



Chapter Six
CAPITAL IMPROVEMENT PROGRAM

Capital Improvement Program



The analyses conducted in the previous chapters evaluated airport development needs based upon safety, security, potential aviation activity, and operational efficiency. However, one of the more important elements of the Master Planning process is the application of basic economic, financial, and management rationale to each development item so that the feasibility of implementation can be assured. The purpose of this chapter is to identify capital needs at San Manuel Airport and identify when these should be implemented according to need, function, and demand.

The presentation of the financial plan and its feasibility has been organized into two sections. First, the airport's capital needs are presented in narrative and graphic form. Secondly, funding

sources on the federal and local levels are identified and discussed.

DEMAND-BASED PLAN

The Master Plan for San Manuel Airport has been developed according to a demand-based schedule. Demand-based planning refers to the intention to develop planning guidelines for the airport based upon airport activity levels, instead of guidelines based on points in time. By doing so, the levels of activity derived from the demand forecasts can be related to the actual capital investments needed to safely and efficiently accommodate the level of demand being experienced at the airport. More specifically, the intention of this Master Plan is that the facility improvements needed to serve new levels of demand should only be implemented when the levels of demand



experienced at the airport justify their implementation.

For example, the aviation demand forecasts projected that based aircraft could be expected to grow through the year 2020. This forecast was supported by the local community's growing economy, population, households, and historical trends showing growing based aircraft levels.

The forecasts noted, however, that future based aircraft levels will be dependent upon a number of economic factors. These factors could slow or accelerate based aircraft levels differently than projected in the aviation demand forecasts. Since changes in these factors cannot be realistically predicted for the entire forecast period, it is difficult to predict, with the level of accuracy needed to justify a capital investment, exactly when an improvement will be needed to satisfy demand level.

For these reasons, the San Manuel Airport Master Plan has been developed as a demand-based plan. The Master Plan projects various activity levels for short, intermediate, and long term planning horizons. When activity levels begin to reach or exceed the level of one of the planning horizons, the Master Plan suggests planning begin to consider the next planning horizon level of demand. This provides a level of flexibility in the Master Plan as the development program can be accelerated or slowed to meet demand. This can extend the time between Master Plan updates.

A demand-based Master Plan does not specifically require implementation of any of the demand-based improvements. Instead, it is envisioned that implementation of any Master Plan improvement would be examined against demand levels prior to implementation. In many ways, this Master Plan is similar to a community's general plan. The Master Plan establishes a plan for the use of the airport facilities consistent with potential aviation needs and the capital needs required to support that use. However, individual projects in the plan are not implemented until the need is demonstrated and the project is approved by Pinal County.

CAPITAL NEEDS AND COST SUMMARIES

Once the specific needs for the airport have been established, the next step is to determine a realistic schedule and costs for implementing each project. The capital needs presented in this chapter outline the costs and timing for implementation. The program outlined on the following pages has been evaluated from a variety of perspectives and represents the culmination of a comparative analysis of basic budget factors, demand, and priority assignments.

The recommended improvements are grouped into three planning horizons: short, intermediate, and long term. Each year, Pinal County will need to re-examine the priorities for funding in the short-term period, adding or

removing projects on the capital programming lists. **Table 6A**

summarizes the key activity milestones for each planning horizon.

	2001	Short Term	Intermediate Term	Long Term
Based Aircraft	18	31	40	55
Annual Operations	8,800	10,400	18,500	22,800

While some projects will be demand-based, others will be dictated by design standards, safety, or rehabilitation needs. In putting together a listing of projects, an attempt has been made to include anticipated rehabilitation needs through the planning period and capital replacement needs. However, it is difficult to project with certainty the scope of such projects when looking 10 or more years into the future.

Exhibit 6A summarizes capital needs for San Manuel Airport through the planning period of this Master Plan. An estimate has been included with each project of federal and state funding eligibility, although this none of these amounts are guaranteed. Federal funding will not be available until the airport is included in the *National Plan of Integrated Airports* (NPIAS). As will be discussed in greater detail later in this chapter, the primary advantage of being included in the NPIAS is the availability of more discretionary dollars than currently available by the Arizona Department of Transportation - Aeronautics Division (ADOT) grants. The ADOT program only has several million dollars available each year, whereas, the federal program has had

more than \$3.0 billion dollars available annually to airports nationwide over the past four years. Additionally, most general aviation airports qualify for an annual entitlement of \$150,000 to be used for federally eligible projects.

Individual project cost estimates account for engineering and other contingencies that may be experienced during implementation of the project and are in current (2003) dollars. Due to the conceptual nature of a Master Plan, implementation of capital improvement projects should occur only after further refinement of their design and costs through engineering and/or architectural analyses. Capital costs in this chapter should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficient for performing the feasibility analyses in this chapter.

SHORT TERM CAPITAL NEEDS

The short term planning horizon is the only planning horizon correlated to time. This is because development

within this initial period is concentrated on the most immediate needs of the airfield and landside areas. Therefore, the program is presented year-by-year to assist in capital planning not only locally, but at the state and federal levels. Short term capital needs presented on **Exhibit 6A** are estimated at \$2.8 million.

A focus of the short term planning horizon is developing the utility infrastructure at the airport. This includes installing electrical, water, and communication services in 2004. All utilities would be extended to the north of the runway to support existing facilities in this area and ongoing hangar development.

Once the utilities have been installed, the installation of all airfield lighting aids is anticipated. This includes a rotating beacon, medium intensity runway edge lighting (MIRL), medium intensity taxiway edge lighting (MITL), and precision approach path indicators (PAPIs) and runway end identifier lights (REILs) to each runway end. The PAPIs will assist pilots in determining the correct descent path to each runway end. The REILs will assist pilots in locating the runway threshold at night and during poor visibility conditions.

The parallel taxiway is planned to paved and widened in the short term planning horizon. This includes the construction of an additional exit taxiway at approximately midfield.

The short term planning horizon also includes the installation of the automated weather observation system

(AWOS). The AWOS will provide automated weather observation and reporting at the airport.

A security measure is the installation of chain link fencing around the existing and ultimate property lines and around the main apron area to secure the aircraft operational areas. This is intended to deter unauthorized pedestrian and vehicle access to the aircraft operational areas.

Landside development included in the short term planning horizon includes developing paved taxilanes to the T-hangars installed in June 2003 and paving the airport entrance road. Currently, this road is unpaved from the new entrance with Redington Road. The surface is only chip sealed.

Finally, the short term planning horizon includes the acquisition of the existing 156 acre airport site from BHP Billiton, acquisition of 45 acres of land south of the airport from BHP Billiton for long term facility development, and acquisition of approximately 21.5 acres of land from the Arizona State Land Trust to provide for the future runway extension.

INTERMEDIATE TERM AND LONG TERM CAPITAL NEEDS

Development within the intermediate term planning horizon is completely focused on improving landside facilities for both transient and locally-based aircraft. This includes developing a public terminal building, aircraft wash

	Total Cost	Federally Eligible	ADOT Eligible	Local Share
Short Term Planning Horizon (First Six Years)				
2004				
Install Electrical, Water, and Communication Utility Services	\$ 350,000	\$ 318,710	\$ 15,645	\$ 15,645
Construct T-Hangar Access Taxilanes	60,000	54,636	2,682	2,682
Subtotal 2004	\$ 410,000	\$ 373,346	\$ 18,327	\$ 18,327
2005				
Construct Parallel Taxiway/Exit Taxiway	457,000	416,144	20,428	20,428
2006				
Install MIRL & MITL	\$ 250,000	\$ 227,650	\$ 11,175	\$ 11,175
Install PAPIs and REILs to Each Runway End	173,000	157,534	7,733	7,733
Install Rotating Beacon	50,000	45,530	2,235	2,235
Subtotal 2006	\$ 473,000	\$ 430,714	\$ 21,143	\$ 21,143
2007				
Install Automated Weather Observation System (AWOS)	\$ 200,000	\$ 182,120	\$ 8,940	\$ 8,940
2008				
Pave Access Road	\$ 225,000	\$ 204,885	\$ 10,058	\$ 10,058
Install Security Fencing - & Automated Security Gate	295,000	268,627	13,187	13,187
Subtotal 2009	\$ 520,000	\$ 473,512	\$ 23,244	\$ 23,244
2009				
Acquire 21.5 Acres of State Trust Land and Airport Site from BHP	\$ 800,000	\$ 728,480	\$ 35,760	\$ 35,760
Subtotal 2009	\$ 800,000	\$ 728,480	\$ 35,760	\$ 35,760
Subtotal Short Term Planning Horizon	\$ 2,860,000	\$ 2,604,316	\$ 127,842	\$ 127,842
Intermediate Term Planning Horizon (7-10 years)				
Install Sanitary Sewer System	\$ 75,000	\$ 68,295	\$ 3,353	\$ 3,353
Construct Public Terminal Building	200,000	-	180,000	20,000
Construct Terminal Area Automobile Parking	72,000	65,563	3,218	3,218
Construct Access Taxilanes	140,000	127,484	6,258	6,258
Construct 10-Unit T-Hangar	200,000	-	-	200,000
Construct Aircraft Wash Rack	50,000	45,530	2,235	2,235
Construct Executive Hangar Taxilane	153,000	139,322	6,839	6,839
Construct Executive Hangar Parking and Access	93,000	84,686	4,157	4,157
Annual Pavement Maintenance/Preservation	250,000	227,650	11,175	11,175
Subtotal Intermediate Term Planning Horizon	\$ 1,233,000	\$ 758,530	\$ 217,235	\$ 257,235
Long Term Planning Horizon (11-20 years)				
Construct Drainage for Runway Extension - 650' x 64" Drain	\$ 313,000	\$ 285,018	\$ 13,991	\$ 13,991
Relocation Water Lines for Runway Extension	100,000	91,060	4,470	4,470
Relocate Electrical Power Line for Runway Extension	200,000	182,120	8,940	8,940
Extend Runway 11-29 and Taxiway A to 4,800'/Construct Holding Apron Install Nonprecision Runway Markings	461,000	419,787	20,607	20,607
Remove Buildings	70,000	63,742	3,129	3,129
Extend Taxiway A to Runway 29/Construct Holding Apron	164,000	149,338	7,331	7,331
T-Hangar Earthwork	175,000	159,355	7,823	7,823
Construct T-Hangar Access Taxilanes	146,000	132,948	6,526	6,526
Construct Two 10-Unit T-Hangars	400,000	-	-	400,000
Construct Tiedowns	97,000	88,328	4,336	4,336
Relocate Segmented Circle/Lighted Wind Cone	25,000	22,765	1,118	1,118
Construct Helipad	60,000	54,636	2,682	2,682
Annual Pavement Maintenance/Preservation	500,000	455,300	22,350	22,350
Subtotal Long Term Planning Horizon	\$ 2,711,000	\$ 2,104,397	\$ 103,302	\$ 503,302
Total All Development	\$ 6,804,000	\$ 5,467,242	\$ 448,379	\$ 888,379

rack, sanitary sewer system, a 10-unit T-hangar, T-hangar access taxilanes, the easterly main apron taxilane, and the executive hangar area north of Runway 11-29.

Development within the long term planning horizon focuses on extending Runway 11-29 to the west and constructing additional T-hangars. The Runway 11-29 extension is reserved for the long term planning horizon in order to focus capital funding on improving general aviation services at the airport. It is not expected that the aircraft that will need the full 4,800 feet of runway length will be conducting a significant number of operations at the airport until the landside facilities and general aviation services are in place to accommodate these aircraft. The long term planning horizon includes provisions to culvert the existing wash to the east and relocate a water line and powerline prior to extending the runway and Taxiway A to the east. Nonprecision runway markings will be installed as well.

The long term planning horizon also includes provisions for the removal of the hangar facilities and residence located in the OFA and primary surface. The hangar facilities will be replaced with new T-hangars located north of Runway 11-29, west of the main apron. Provisions for expanding fill within the terminal area and removal of the buildings are included in the long term planning horizon.

Other projects in the long term planning horizon include relocating the segmented circle and lighted windcone

to allow for the development of the helipad. Once the buildings within the OFA and primary surface are removed, Taxiway A is programmed to be extended to the Runway 29 end and a holding apron constructed.

A total of \$50,000 annually is included in the intermediate term planning horizon for pavement preservation activities. Pavement preservation activities typically include applying a slurry seal to rejuvenate and protect the pavement surface, crack sealing, and/or small pavement repairs.

Exhibit 6B graphically depicts development staging.

CAPITAL IMPROVEMENTS FUNDING

Financing capital improvements at the airport will not rely exclusively upon the financial resources of Pinal County. Capital improvements funding is available through various grants-in-aid programs at both the federal and state level. The following discussion outlines the key sources for capital improvement funding.

FEDERAL GRANTS

Through federal legislation over the years, various grants-in-aid programs have been established to develop and maintain a system of public airports throughout the United States. The purpose of this system and its federally-based funding is to maintain national defense and promote interstate

LEGEND

- Object Free Area (OFA)
- Taxiway OFA
- Obstacle Free Zone (OFZ)
- Runway Safety Area (RSA)
- Existing Boundary
- Ultimate Boundary
- Runway Protection Zone (RPZ)
- Ultimate RPZ
- Buildings to be Removed
- Short Term Development
- Intermediate Term Development
- Long Term Development

SHORT TERM PLANNING HORIZON

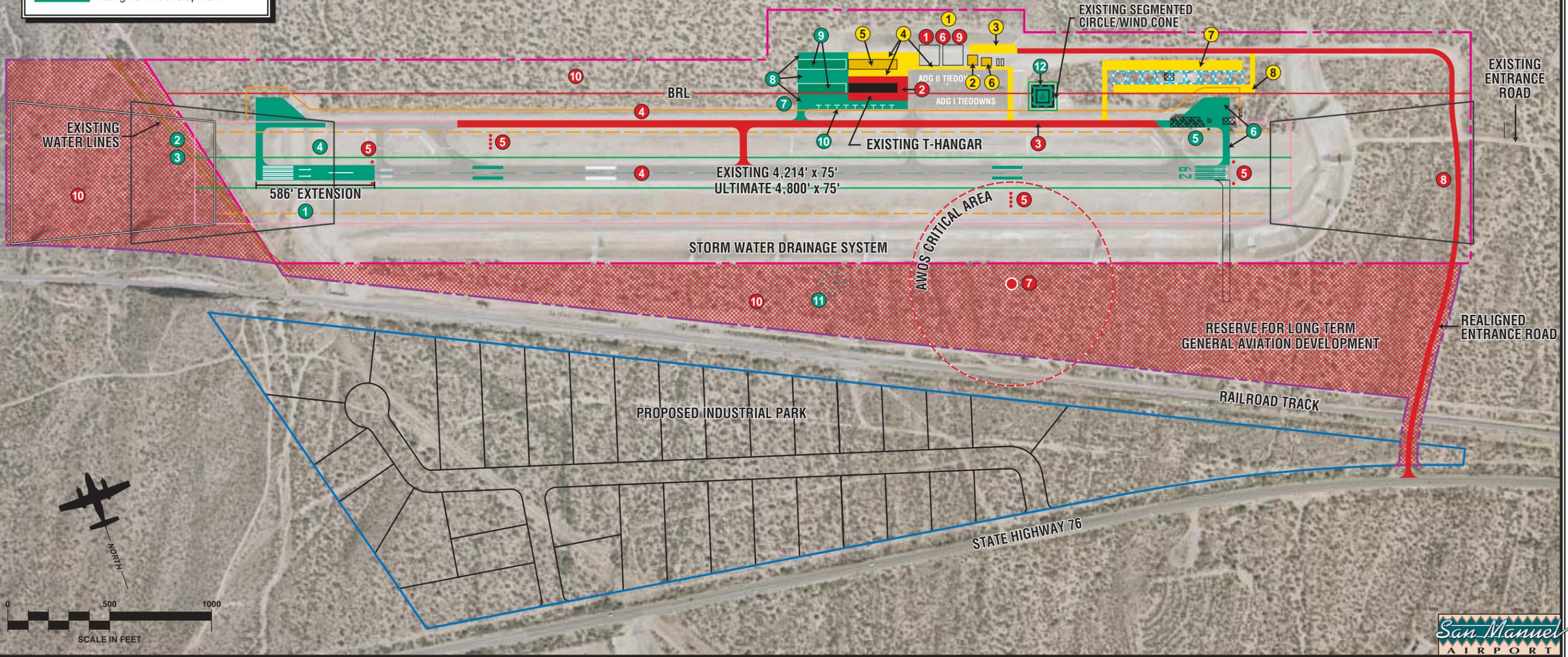
- 1 Install Electrical, Water, and Communication Utility Services
- 2 Construct T-Hangar Access Taxilanes
- 3 Construct Parallel Taxiway/Exit Taxiway
- 4 Install MIRL & MITL
- 5 Install PAPIs and REILs to Each Runway End
- 6 Install Rotating Beacon
- 7 Install Automated Weather Observation System (AWOS)
- 8 Pave Access Road
- 9 Install Security Fencing & Automated Security Gate
- 10 Acquire 21.5 Acres of State Trust Land and Airport Site from BHP

INTERMEDIATE TERM PLANNING HORIZON

- 1 Install Sanitary Sewer System
- 2 Construct Public Terminal Building
- 3 Construct Terminal Area Automobile Parking
- 4 Construct Access Taxilanes
- 5 Construct 10-unit T-hangar
- 6 Construct Aircraft Wash Rack
- 7 Construct Executive Hangar Taxilane
- 8 Construct Executive Hangar Parking and Access

LONG TERM PLANNING HORIZON

- 1 Construct Drainage for Runway Extension - 650' x 64" Drain
- 2 Relocate Water Lines for Runway Extension
- 3 Relocate Electrical Power Lines for Runway Extension
- 4 Extend Runway 11-29 and Taxiway A to 4,800'/Construct Holding Apron/Install Nonprecision Runway Markings
- 5 Remove Buildings
- 6 Extend Taxiway A to Runway 29/Construct Holding Apron
- 7 T-hangar Earthwork
- 8 Construct T-hangar Access Taxilanes
- 9 Construct Two 10-unit T-hangars
- 10 Construct Tiedowns
- 11 Relocate Segmented Circle/Lighted Wind Cone
- 12 Construct Helipad



commerce. The most recent legislation was enacted in early 2000 and is entitled the *Wendell H. Ford Aviation Investment and Reform Act for the 21st Century* or AIR-21.

The four-year bill covers FAA fiscal years 2000, 2001, 2002, and 2003. This was breakthrough legislation because it authorized funding levels significantly higher than ever before. Airport Improvement Program (AIP) funding was authorized at \$2.475 billion in 2000, \$3.2 billion in 2001, \$3.3 billion in 2002, and \$3.4 billion in 2003. An AIP bill after 2003 is still uncertain. The U.S. Congress will need to consider re-authorization of the program in calendar year 2003.

The source for AIR-21 funds is the Aviation Trust Fund. The Aviation Trust Fund was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Trust Fund also finances the operation of the FAA. It is funded by user fees, taxes on airline tickets, aviation fuel, and various aircraft parts.

Funds are distributed each year by the FAA from appropriations by Congress. A portion of the annual distribution is to primary commercial service airports based upon enplanement levels. If Congress appropriates the full amounts authorized by AIR-21, eligible general aviation airports receive up to \$150,000 of funding each year. The remaining AIP funds are distributed by the FAA based upon the priority of the project for which they have requested federal

assistance through discretionary apportionments. A National Priority Ranking System is used to evaluate and rank each airport project. Those projects with the highest priority are given preference in funding.

Should San Manuel Airport eventually be included in the NPIAS, each airport project for San Manuel Airport would be required to follow this procedure and compete with other airport projects in the State for AIP State Apportionment dollars and across the country for other Federal AIP funds. An important point to consider is that, unlike entitlement dollars for commercial service airports, most funding for San Manuel Airport would not be guaranteed.

General aviation airport development that meets FAA's eligibility requirements can receive 91.06 percent federal funding from AIR-21. Property acquisition, airfield improvements, aprons, perimeter service roads, and access road improvements are examples of eligible items. General aviation terminal buildings, cargo buildings, and fueling facilities are not generally eligible.

As evident from the airport development schedule and cost summaries, Pinal County could benefit significantly from federal discretionary funding. Federal funding extends the amount of state dollars available for airport funding and guarantees a limited amount of entitlement dollars each year (assuming the current program is continued through the planning period). The County should continue to pursue inclusion in the

NPIAS in order to be eligible for federal funding.

FAA FACILITIES AND EQUIPMENT PROGRAM

The Airway Facilities Division of the FAA administers the national Facilities and Equipment (F&E) Program. This annual program provides funding for the installation and maintenance of various navigational aids and equipment for the national airspace system and airports. Under the F&E program, funding is provided for FAA airport traffic control towers, enroute navigational aids, and on-airport navigational aids such as approach lighting systems. Assuming inclusion in the NPIAS, as activity levels and other development warrant, the airport may be considered by the FAA Airways Facilities Division for the installation and maintenance of navigational aids through the F&E program. This could include the installation of the REILs and PAPIs and communication facilities enroute air traffic control.

STATE AID TO AIRPORTS

In support of the state airport system, the State of Arizona also participates in airport improvement projects. The source for State airport improvement funds is the Arizona Aviation Fund. Taxes levied by the State on aviation fuel, flight property, aircraft registration tax, and registration fees, (as well as interest on these funds) are deposited in the Arizona Aviation Fund. The transportation Board establishes

the policies for distribution of these State funds.

Under the State of Arizona grant program, an airport can receive funding for one-half (4.47 percent) of the local share of projects receiving federal AIP funding. The State also provides 90 percent funding for projects which are typically not eligible for federal AIP funding or have not received federal funding. Historically, improvements at San Manuel Airport have been funded at 95 percent of the project cost since San Manuel Airport is not included in the NPIAS. This essentially has allowed Pinal County to bear the same local share cost for improvements as if they were receiving federal AIP grand funds.

State Airport Loan Program

The Arizona Department of Transportation-Aeronautics Division (ADOT) Airport Loan Program was established to enhance the utilization of State funds and provide a flexible funding mechanism to assist airports in funding improvement projects. Eligible projects include runway, taxiway, and apron improvements; land acquisition, planning studies, and the preparation of plans and specifications for airport construction projects, as well as revenue generating improvements such as hangars and fuel storage facilities. Projects which are not currently eligible for the State Airport Loan Program are considered if the project would enhance the airport's ability to be financially self-sufficient.

There are three ways in which the loan funds can be used: Grant Advance, Matching Funds, or Revenue Generating Projects. The Grant Advance loan funds are provided when the airport can demonstrate the ability to accelerate the development and construction of a multi-phase project. The project(s) must be compatible with the Airport Master Plan and be included in the ADOT 5-year Airport Development Program. The Matching Funds are provided to meet the local matching fund requirement for securing federal airport improvement grants or other federal or state grants. The Revenue Generating funds are provided for airport-related construction projects that are not eligible for funding under another program.

LOCAL FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through local resources. Assuming federal funding, this essentially equates to 4.47 percent of the project costs if all eligible FAA and state funds are available. If only ADOT grants were available, the local share would be five percent of the project, or 0.053 percent higher

There are several alternatives for local finance options for future development at the airport, including airport revenues, direct funding from the County, issuing bonds, and leasehold financing. These strategies could be used to fund the local matching share, or complete the project if grant funding cannot be arranged.

The capital improvement program has assumed that some landside facility development would be completed privately, while other developments (namely T-hangars, the aircraft wash rack, and public terminal building) would be completed by Pinal County. Pinal County would complete the necessary infrastructure improvements as this development is grant eligible.

There are several municipal bonding options available to Pinal County including: general obligation bonds, limited obligation bonds, and revenue bonds. General obligation bonds are a common form of municipal bond which is issued by voter approval and is secured by the full faith and credit of the County. County tax revenues are pledged to retire the debt. As instruments of credit, and because the community secures the bonds, general obligation bonds reduce the available debt level of the community. Due to the community pledge to secure and pay general obligation bonds, they are the most secure type of municipal bond and are generally issued at lower interest rates and carry lower costs of issuance. The primary disadvantage of general obligation bonds is that they require voter approval and are subject to statutory debt limits. This requires that they be used for projects that have broad support among the voters, and that they be reserved for projects that have highest public priorities.

In contrast to general obligation bonds, limited obligation bonds (sometimes referred to as a Self-Liquidating Bonds) are secured by revenues from a local source. While neither general fund

revenues nor the taxing power of the local community is pledged to pay the debt service, these sources may be required to retire the debt if pledged revenues are insufficient to make interest and principal payments on the bonds. These bonds still carry the full faith and credit pledge of the local community and, therefore, are considered, for the purpose of financial analysis, as part of the debt burden of the local community. The overall debt burden of the local community is a factor in determining interest rates on municipal bonds.

There are several types of revenue bonds, but in general they are a form of municipal bond which is payable solely from the revenue derived from the operation of a facility that was constructed or acquired with the proceeds of the bonds. For example, a Lease Revenue Bond is secured with the income from a lease assigned to the repayment of the bonds. Revenue bonds have become a common form of financing airport improvements. Revenue bonds present the opportunity to provide those improvements without direct burden to the taxpayer. Revenue bonds normally carry a higher interest rate because they lack the guarantees of general and limited obligation bonds.

Leasehold financing refers to a developer or tenant financing improvements under a long term ground lease. The obvious advantage of such an arrangement is that it relieves the community of all responsibility for raising the capital funds for improvements. However, the private development of facilities on a ground

lease, particularly on property owned by a municipal agency, produces a unique set of problems. In particular, it is more difficult to obtain private financing as only the improvements and the right to continue the lease can be claimed in the event of a default. Ground leases normally provide for the reversion of improvements to the lessor at the end of the lease term, which reduces their potential value to a lender taking possession. Also, companies that want to own their property as a matter of financial policy may not locate where land is only available for lease. Pinal County has used long term lease arrangements successfully to finance capital improvements at the airport in the past. Most hangar facilities were developed with private funds under a long term ground lease with the County.

PLAN IMPLEMENTATION

The successful implementation of the San Manuel Airport Master Plan will require sound judgment on the part of Pinal County with regard to the implementation of projects to meeting future activity demands, while maintaining the existing infrastructure and improving this infrastructure to support new development. While the projects included in the capital improvement program have been broken into short, intermediate, and long term planning periods, the County will need to consider the scheduling of projects in a flexible manner and add new projects from time-to-time to satisfy safety or design standards, or newly created demands.

In summary, the planning process requires that Pinal County continually monitor the need for new or rehabilitated facilities, since applications (for eligible projects) must

be submitted to FAA and State each year. Pinal County should continually monitor, with the FAA and State, the projects which are required for safety and security.