2012 Georgia Airport Pavement Management Report

Preserving Georgia's Critical Airport Pavement Infrastructure

GEORGIA AIRPORTS
MEAN BUSINESS

Acknowledgements

This document was produced under the auspices of the

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GEORGIA STATEWIDE PAVEMENT MANAGEMENT STUDY

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The preparation of this report was financed in part through a planning grant from the Federal Aviation Administration (FAA) as provided under Section 505 of the Airport and Airway Improvement Act of 1982. The contents of this report do not necessarily reflect the views or policy of the USDOT or the FAA, and do not constitute a commitment on the part of the United States to participate in any development depicted therein, nor does it indicate that the proposed development is environmentally acceptable in accordance with applicable public laws.

Overview

BACKGROUND

Georgia's airport system of 104 publicly-owned, public-use airports plays a vital role in supporting economic development opportunities statewide. Furthermore, the pavements at the airports within this system represent a significant capital investment. It is critical for airport pavements to be maintained; otherwise, the value of these capital investments will be diminished. Timely maintenance and rehabilitation, or M&R, of the pavement infrastructure is vital. Pavement maintenance and repair become more costly once pavement condition deteriorates below a certain level. Additionally, as pavement conditions deteriorate, weaknesses such as cracks and loose debris, pose a significant safety risk to aircraft.

Recognizing the importance of airport pavements and the investment they represent, the Georgia Department of Transportation established a statewide Airport Pavement Management System (APMS) in 1998. Since its establishment, the APMS has been updated approximately every five years.

Georgia's APMS provides individual airports, the Department, and the FAA with current objective data on airport pavement conditions. The APMS data can also be utilized to: document the need for pavement-related funding, prioritize project needs, and formulate capital improvement programs. Further, the APMS fulfills the individual airport requirements, Public Law 103-305 and Federal Airport Sponsor Grant Assurance 11, which both require the airport maintain a pavement maintenance management system. The effective utilization of this data documents Georgia's effort to maintain its airport infrastructure, which coincides with the priorities of the FAA for continued maintenance of existing pavement.

IMPACT OF THE AIRPORT PAVEMENT MANAGEMENT SYSTEM

As part of the APMS process, a visual assessment of pavement condition is undertaken using the pavement condition index (PCI) methodology as documented in FAA Advisory Circular 150/5380-6B, *Guidelines and Procedures for Maintenance of Airport Pavements* and American Society for Testing and Materials (ASTM) *Standard D5340, Standard Test Method for Airport Pavement Condition Index Surveys*. This evaluation results in the calculation of an overall value which ranges from a PCI of 0 (failed) to 100 (no visible signs of pavement deterioration).

Despite the constant use of the APMS, the overall condition decreased from 79 to 77. This decline can be partially attributed to a change made by the ASTM to its PCI methodology during that period. However, the significant portion of the decline can be attributed to the aging pavement constructed during two special development programs; the Governor's Regional Airport Enhancement Program (GRAEP) and the AIRGeorgia Program, with projects completed between 1998 and 2009.

The GRAEP program extended runways to 5,500 feet in support of regional economic development. Twenty seven airports received funding through this program for a total investment of nearly $47 million. The AIRGeorgia program constructed runway extensions to 5,000 feet at 17 airports, with a total investment of $27 million.

The financial impact of delaying repairs can be severe – reconstruction of airfield pavement in Georgia can cost 3 to 4 times the cost of an overlay.

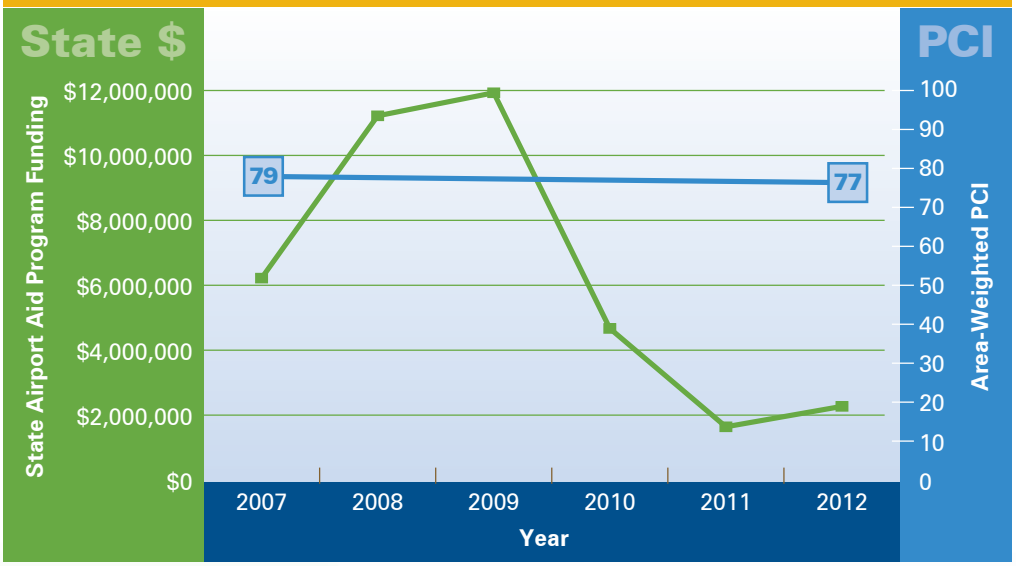
Overview

Quick Facts

- The project included 95 general aviation airports and 8 air carrier airports for a total of 103 airports.
- The overall pavement area of the 103 airports included in the Department's APMS database is 145.5 million square feet.
- Due to on-going efforts, the overall condition of the pavement infrastructure increased from 71 to 77, on a scale of 0 to 100, from 1998 to 2012.
- The overall condition of the pavement infrastructure decreased from 79 to 77, on a scale of 0 to 100, from 2007 to 2012, with general aviation airports dropping from 80 to 76. A significant portion of the decline can be attributed to the aging of pavement constructed during the GRAEP and AIRGeorgia programs.
- The current backlog of work is $236.3 million—$181.2 million for general aviation airports and $55.0 million for air carrier airports.
- The proposed annual funding level of $30.25 million – $25 million for general aviation airports and $5.25 million for air carrier airports, would allow an area-weighted PCI of 80 to be achieved through 2017.

These two programs added more than 6.6 million square feet of pavement to the airport infrastructure which is now aging and requires maintenance. In addition, as the following figure shows, the state airport aid program funding level began a decline in fiscal year 2010. While the pavement area needing to be maintained grew, the funding for those pavements decreased and overall conditions, not unexpectedly, declined.

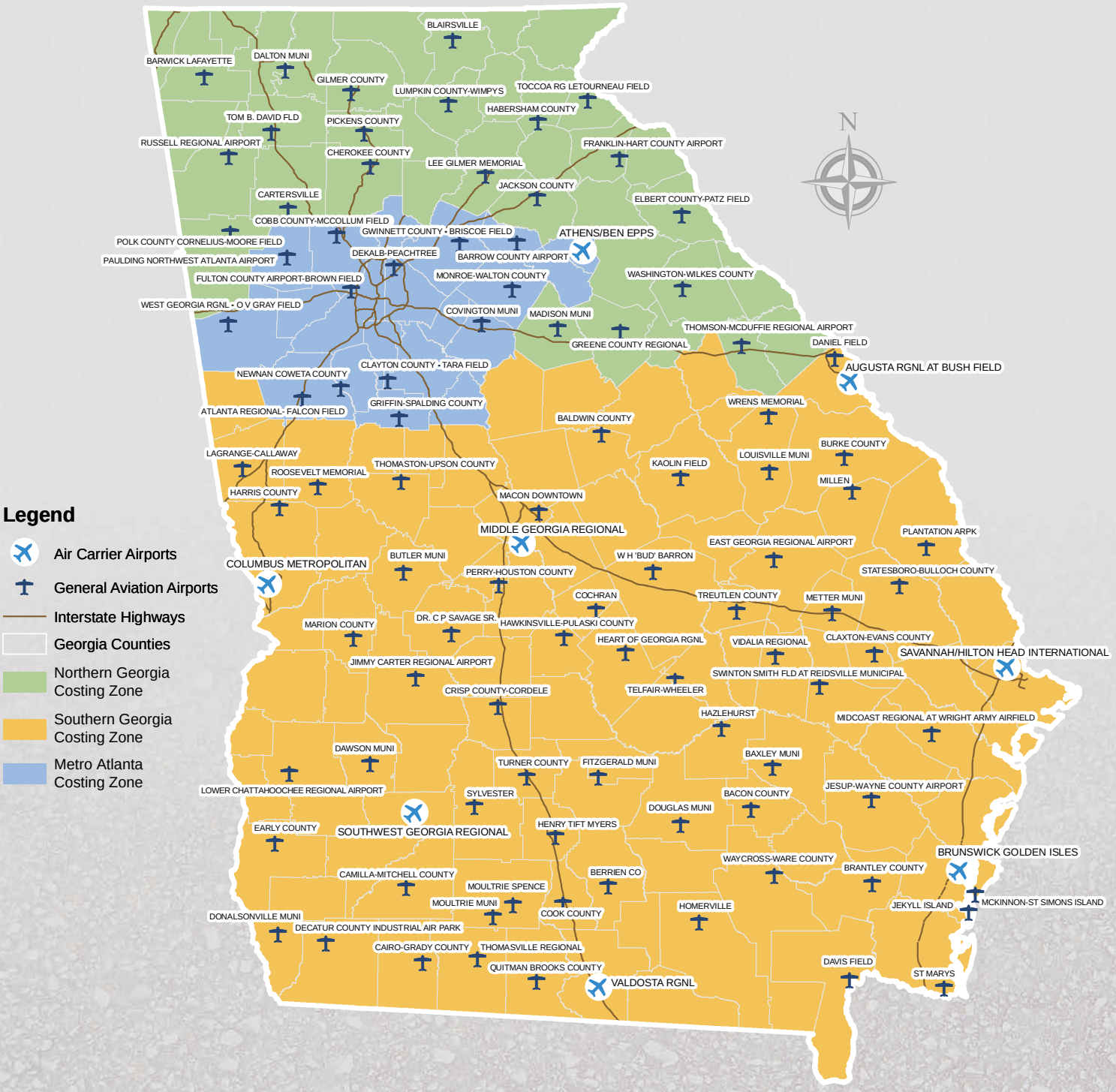
STATE AIRPORT AID PROGRAM FUNDING VS AREA-WEIGHTED PCI



Georgia's existing airport pavements are equivalent to a two-lane road from Miami to New York City.

Project Airports

In 2012, Georgia's publicly-owned, public-use airports—except Atlanta's Hartsfield-Jackson International Airport—were evaluated to update the Georgia APMS. These 103 airports shown in the figure below represent 145.5 million square feet of pavement, or 1,150 miles, which equates to a two-lane paved road from Miami, Florida to New York City, New York. The total area can be further broken down into 68.9 million square feet, 47%, of runway pavement; 40.6 million square feet, 28%, of taxiway and T-Hangar pavement; and, 36.1 million square feet, 25%, of apron and helipad pavement. Further, the pavement consists of 85% asphalt-surfaced pavements and 15% of portland cement concrete pavement.



Pavement Condition Assessment

The PCI methodology, as documented in FAA Advisory Circular (AC) 150/5380-6B, Guidelines and Procedures for Maintenance of Airport Pavements and American Society for Testing and Materials (ASTM) Standard D5340, Standard Test Method for Airport Pavement Condition Index Surveys, was used to assess the pavement condition at Georgia airports. This procedure is the standard used by the aviation industry in the United States to visually assess and monitor the condition of airport pavements. Established in the early 1980s, it provides a consistent, objective, and repeatable method to evaluate the overall pavement condition.

During a PCI survey, the types, severities, and amounts of distress present in a pavement surface are quantified. This information is used to develop a composite index that represents the overall condition of the pavement in numerical terms, ranging from 0 (failed) to 100 (excellent). In addition, the collected data is used to determine pavement deterioration rates as well as the major cause of pavement deterioration.

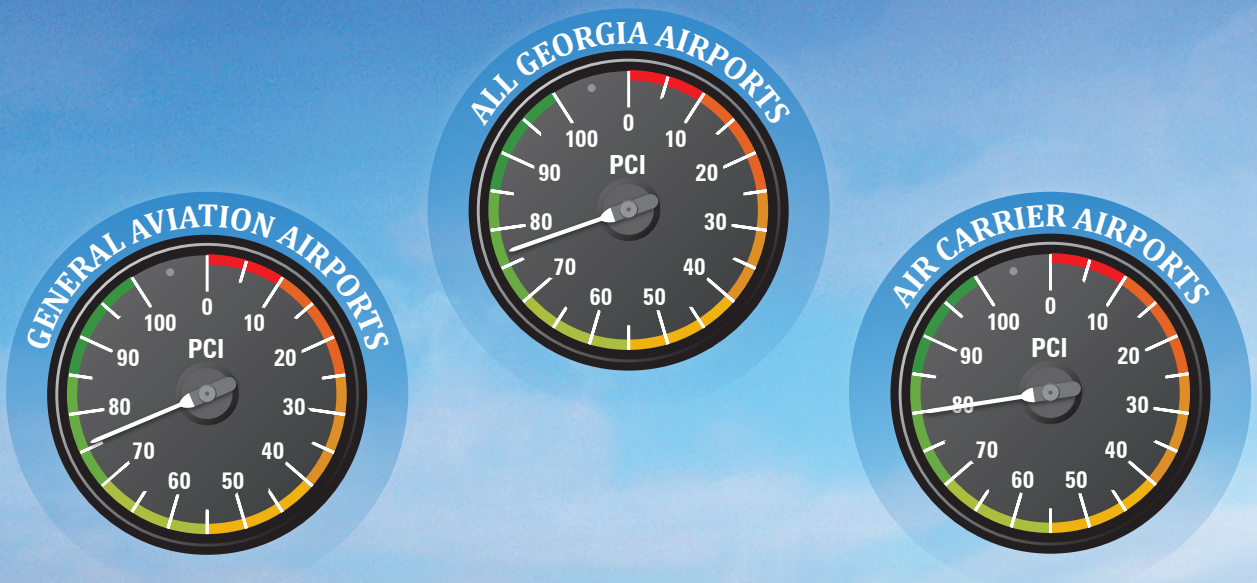
Programmed into an APMS, the analysis of PCI data is used to determine when preventive maintenance actions, such as crack sealing, are advisable and also to identify the most cost-effective time to perform major rehabilitation, such as an overlay. The relationship between a pavement's PCI value and the typical type of repair identified for the pavement is shown in the figure below.

	PCI
PREVENTIVE MAINTENANCE	86-100
	76-85
	56-75
MAJOR REHABILITATION	41-55
	26-40
RECONSTRUCTION	11-25
	0-10

PCI	REPRESENTATIVE PAVEMENT SURFACE	REPAIR ALTERNATIVE
96		Pavements with PCIs above 60 to 70 often benefit from cost-effective preventive maintenance actions, such as crack sealing and surface treatments.
60		Pavements with a PCI in the range of 40 to 70 will typically require more expensive rehabilitation, such as an overlay.
5		Pavement allowed to deteriorate below a PCI of 40 could require costly reconstruction to restore it to operational condition.

Pavement Condition Assessment

The overall 2012 area-weighted condition of the 103 airports included in the Georgia APMS is a PCI of 77. The figures below compare the overall condition of the pavement for the 103 airports with that of the general aviation airports and the air carrier airports. The table below shows the 2012 condition broken out by airport classification and pavement use.



PAVEMENT RATING BY TYPE

AIRPORT CLASSIFICATION	ALL	RUNWAY	TAXIWAY	APRON/ HELIPAD
ALL AIRPORTS	77	77	80	71
GENERAL AVIATION	76	77	78	70
AIR CARRIER	80	79	84	76

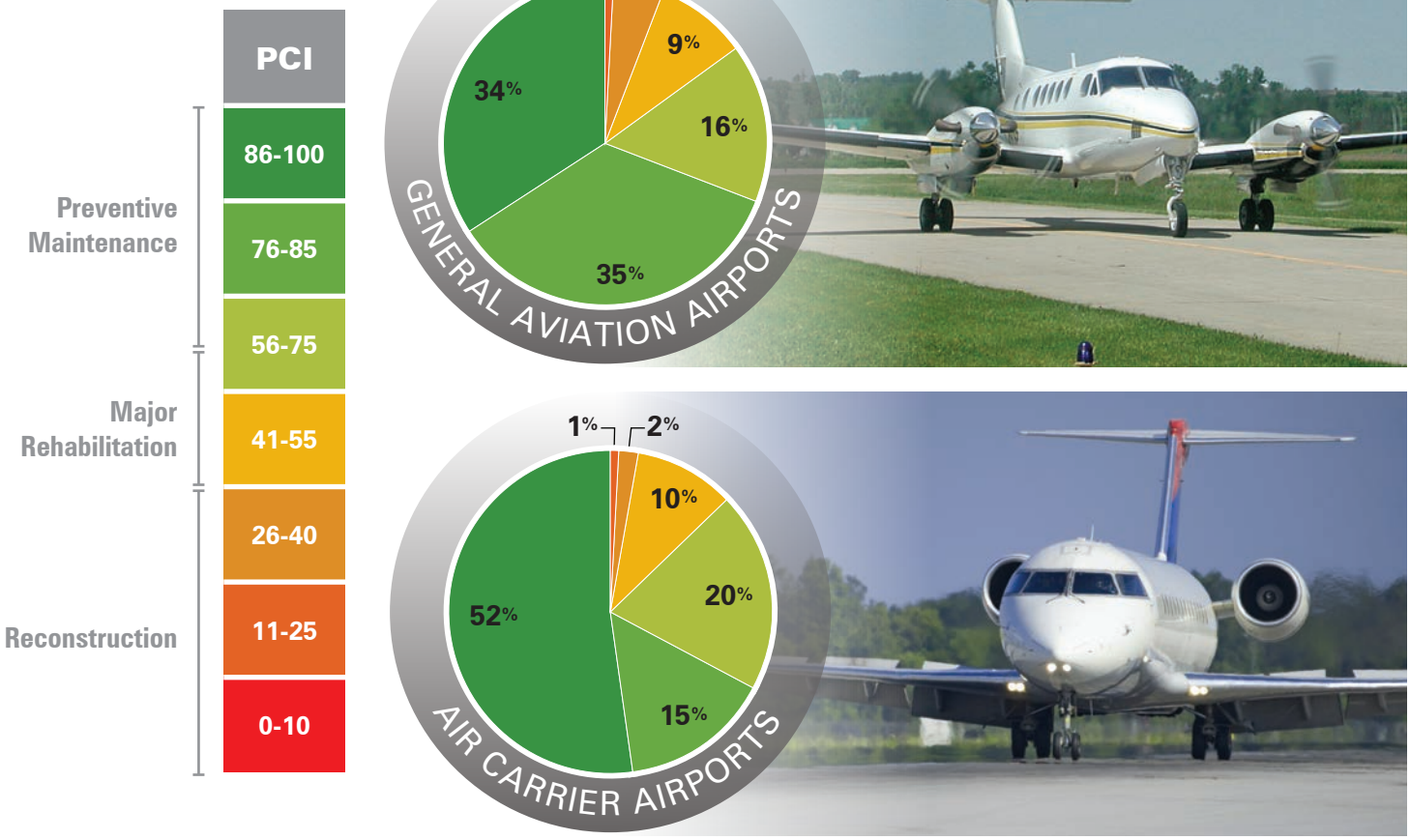
Pavement Needs Assessment

- **Preventive maintenance refers to activities such as crack sealing, joint sealing, patching, and surface treatments.**
- **Rehabilitation includes overlays and concrete restoration.**
- **Reconstruction involves replacement of the entire pavement.**

More than 72% of Georgia's airport pavement area is at the condition level where timely preventive maintenance will cost-effectively slow the rate of deterioration. Approximately 22% of the pavement area at the 103 project airports is in need of more extensive rehabilitation, such as an overlay, while approximately 6% of the area is in need of reconstruction. However, the pavement system is aging, and many of the pavements that will benefit now from preventive maintenance will soon deteriorate to a point where rehabilitation will be required.

The following figures show the percentage of pavements in each condition range and indicate which type of work should be performed on the Georgia airport pavements, broken out by airport classification. In these figures, preventive maintenance refers to activities such as crack sealing, joint sealing, patching, and surface treatments. Rehabilitation includes overlays and concrete restoration. Reconstruction involves replacement of the entire pavement.

PERCENTAGE OF PAVEMENT AREA BY PCI RANGE



Protecting Capital Investment

An analysis was performed to develop an approach for addressing pavement needs from 2013 to 2017. For each year of the analysis, the future conditions of the pavements were predicted, and a determination was made as to whether preventive maintenance or major rehabilitation/reconstruction was the appropriate and most cost-effective strategy. In any given year, if a pavement was projected to be above a critical PCI of 60 for general aviation taxiways and aprons, 65 for air carrier taxiways and aprons, 70 for general aviation runways, and 75 for air carrier runways, the pavement was recommended for preventive maintenance. Below these critical PCI thresholds, major rehabilitation was recommended. Three scenarios were analyzed; zero budget, unconstrained budget, and recommended budget.

The zero budget analysis resulted in the pavement system rapidly deteriorating from a PCI of 77 to 68 by the end of 2017. This decrease translates into higher future major rehabilitation/reconstruction needs and increased costs.

The unconstrained budget analysis assumed all identified projects were funded. This resulted in the 2012 PCI of 77 increasing to 86 by the end of 2017. However, approximately $47.3 million annually would be needed during the next five years to fund this program – $36.2 million annually for general aviation airports and $11.0 million annually for air carrier airports. The table at the end of this report provides a total estimated cost per airport for the projects that are recommended under the unconstrained budget scenario.

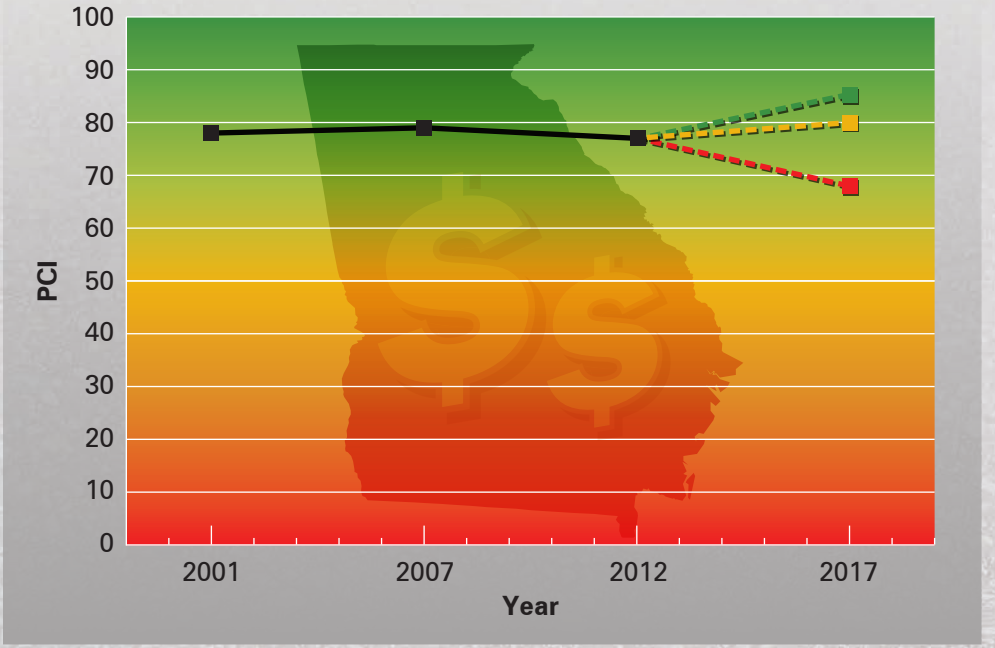
Since the zero dollar budget and the unlimited budget produce undesirable or unachievable results, an additional analysis was completed to determine the funding level required to achieve an PCI goal of 80 for the airport pavement system. It was determined a PCI of 80 could be maintained through 2017 with an expenditure of $30.2 million annually during the next five years – $25.0 million annually for general aviation airports and $5.2 million annually for air carrier airports.

CONSTRAINED ANNUAL BUDGET BY ANALYSIS YEAR ($MILLIONS)

TOTAL SYSTEM	GENERAL AVIATION	COMMERCIAL SERVICE
	1998	
$7M	$7M	n/a*
	2001	
$11.5M	$7M	$4.5M
	2007	
$14M	$10M	$4M
	2012	
$30.25M	$25M	$5.25M

**Commercial Service airports were not included in the 1998 APMS implementation*

HISTORIC AND ANTICIPATED PCI VALUES BY ANALYSIS SCENARIO



Unconstrained Annual Budget **$47.3 million**

Recommended Annual Budget **$30.3 million**

Zero Annual Budget **$0**

5-Year Pavement Funding Needs

ASSOCIATED CITY	AIRPORT NAME	2012 AREA-WEIGHTED PCI	5-YEAR TOTAL FUNDING NEEDS
Adel	Cook County Airport	86	$519,783
Alma	Bacon County Airport	80	$1,286,748
Americus	Jimmy Carter Regional Airport	81	$634,173
Ashburn	Turner County Airport	64	$509,835
Atlanta CCO	Newnan-Coweta County Airport	78	$2,973,775
Atlanta FFC	Atlanta Regional-Falcon Field	71	$4,360,809
Atlanta FTY	Fulton County-Brown Field	64	$8,810,202
Atlanta CVC	Covington Municipal Airport	99	$242,880
Atlanta PDK	Dekalb-Peachtree Airport	53	$18,818,214
Atlanta PUJ	Paulding Northwest Atlanta Airport	100	$18,226
Atlanta RYY	Cobb County-McCollum Field	85	$2,468,677
Augusta DNL	Daniel Field	63	$5,444,091
Bainbridge	Decatur County Industrial Airpark	62	$11,140,433
Baxley	Baxley Municipal Airport	89	$175,665
Blairsville	Blairsville Airport	86	$523,358
Blakely	Early County Airport	88	$262,152
Brunswick SSI	McKinnon-St. Simons Island Airport	86	$1,379,740
Buena Vista	Marion County Airport	63	$553,784
Butler	Butler Municipal Airport	84	$338,970
Cairo	Cairo-Grady County Airport	82	$132,061
Calhoun	Tom B. David Field	82	$832,468
Camilla	Camilla-Mitchell County Airport	88	$384,814
Canon	Franklin-Hart County Airport	81	$580,299
Canton	Cherokee County Airport	86	$1,150,708
Carrollton	West Georgia Regional Airport	85	$1,518,369
Cartersville	Cartersville Airport	72	$1,793,292
Cedartown	Polk County-Cornelius Moore Field	83	$557,881
Claxton	Claxton-Evans County Airport	76	$845,386
Cochran	Cochran Airport	84	$880,835
Cordele	Crisp County-Cordele Airport	79	$647,096
Cornelia	Habersham County Airport	80	$746,870
Cuthbert	Lower Chattahoochee Regional Airport	54	$1,082,308
Dahlonega	Lumpkin County-Wimpy's Airport	75	$448,567
Dalton	Dalton Municipal Airport	80	$1,122,363
Dawson	Dawson Municipal Airport	75	$1,312,554
Donalsonville	Donalsonville Municipal Airport	78	$828,229
Douglas	Douglas Municipal Airport	87	$649,995
Dublin	W.H. "Bud" Barron Airport	90	$594,681
Eastman	Heart Of Georgia Regional Airport	85	$511,772
Elberton	Elbert County-Patz Field	78	$580,925
Ellijay	Gilmer County Airport	89	$106,339
Fitzgerald	Fitzgerald Municipal Airport	73	$1,329,008
Folkston	Davis Field	56	$463,972
Gainesville	Lee Gilmer Memorial Airport	79	$3,564,937
Greensboro	Greene County Regional Airport	81	$798,636
Griffin	Griffin-Spalding County Airport	77	$1,179,363
Hampton	Tara Field	82	$664,662
Hawkinsville	Hawkinsville-Pulaski County Airport	60	$539,930
Hazlehurst	Hazlehurst Airport	77	$820,613
Hinesville	Midcoast Regional Airport at Wright Army Airfield	62	$5,814,907
Homerville	Homerville Airport	60	$1,723,797
Jasper	Pickens County Airport	84	$298,862
Jefferson	Jackson County Airport	77	$1,457,728

GENERAL AVIATION AIRPORTS

ASSOCIATED CITY	AIRPORT NAME	2012 AREA-WEIGHTED PCI	5-YEAR TOTAL FUNDING NEEDS
Jekyll Island	Jekyll Island Airport	78	$158,253
Jesup	Jesup-Wayne County Airport	93	$214,624
LaFayette	Barwick-LaFayette Airport	86	$479,324
LaGrange	LaGrange-Callaway Airport	56	$9,096,061
Lawrenceville	Gwinnett County-Briscoe Field	55	$12,788,399
Louisville	Louisville Municipal Airport	85	$398,972
Macon MAC	Macon Downtown Airport	75	$2,255,716
Madison	Madison Municipal Airport	69	$1,073,185
McRae	Telfair-Wheeler Airport	84	$674,444
Metter	Metter Municipal Airport	87	$161,663
Milledgeville	Baldwin County Airport	78	$1,135,670
Millen	Millen Airport	100	$121,274
Monroe	Monroe-Walton County Airport	77	$1,309,724
Montezuma	Dr. C. P. Savage, Sr. Airport	78	$149,651
Moultrie MGR	Moultrie Municipal Airport	60	$4,942,367
Moultrie MUL	Spence Airport	41	$6,676,182
Nahunta	Brantley County Airport	100	$87,758
Nashville	Berrien County Airport	73	$732,405
Perry	Perry-Houston County Airport	77	$1,803,013
Pine Mountain	Harris County Airport	81	$1,153,308
Quitman	Quitman-Brooks County Airport	91	$431,077
Reidsville	Swinton Smith Field at Reidsville Municipal Airport	87	$705,835
Rome	Russell Regional Airport	77	$4,455,464
Sandersville	Kaolin Field	81	$1,005,383
Soperton	Treutlen County Airport	86	$62,105
St. Marys	St. Marys Airport	70	$2,212,481
Statesboro	Statesboro-Bulloch County Airport	79	$2,283,488
Swainsboro	East Georgia Regional Airport	87	$336,003
Sylvania	Plantation Airpark	74	$1,955,266
Sylvester	Sylvester Airport	81	$29,764
Thomaston	Thomaston-Upson County Airport	82	$1,544,929
Thomasville	Thomasville Regional Airport	63	$7,672,030
Thomson	Thomson-McDuffie Regional Airport	90	$413,900
Tifton	Henry Tift Myers Airport	74	$2,108,756
Toccoa	Toccoa-R. G. LeTourneau Field	80	$1,086,571
Vidalia	Vidalia Regional Airport	70	$3,139,547
Warm Springs	Roosevelt Memorial Airport	95	$139,457
Washington	Washington-Wilkes County Airport	73	$746,263
Waycross	Waycross-Ware County Airport	85	$440,752
Waynesboro	Burke County Airport	48	$1,865,130
Winder	Barrow County Airport	66	$6,411,512
Wrens	Wrens Memorial Airport	80	$342,886
GENERAL AVIATION 5-YEAR TOTAL			**$181,226,338**

AIR CARRIER AIRPORTS

Albany	Southwest Georgia Regional Airport	74	$8,248,992
Athens	Athens-Ben Epps Field	60	$7,318,420
Augusta AGS	Augusta Regional at Bush Field	74	$8,926,582
Brunswick BQK	Brunswick-Golden Isles Airport	83	$4,282,833
Columbus	Columbus Airport	80	$4,047,359
Macon MCN	Middle Georgia Regional Airport	70	$10,636,311
Savannah	Savannah-Hilton Head International Airport	89	$6,480,050
Valdosta	Valdosta Regional Airport	87	$5,094,149
AIR CARRIER 5-YEAR TOTAL			**$55,034,697**

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