for commercial service airports may impose Passenger Facility Charges (PFCs) to supplement public airport capital needs on eligible projects. PFCs are federally authorized and the FAA must review applications to impose PFCs for projects to determine eligibility. PFC projects must accomplish one of the following objectives set forth by statute: preserving or enhancing airport safety, security, or capacity, reducing airport noise, or enhancing competition among airlines. Airports are required to consult with air carriers operating at their airports; however airline agreement is not needed to collect or use PFCs. PFCs can be imposed at the level of one, two, three, four dollars, or \$4.50 per enplaned passenger. PFCs can be used to pay for capital improvements as they are incurred (PAYGO) or can be leveraged to pay debt service on bonds. Because they are collected on a per enplanement basis, PFCs are an important funding tool for capital projects at large commercial service airports. PFCs can contribute to the overall funding plan for smaller commercial service airports, but may not be a sufficient or reliable source of funding depending on the variability of air service at the airport. The last increase in the maximum level of PFCs was in 2000.



## AIRPORT-GENERATED REVENUES

Airports can generate revenues through a combination of aviation user fees, land and building rents, auto parking fees, privilege fees for on-airport concessions, and commercial development. Large commercial service airports generally can generate sufficient revenues, supplemented by federal and state grants and PFCs described above to meet operating expense requirements and to meet most capital development requirements.

Funding the local share of airport operation, maintenance, and improvement projects is available to each airport from a variety of sources. These sources are described below and as noted, the type and potential amount of revenue generation will vary by the size of the airport.

**Revenue at Smaller Airports:** Most of the smaller state airports have a fueling facility from which airports typically generate revenue from each gallon of fuel that is sold. These airports also generate revenue from rental of hangar space, vending machines, and rental of land for either private hangar space or agricultural use. These sources typically provide revenue to pay for a portion of an airport's annual operation and maintenance costs but rarely provide any funds for the required local share of an improvement project that is primarily funded by FAA or State grants.

**Revenue at Larger Airports:** Larger airports generate the same type of revenue as smaller airports but they also use additional fees to generate revenue. The major sources that are used include fees for aircraft landing at the airport and automobile parking.

**Local Taxes:** Taxes by the local community or government agency that controls an airport typically fund the local share of airport improvements and a portion of operation and maintenance costs. For most of the airports in the state, this is the primary source of funding for airport improvement projects.

At smaller commercial service and general aviation airports, the airport generated revenues may not be sufficient to fully support airport operating costs and capital investments. However, systematic pursuit of non-aeronautical revenues can contribute to the long-term financial viability of the airport. Best results for commercial development and non-traditional revenue generation will be achieved when implemented under a business plan framework as these projects can likewise require investment of airport and airport sponsor funding and the potential revenue can be uncertain or take a considerable length of time for repayment.



In some instances, airports may have natural resources such as oil and gas or mineral rights that have the potential for revenue generation if the extraction can take place in a manner that does not interfere with the safe operation of the airport. Some airports are also turning to renewable energy sources such as solar and wind generation of energy if they can be implemented in a manner that is compatible with the safe operation of the airport, and if a reasonable pay-back period for the required investment can be achieved. Some airports may resort to the sale of land not needed for aeronautical purposes. This requires a very long perspective to assure that the land will not be needed for future capacity and may require the approval of the FAA if grant funds were used to purchase the land or if it was received under the Surplus Property Act. Sale of land may also bring commercial or residential development closer to the airport and serve as a future encroachment for aviation activities.

## GENERAL FUND REVENUES

At many small commercial service and general aviation airports, the airport sponsor is required to use its general fund revenues or financing from its general obligation bonds to support operating costs and local matching funds for capital projects. Unfortunately, fiscal challenges are widespread for many municipalities as well. Some municipalities are seeking options to close airports that are not perceived to be providing sufficient benefit to the community for the cost of investment or are seeking private partners for the operation and/or development of the airport.

## PRIVATE FINANCING SOURCES

Projects that have revenue generating potential may be funded through private financing or equity investments as part of a public-private partnership (PPP). PPP arrangements can be a valuable financing strategy when traditional methods are not available. However, they usually carry a higher financing cost or return on investment requirement than projects that can be financed through tax-exempt financing. PPP arrangements are also not a silver bullet. Revenues need to be generated to repay the investment from other revenue sources such as rents or user fees in the long term. However, some investors may have a long-term perspective that allows the project to move forward. Airport sponsors may also wish to develop partnerships with community economic development organizations to define and attract potential partners for PPPs.

## Project Prioritization System

MnDOT prioritizes airport projects utilizing a modified version of the FAA's project priority equation. Modifications were made to the equation to more accurately reflect Minnesota airport classifications. The modified priority equation only applies to the competition for state funds while the FAA's equation only applies to the competition for federal funds. The purpose of using an equation is to equally and objectively compare multiple airport projects against one another. The priority equation consists of four components: Purpose Points, Airport Type, Airport Component, and Project Type. Each project is assigned a point value for each of these components. These point values range from zero to ten points. **Figure 7-12** shows an outline of the equation used for analysis and the points that are typically assigned for a specific project.

Figure 7-12: MnDOT Project Equation

$$\text{Priority Score} = 0.25P(S+1.4P+C+1.2T)$$

<b>P</b> Purpose of Project (0 to 10 points)	<b>S</b> Airport Classification (2 to 5 points)	<b>C</b> Component of Airport (0 to 10 points)	<b>T</b> Type of Airport Project (0 to 10 points)
<ul style="list-style-type: none"> <li>10 = Safety/Security</li> <li>9 = Statutory Emphasis Programs</li> <li>8 = Planning/Environment/Reconstruction</li> <li>7 = Capacity</li> <li>6 = Standards</li> <li>4 = Other</li> </ul>	<ul style="list-style-type: none"> <li>4 = NPIAS Key Airport</li> <li>3 = NPIAS Intermediate Airport</li> <li>2 = NPIAS Landing Strip</li> <li>5 = Non-NPIAS Intermediate Airport</li> <li>4 = Non-NPIAS Landing Strip</li> </ul>	<ul style="list-style-type: none"> <li>10 = Runway</li> <li>9 = Seaplane, Helipad</li> <li>8 = Taxiway</li> <li>7 = Homes, Land, Other, Public Building, Planning</li> <li>5 = Apron</li> <li>4 = Ground Transportation, New Airport</li> <li>3 = Building</li> <li>1 = Terminal</li> <li>0 = Financing</li> </ul>	<ul style="list-style-type: none"> <li>10 = Construction (CO), Obstruction Removal (OB), ARFF Vehicle (RF)</li> <li>9 = Master Plan (MA), RW/TW Signs (SG)</li> <li>8 = Improvements (IM), Lighting (LI), Safety Zone - RPZ (SZ), Visual Approach Aids (VI), Weather Reporting (WX)</li> <li>7 = Instrument Approach Aid (IN)</li> <li>6 = Development Land (DV), Extension/Expansion (EX), Security Improvement (SE)</li> <li>5 = Miscellaneous (MS)</li> <li>2 = Fuel Farm Development</li> <li>1 = Parking (PA)</li> </ul>

There are additional "T" Type Points but the above "T" Points reflect the ones used in developing the estimated costs for this Plan.

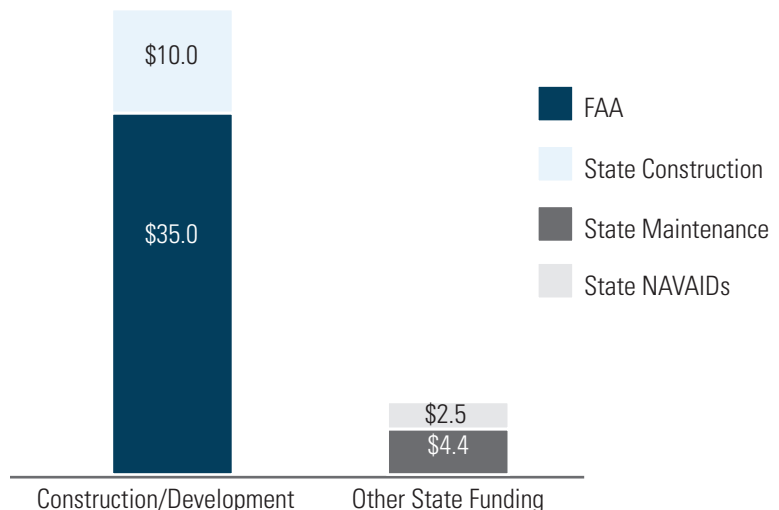
## Funding Analysis

Based on the needs and their estimated costs presented in previous sections of this chapter, at least \$2.461 billion is estimated to be needed to meet the capital investments identified for Minnesota airports (other than MSP) through 2030. Though identified as the needs over the next 20 years, this amount is likely to be understated, as the airport CIPs and capital planning processes typically identify projects a maximum of five years in the future. This understates the costs in the long-term time range for locally desired projects not identified by this Plan’s analysis, which are numerous.

Financial challenges in the aviation industry are now being exacerbated by fiscal challenges at the federal, state, and local government levels. While these challenges are assumed to be resolved in the long-term, those solutions could impose significant changes to project eligibility and levels of available funding. This Plan assumes continuation of the existing level of funding sources as a baseline. However, in light of those financial challenges, this baseline may be considered to be a best-case scenario over the long term.

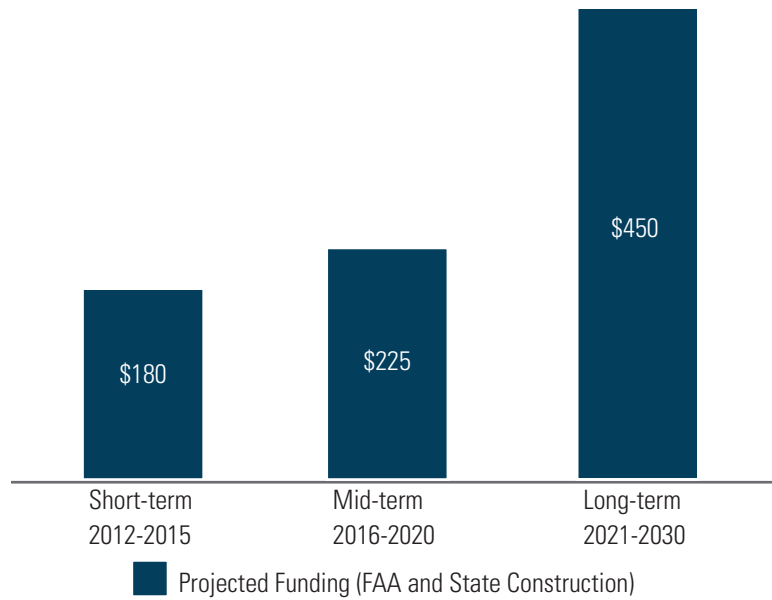
A total of \$45 million of Federal and State annual funding is projected for general airport capital investment each year other than at MSP. An additional \$4.4 million of State funding for maintenance expenses and \$2 million for NAVAIDs (see **Figure 7-13**) is projected but not considered as part of this analysis. This represents \$180 million during the short-term phase, \$225 million during the mid-term and \$450 million during the long-term (see **Figure 7-14**). This \$855 million in anticipated available funding over 20 years represents less than 35 percent of the \$2,461 million in (an average of approximately \$130 million annually) estimated capital investment needs over the planning period, or a gap of \$1.6 billion (see **Figure 7-15**).

**Figure 7-13: Projected Annual Funding Sources (millions)**



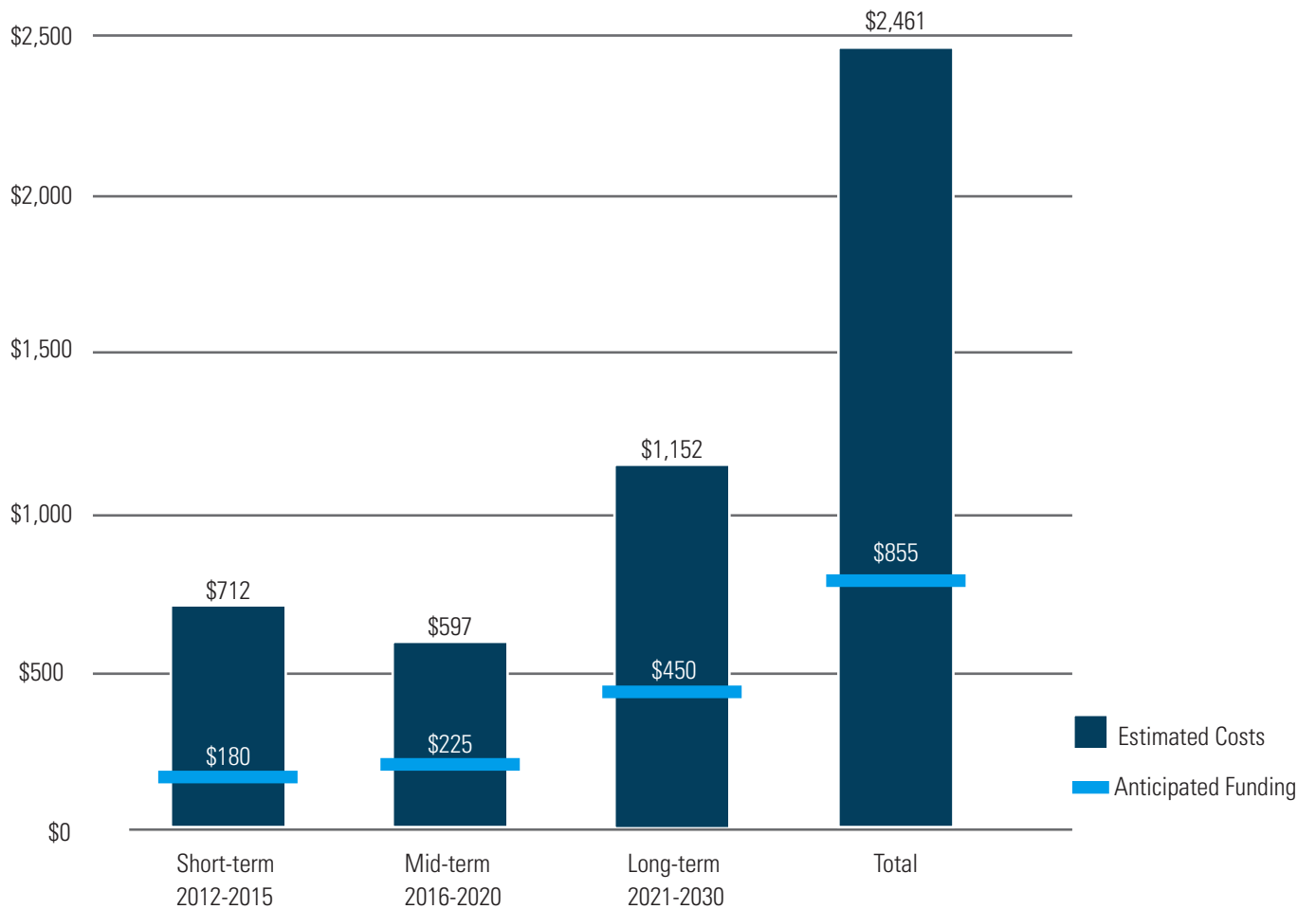
Source: MnDOT Office of Aeronautics

Figure 7-14: Projected Construction Funding by Phase (millions)



Source: MnDOT Office of Aeronautics & HNTB Analysis

Figure 7-15: 20-Year Estimated System Capital Costs (millions)



Source: MnDOT Office of Aeronautics & HNTB Analysis

One potential conclusion drawn when considering the preceding funding analysis is that many of the projects identified for the short-term phase will likely be moved to the mid-term phase because the total short-term needs are greater than the funding anticipated to be available, resulting in a widening funding gap in the mid-term. However, re-phasing projects will not be sufficient to match the available funding with the identified capital project needs. Local funding may fill a portion of that gap, however, smaller airports and local communities will likely also face continued challenges in raising significant funding for capital projects in addition to the necessary operating and maintenance costs associated with airports. When the funding gap exceeds one-half of the capital investment needs identified, questions should begin to arise as to the long-term financial sustainability of the airport system as it exists today. Policy decisions are likely to be required and adjustments to the way projects are selected to receive funding may be necessary in order to promote the sustainability of the system as a whole and manage the expected widening of the gap between needs and revenues.

## **Prioritization Considerations**

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One response to the anticipated gap might be to triage the nature of the capital project and to fund those that meet only the most critical needs. However, when less than half of system needs are likely to be funded over 20-years, continuing this approach may result in having “half-completed” facilities that are in less than optimal condition at airports throughout the system. As a result, some parts of the system may need to be reduced while other parts are enhanced or expanded to meet changing demand.

As noted in **Chapter 1: Introduction and System Goals**, the project prioritization formula described earlier in this chapter should be periodically reviewed to ensure that funds are allocated appropriately. To that end, three prioritization concepts have been identified during this planning process and are called out here for consideration looking forward. It is important to note that any adjustment to the prioritization system currently in place would be completed in a collaborative manner, separate from the SASP planning process, and would at a minimum take months to complete and implement.



## GENERAL PRIORITY BASED ON SASP

Based upon the many analyses conducted during this planning process (i.e., inventory data collection, forecast, minimum system objective analysis, performance measures and indicators, cost estimate development) coupled with feedback received through numerous stakeholder meetings and interactions, a general priority order for project selection is identified. The priority order for consideration along with a brief description of each category of improvement project follows.

**1. Safety Projects:** These projects include removal of airspace obstructions, protection of airspace around airports through appropriate land acquisition and zoning, and addressing standards issues related to safety (adequate safety areas etc.).

**2. Facility Preservation Projects:** These projects include significant maintenance and reconstruction costs for pavements, lighting and navigational aids and landside facilities such as buildings, roads and parking.

**3. System Usability and Access:** This would generally consist of improved instrument approaches and making more airports eligible as alternate airports during poor weather.

**4. Airport Expansion:** All projects that expand the facilities on an airport should be reviewed very closely. A density analysis should be conducted to see if other nearby airports could satisfy the need.

It is worth noting that this concept is currently utilized to a degree with the current prioritization formula, with safety projects ranking very high, along with preservation related projects. However, reiterating and further formalizing the importance of safety projects, while simultaneously highlighting the anticipated challenges for funding airport expansion projects in the future, may be of benefit in the future.

## BEST CASE ANALYSIS

This concept is derived from marketplace economics, whereby demand for an aviation facility is primarily a factor of need, rather than convenience or location. Its application can be especially effective in instances where the same need for a facility/funding exists in multiple areas of the state. Using this project selection and prioritization concept can benefit the whole system, rather than just one airport. This concept could be applied to facility needs such as crosswind runways, hangars, apron, 24/7 fueling facilities, certain navigational systems, weather reporting and even airport classifications to determine whether or not existing adjacent facilities can satisfy the need.

Another application is to use this analysis to consider facilities that could be removed from the system (e.g. runway narrowing, runway shortening, runway closure, airport closure) without reductions in system coverage or service. These are typically not desirable options but, where appropriate, reducing system needs could lead to an improved system overall. To that end, if extreme funding difficulties develop, considerations making it easier for communities without broad support for their airport to close or downsize may be in order if there is only a limited impact to the system based on a density analysis.

Note that this concept is already utilized to a degree during project selection, though could be more formalized in the future. Regardless, increased scrutiny of airport master plans that include expansion may be in order to achieve “best case” results for the system, rather than just individual airports.



## SUSTAINABLE AIRPORT SYSTEM

One final alternative prioritization concept for consideration is illustrated in **Figure 7-16**. Under this concept, sustainability requires evaluating investments as part of a long-term, holistic plan rather than just annual decisions. Prioritization would be completed through hierarchical categories. Preservation of assets and safety are the priorities, others funded only to the extent funds are available over the long term. The system would also target allocations by airport role categories. While funding decisions are made on an annual basis, enhanced planning may be most effective if completed in three to five year rolling increments.

Figure 7-16: Sustainable Airport System Details



## System Recommendations

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Recommended improvements to meet the needs of the system and to maximize Minnesota's financial investment in its system have been identified in the preceding chapters. The following section summarizes the multiple analyses that were conducted to identify system needs, or recommended improvements, and directs the reader to the more specific results of each analysis. It is important to again note that this SASP is not a programming document, as MnDOT does not own or operate the airports in the system. The project specific recommendations must still be implemented by individual airports.

### MINIMUM SYSTEM OBJECTIVES, PERFORMANCE MEASURES AND DENSITY ANALYSIS

As part of this planning process, minimum system objectives were established for each category of system airport (see **Table 5-2** in **Chapter 5: Airport Facility Requirements**) and an analysis was conducted to determine deficiencies, or needs, for the system and for each airport. Some of the key facilities analyzed included airport pavements, navigation systems, runway lighting, weather reporting systems, airport buildings and fuel facilities. A system level summary is included as part of **Chapter 5: Airport Facility Requirements**, while airport specific needs are identified in **Appendix E: Airport Facility Needs Sheets and Report Cards**. The facility needs sheets will enable each airport to clearly see the facilities that are recommended and provide guidance on items each airport should have in place to best fill its role and meet the needs of its projected users. The airport specific needs sheets should be utilized by airports when updating their master plan or ALP and will be utilized by MnDOT to assist in that process. The identified needs were used in part to determine the estimated total costs for the system, presented earlier in this chapter.

Another source of needs identification is the comprehensive performance analysis completed to determine how well Minnesota's aviation system is performing, the results of which are included in **Chapter 6: Performance Report**. Individual airport results are included in the report cards as part of **Appendix E: Airport Facility Needs Sheets and Report Cards**. If, for example, an airport was identified as not having up-to-date planning documents, it would be identified by a red box on its report card. This would also result in a cost being identified in the appropriate planning phase, which would then appear on its individual facility needs sheets. Projects were included to meet the identified targets.

A density analysis was also completed as part of the SASP, the results of which are found in **Chapter 6: Performance Report**. The density analysis is used to gain an understanding of access to the air transportation system but this could serve as tool for selecting certain facilities to receive for funding in the future.

## NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS (NPIAS)

As identified by the FAA, an existing airport that is currently included in an accepted State Aviation System Plan, such as the Minnesota State Aviation System Plan, is eligible to be considered for inclusion in the NPIAS if the airport serves a community located at least 20 miles from the nearest existing or proposed NPIAS airport and the airport has at least ten based aircraft. There are currently 97 airports in Minnesota that are included in the NPIAS (see **Figure 1-5** in **Chapter 1: Introduction and System Goals**).

Most of the airports in Minnesota that are not currently included in the NPIAS are less than 20 miles from an airport in Minnesota that is already included in the NPIAS, thus eliminating them from NPIAS inclusion based on the FAA entry criteria. Furthermore, most airports with at least 10 based aircraft that are not already included in the NPIAS, are too close to existing NPIAS airports to qualify as well.

If airports seeking inclusion in the NPIAS wish to develop further justification based on activity levels and based aircraft in excess of what has been identified or projected in this plan, MnDOT will work with the sponsor and FAA to consider individual requests. It is important to note that there are system airports actively pursuing NPIAS inclusion, such as the Granite Falls Municipal Airport. MnDOT has been involved in this process and has indicated to the FAA its support of the Granite Falls application for inclusion in the NPIAS.

## Summary

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This SASP has provided a high level 20-year view of the state's aviation needs. Detailed planning work is done for individual airports through the Master Planning and Airport Layout Plan processes. The Plan has also identified the goals, minimum system objectives, and performance measures that will guide system improvements into the future. Ultimately, the desired result is an airport system that achieves the vision of this plan: enabling safe, fast, and reliable air transportation for the citizens and businesses of Minnesota through partnership and innovation.

The analyses contained within this Plan clearly conclude that Minnesota has an excellent system of existing airports. Population coverage by different categories of airports is good and a clear need for new airports or additional capacity from a system standpoint does not exist. However, this does not preclude the ability to consider new airport locations under certain circumstances.

The usability of Minnesota's airports is also exceptional, with all airports having weather reporting system coverage and adequate instrument approaches, though as technology advances toward GPS based approaches, airport usability from that aspect could continue to improve.

The reality is, however, expected available funding over the next 20-years won't be enough to preserve system airports, meet minimum system objectives, improve safety and accommodate the forecast needs. The expected widening of the gap between available funds and identified needs currently is, and will likely continue to be managed by the established prioritization system. However, adjustments to how projects are prioritized, some concepts of which are identified in this Plan, may need to be considered. Until that occurs, the needs for each project should continue to be very carefully reviewed.

The next and final chapter of this Plan considers the future of aviation in Minnesota beyond the 20-year planning horizon.