Chapter 8 Ideal Funding Levels

This purpose of this chapter was to develop a tool to enable the BOA to identify an ideal or realistic funding level for its federal and state grant programs over any given four year period. The four-year period used in this analysis covered SFY 2007/08 through 2010/11.

The first step was to identify unconstrained capital improvement needs for this four-year period. These were determined based on the projects identified by airport sponsors in the Twelve-Year Plan (TYP). The projects included federal capital improvement needs for the Airport Improvement Program[20] (AIP) and state capital improvement needs for the Aviation Development Program (ADP).

This ideal funding tool was also based on average implementation timelines for capital improvement projects by project type and purpose. These timelines cover the period from project inception through planning, design, and construction.

Approach

The first step was to develop project implementation timelines based on major milestones for each project type and the typical durations between milestones. By compiling project histories for the 13 major project categories, "rules of thumb" durations for each milestone within the typical project readiness continuum were identified. The 13 major project categories considered included:

- New runways
- Runway extensions
- New passenger terminals
- Terminal expansion
- New taxiways
- Taxiway extensions
- NAVAID development
- Roadway access improvements
- New aircraft parking aprons
- Pavement rehabilitation
- New fuel storage facilities
- New airport buildings
- Land acquisition and obstruction removal

In addition to defining implementation timelines by project type, these timelines were also divided into high, medium and low project complexity. The end result was an empirical metric that the BOA could use to determine a more accurate consumption of state funds by airport sponsors, based on project type and complexity. Complexity levels are defined in the technical report.

The next step was to group the projects according to the following seven project purpose categories. These categories are used by the FAA and PENNDOT to evaluate and prioritize federal funding. Then, the timeline durations were listed as a range of years that covered projects by purpose and by level of complexity.

- Capacity
- Environmental
- Planning
- Reconstruction
- Safety and Security
- Standards
- Other

[20] The AIP includes the Block Grant Program projects

The capital improvement needs included in the TYP for the study period (SFY2007/08 through 2010/11) were then grouped by airport classification and project purpose. This statewide demand was compared to the estimated project durations by project purpose to define an ideal or realistic funding level – one based on how much money all the eligible sponsors in Pennsylvania could reasonably expect to spend over a four-year period on BOA administered projects.

Findings – Project Implementation Milestones

The major components of project readiness were identified in terms of key project milestones for each project type. Specific milestones used were:

- Planning studies and approvals
- Design
- Permitting
- Bidding and bid results
- Ability to provide local match
- Community buy-in
- Construction

Findings – Project Implementation Timelines

The 13 project types were compiled across the range of complexity and summarized in **Table 8-1**. The seven project purpose categories were also compiled across the range of complexity and summarized in **Table 8-2**. Both tables express project timelines in a span of years that cover the range of project complexity.

The duration ranges summarized in Tables 8-1 and 8-2 are based on detailed timelines contained in the technical report that illustrate estimated project durations by project type, milestone, complexity, and purpose.

Table 8-1 – Implementation Timeline Ranges by Project Type

Project Type	Implementation Range	Average
New runways	6 – 12 years	9.5 years
Runway extensions	5 – 10 years	7.5 years
New passenger terminals	5 – 9 years	7 years
Terminal expansions	4 – 8 years	6 years
New taxiways	3 – 6 years	4.5 years
Taxiway extensions	2 – 5 years	3.5 years
Roadway access improvements	5 -9 years	7 years
New NAVAID development	3 – 6 years	4.5 years
Land acquisition/obstruction removal	2 – 5 years	3 years
New parking apron	2 – 4 years	3 years
Pavement rehabilitation	1 – 3 years	2 years
New fuel storage facilities	2.5 – 5.5 years	4 years
New airport buildings	2 – 5 years	3.5 years

Table 8-2 – Implementation Timeline Ranges by Project Purpose

Project Type	Implementation Range	Average
Capacity	4.5 – 13.5 years	9 years
Environmental	2 – 6 years	4 years
Planning	2 – 5 years	3.5 years
Reconstruction	5.5 – 11.5 years	8.5 years
Safety and Security	4.5 – 9.5 years	7 years
Standards	5.5 – 11.5 years	8.5 years
Other	N/A	7.5 years[21]

Findings – Four Year Funding Demand

The total sum (federal, state, and local) of the projects in the TYP for the four years covering SFY2007/8 through 2010/11 is $249.3 million. This was considered to be the unconstrained statewide "demand" for capital improvement projects and consists of the funding levels shown in **Table 8-3**.

Table 8-3 – Total "Demand" SFY2007/08 to 2010/11

AIP[22]		State ADP[23]	
Approved	Unapproved	Approved	Unapproved
$76.4 million	$120.1 million	$19.1 million	$33.7 million
$196.5 million		$52.8 million	
$249.3 million			

The total four-year funding demand was further evaluated by project purpose, as presented in **Table 8-4**.

Table 8-4 – Four Year Funding Demand by Project Purpose

Project Purpose	Funding	Percent
Standards	$132.9 million	53%
Capacity	$42.5 million	17%
Reconstruction	$43.3 million	17%
Planning & Environmental	$15.2 million	6%
Other	$9.0 million	4%
Safety & Security	$6.4 million	3%
Total	**$249.3 million**	**100%**

[21] The typical project duration for "Other" projects was assumed to be the average of all the average durations shown in Table 8-2, or 7.5 years

[22] Only includes Airport Improvement Program projects for airports in the State Block Grant Program

[23] Includes Aviation Development Program projects only; TAP/Capital Budget not included

By comparing funding demand with the average project durations by project purpose (Table 8-2), the ideal funding level could be estimated by determining the probable or realistic "consumption" of these funds. This was done as follows.

The average duration by project purpose was divided by four to determine the number of four year funding cycles that would be required to spend the demand by project purpose. Then, the demand was divided by the number of four year cycles to determine how much could be spent in any one four year cycle. That result is shown in **Table 8-5**.

Table 8-5 – Realistic Funding Demand per Four Year Cycle

Purpose	Four Year Demand ($ million)	Average Duration (years)	Duration divided by four (years)	Four Year Demand divided by Duration/4 ($ million)	Percent
Capacity	$42.5	9	2.25	$18.9	
Safety, Security & Standards	$139.3	8.4	2.10	$66.2	
Reconstruction	$43.3	8.5	2.125	$20.4	
Planning & Environmental	$15.2	4[24]	1	$15.2	
Other	$9.0	7.5	1.875	$4.8	
Total	**$249.3**			**$125.5**	**50.3%**

As shown in this table, a reasonable assumption for an ideal or realistic four year funding level is $125.5 million, or 50.3% of the total four year demand. This is compared to the sum of the Approved 2007 FYP which equals $95.5 million.

It is important to note that these demand calculations do not include the Aviation Transportation Assistance Program (capital budget) funds that are line-itemed into the BOA budget from the governor's office. That funding level typically amounts to about $5 million per year, or $20 million over a four-year period.

Recommendations

The project implementation timeline and realistic funding level tool consists of two separate items – the project implementation timelines and the estimated ideal or realistic four year funding level. The first tool, the project implementation timeline, will assist the BOA in programming multi-year and phased projects in the FYP and TYP. The second tool, the four year ideal or realistic funding level, will enable the BOA to demonstrate the adequacy of the total four-year funding program based on the funding demand and consumption assessment.

Timelines

The timelines identify the average durations of projects by project type, complexity, and purpose. They will be useful to the BOA as they update the annual FYPs and TYPs.

[24] The average duration for "Safety, Security, & Standards" and for "Planning & Environmental" projects is a weighted average of the timelines for the individual project purpose categories.

These are empirical so it is important to recognize that other issues may dictate the exact duration of the entire project, from beginning to end, including the funds that the BOA has available in each four-year period.

Ideal or Realistic Funding Level

This exercise will be useful to the BOA in establishing four year funding levels. This benchmark is based on an objective assessment of funding demand and can be determined for any four-year period within the TYP, each time the TYP is updated.

By applying this approach, the recommended four-year funding level of $125.5 million for the study period covering SFY2007/08 through 2010/11 is consistent with the actual four year funding level in the approved 2007 FYP, or $95.5 million. Actual funding is 76% of the estimate of realistic funding.

It is recommended that the BOA strive to achieve between 80-90% of the realistic funding levels in each approved FYP which equates to 50% of the funding demand. Based on the current TYP, this equals between $100 to $113 million for every four year plan, or from $1.2 to $4.4 million more each year than is programmed in the current FYP.