



Report:

Georgia Airport Pavement Management Plan Executive Summary

PRESERVING
GEORGIA'S
CRITICAL
PAVEMENT
INFRASTRUCTURE



Acknowledgments

Georgia Department of Transportation Russell R. McMurry, P.E., Commissioner

DIVISION OF INTERMODAL

Carol Comer

Director

Steve Brian

Manager, Aviation Programs

Joseph Robinson

Aviation Planning Manager

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Overview

Background

Georgia's airport system plays a vital role in supporting economic development opportunities statewide, and its pavements comprise a large capital investment as well as directly impact operational safety. If Georgia's airport pavements are not maintained at an acceptable condition level, the value of these capital investments will diminish and safety could be compromised.

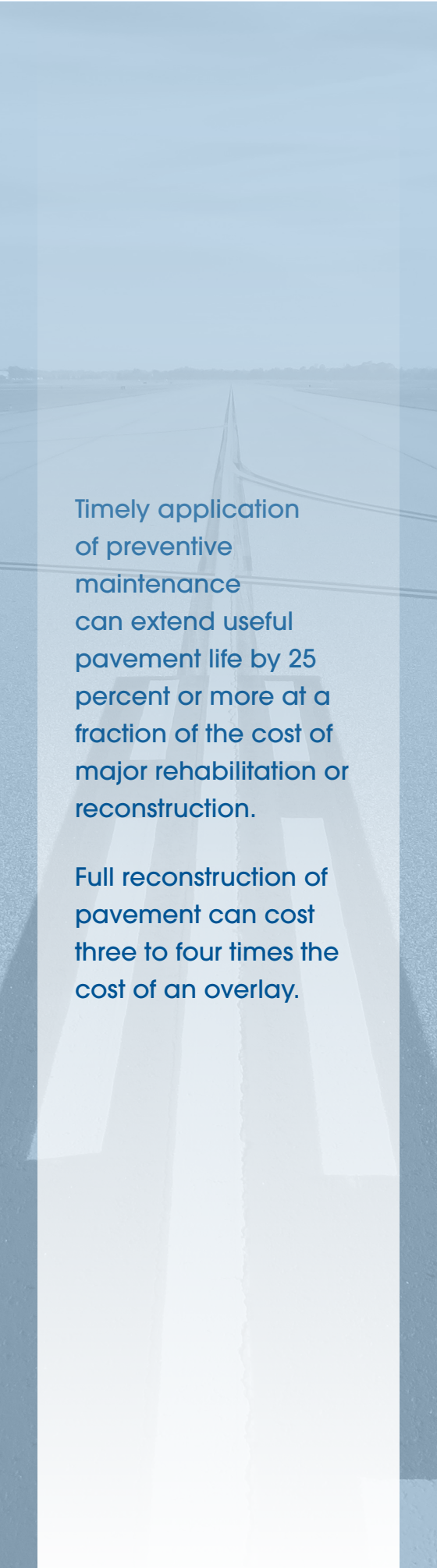
Identifying the appropriate maintenance and rehabilitation (M&R) treatment and applying it at the right time is the key to cost-effectively managing pavement infrastructure. Delaying M&R until a pavement structure has seriously degraded can cost three to four times more than if M&R was applied earlier in a pavement's life cycle. Additionally, as pavements deteriorate cracks and loose debris pose a significant safety risk to aircraft.

Recognizing the importance of airport pavements to safety and the investment they represent, the Georgia Department of Transportation (GDOT) established a Statewide Airport Pavement Management System (APMS) in 1998 to monitor the health of the pavement system and to proactively plan for its cost-effective preservation. The APMS provides airport sponsors, GDOT, and the Federal Aviation Administration (FAA) with current, objective data on airport pavement conditions. The APMS data can also be utilized to assess the need for pavement-related funding, prioritize project needs, and formulate capital improvement programs. Further, the APMS fulfills most of the individual airport responsibilities required by Public Law 103-305 and Federal Airport Sponsor Grant Assurance 11, which both require the airport to maintain an effective pavement maintenance management system. GDOT's continued update and utilization of the APMS for more than two decades is evidence of its commitment to maintaining its airport infrastructure, which coincides with the priorities of the FAA for continued maintenance of existing pavement.

Impact of the Statewide 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. This evaluation results in the calculation of an overall value, which ranges from a PCI of 100 (no visible signs of pavement deterioration) to zero (failed).

In 2012, the overall PCI of the system was 77; in 2018, it had dropped to 71, representing a deterioration rate of one PCI point per year.

An aerial photograph of an airport runway, showing the perspective of the road stretching into the distance. The image is overlaid with a semi-transparent blue filter. Text is placed on the right side of the image.

Timely application of preventive maintenance can extend useful pavement life by 25 percent or more at a fraction of the cost of major rehabilitation or reconstruction.

Full reconstruction of pavement can cost three to four times the cost of an overlay.

Quick Facts



The project included 94 general aviation airports and eight commercial service airports for a total of 102 airports.



The pavement area of the 102 airports included in the APMS is 151.6 million square feet and the area-weighted age of the pavement system is 18 years.



The condition of the pavement infrastructure decreased from 77 to 71, on a scale of zero to 100, from 2012 to 2018.

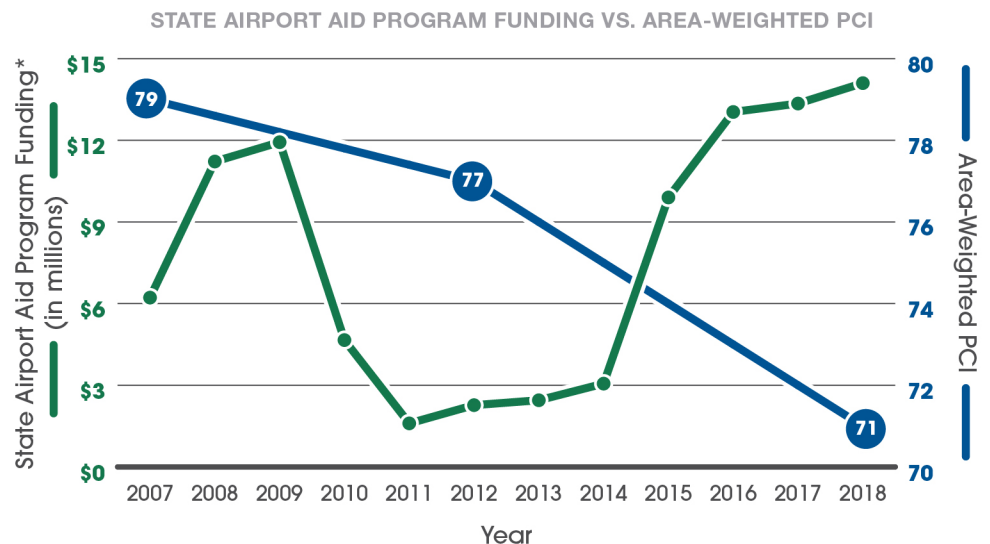


The current annual backlog of work is \$455.4 million - \$354.2 for general aviation airports and \$101.2 million for commercial service airports.

An annual funding level of \$58 million from 2020 to 2024 — \$48.75 for general aviation airports and \$9.25 million for commercial service airports — would achieve an area-weighted PCI of 80 through 2024.

This decline can be attributed to many factors, including:

- The area of pavement to be managed has increased.** In 2007 the APMS included 139.4 million square feet of pavement. In 2012 that had grown to 145.5 million square feet, and in 2018 it reached 151.6 million square feet. That means the funding allocated for pavement M&R must address the needs of a pavement system that is nine percent larger than in 2007.
- The airport pavement system has aged.** In 2012 the area-weighted age was 16 years, and in 2018 it had increased to 18 years. During the life cycle of pavement, the PCI typically decreases as the age of the pavement increases. At the beginning of a pavement's life cycle, preventive maintenance actions, such as crack sealing and surface treatments, are usually a very cost-effective approach for preserving and extending the life of the pavement. As pavement ages and condition deteriorates, a point is reached where major work such as an overlay or reconstruction is needed. This study revealed that an increasing amount of Georgia airport pavement has reached this point.
- The level of funding for pavement M&R has not kept pace with the needs of the system.** The 2007 APMS study showed the airport pavement system needed \$14.00 million a year for 2008 through 2012 to achieve an area-weighted PCI of 80. However, the average annual funding for the entire program (not just paving-related projects) was \$6.35 million. The 2012 APMS study showed the airport pavement system needed \$30.25 million a year for 2013 through 2017 to achieve an area-weighted PCI of 80, but the annual average funding for the entire program (not just paving-related projects) was \$8.36 million. This funding shortage has contributed to the slow deterioration of the pavement infrastructure.
- Continued inflation has affected the ability of the allocated funding to keep pace with pavement needs.** For example, in 2007 it would have cost \$1.24 million to place a 2-inch overlay on a 5,000 foot by 150 foot runway. In 2019 this same overlay will cost \$2.12 million, representing a 71 percent increase in cost.



During the previous project update in 2012, it was projected that **\$30.25M** would have been needed annually to achieve a PCI of 80 by 2017.

*Entire appropriated funding, not just paving-related funding.



Pavements with PCIs above a critical threshold (ranging from 60 to 75 depending on the classification of the airport and the use of the pavement) may benefit from preventive maintenance actions, such as crack sealing and surface treatments.



Pavements with a PCI in the range of 40 to the critical threshold will typically require more costly rehabilitation, such as an overlay.



Pavement below a PCI of 40 may require even more costly reconstruction to restore it to operational condition.

Preventive Maintenance

Major Rehabilitation

Reconstruction

PCI Scale



Pavement Condition Assessment

The PCI methodology, as documented in FAA Advisory Circular 150/5380-6C, Guidelines and Procedures for Maintenance of Airport Pavements and ASTM D5340-12, 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 for visually assessing and monitoring 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 on a pavement's 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 100 (excellent) to 0 (failed). In addition, the collected data are used to calculate pavement deterioration rates and identify major causes 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 to identify the most cost-effective time to perform major rehabilitation, such as an overlay. The relationship between a pavement's PCI and the typical type of repair identified for the pavement is shown in the figure on the left.

2018 PAVEMENT CONDITIONS



| Pavement Rating by Type | | | | |
|-------------------------|-----|--------|---------|-----------------|
| Airport Classification | All | Runway | Taxiway | Apron / Helipad |
| All Airports | 71 | 73 | 73 | 68 |
| General Aviation | 69 | 71 | 70 | 63 |
| Commercial Service | 78 | 77 | 78 | 80 |

The 2018 area-weighted PCI of the 102 airports included in the APMS is 71. The figures above compare the overall condition of the pavement for the 102 airports with that of the general aviation airports and the commercial service airports. The figure on the left shows the 2018 condition distributed by airport classification and pavement use.



Percentage of Pavement Area by PCI Range



Pavement Needs Assessment

The study indicates that 54 percent of Georgia’s airport pavement would benefit from preventive maintenance, 40 percent needs more extensive rehabilitation such as an overlay, and six percent needs reconstruction. Because the pavement system is aging, many of the pavements that will benefit now from preventive maintenance will soon deteriorate to a point where more costly rehabilitation will be required.

The figures on the left show the percentage of pavements in each condition range and indicate which type of work should be performed. 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.

Protecting Capital Investment

An analysis was performed to assess pavement needs from 2020 to 2024. This analysis predicted future pavement conditions and drew conclusions as to whether preventive maintenance or major rehabilitation/reconstruction would be the best strategy based on whether a pavement was above or below its critical PCI threshold. Above its critical PCI, the pavement was recommended for preventive maintenance; below its critical PCI, the pavement was recommended for major rehabilitation or reconstruction.

GDOT established critical PCI thresholds as follows:

- General Aviation Airports: Critical PCI of 60 for taxiways, aprons, helipads, and T-hangars and critical PCI of 70 for runways.
- Commercial Service Airports: Critical PCI of 65 for taxiways, aprons, helipads, and T-hangars and critical PCI of 75 for runways.

Three financial scenarios were analyzed for years 2020 through 2024: no funding, unlimited funding, and funding to achieve an area-weighted PCI of 80 for the pavement system.

The no funding analysis resulted in the pavement system deteriorating from a 2018 PCI of 71 to 63 by the end of 2024. This decrease translates to higher future major rehabilitation/reconstruction needs at increased costs.

The unlimited funding analysis assumed all identified pavement projects were undertaken. This scenario would result in an expenditure of \$91.07 million annually (\$70.83 million for general aviation airports and \$20.24 million for commercial service airports) over the next five years and would result in a projected PCI of 88 at the end of 2024. The table at the end of this report provides a total estimated cost per airport for the projects recommended under the unlimited budget scenario.

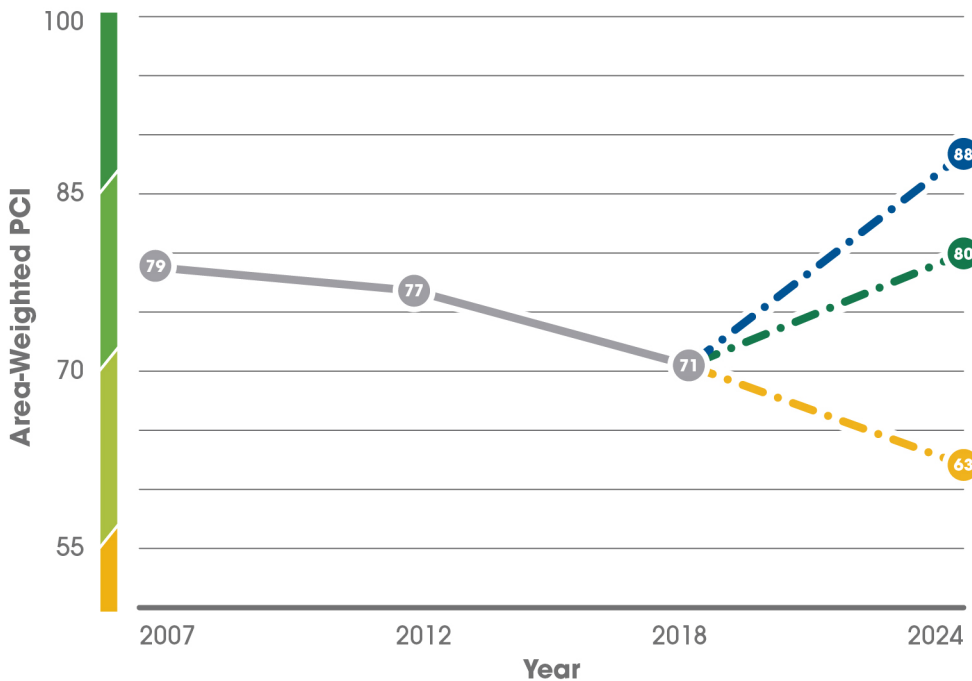
Because the no funding and the unlimited funding scenarios produced undesirable and unachievable results, respectively, an additional analysis was performed to determine the funding level required to achieve a PCI goal of 80 for the airport pavement system. This analysis showed that a PCI of 80 could be maintained through 2024 with an annual expenditure of \$58 million—\$48.75 million annually for general aviation airports and \$9.25 million annually for commercial service airports.

Annual Budget Needed to Achieve Area-Weighted PCI of 80

| All Airports | 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 |
| 2018 | | |
| \$58M | \$48.75M | \$9.25M |

*Commercial service airports were not included in the 1998 APMS implementation.

HISTORIC AND ANTICIPATED PCIs BY ANALYSIS SCENARIO

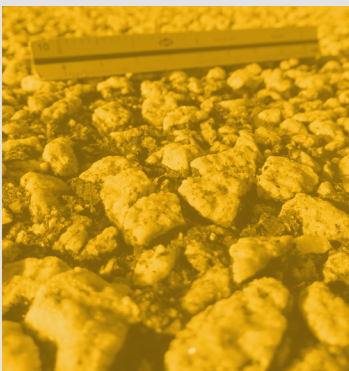


Unlimited Funding
Annual Budget:
\$91.1M

Funding to
Achieve PCI of 80:
\$58M

No Funding:
\$0

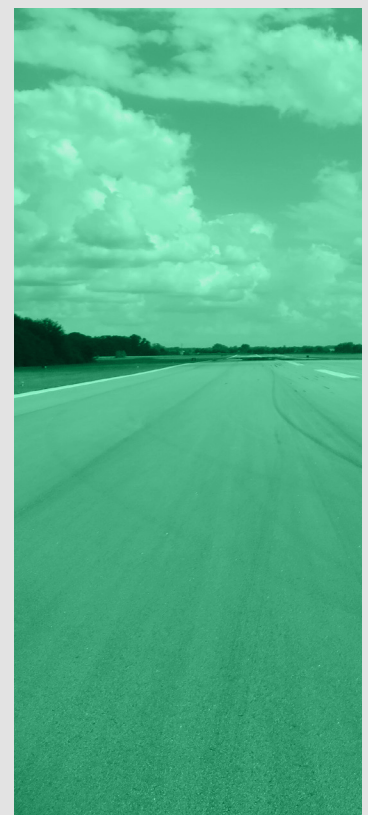
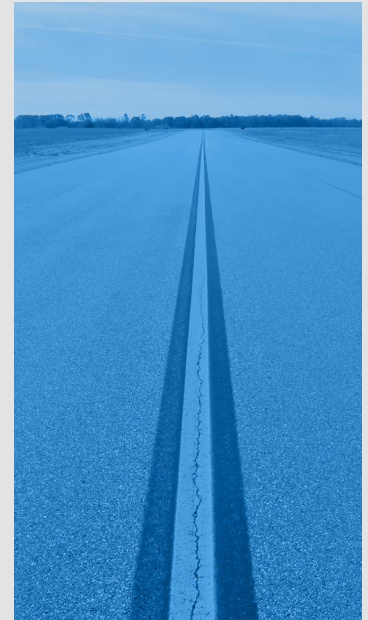
5-Year Pavement Funding Needs



| Associated City | Airport Name | 2018 Area-Weighted PCI | 5-Year Total Funding Needs |
|----------------------------------|--|------------------------|----------------------------|
| General Aviation Airports | | | |
| Adel | Cook County Airport | 80 | \$1,498,000 |
| Alma | Bacon County Airport | 94 | \$130,000 |
| Americus | Jimmy Carter Regional Airport | 69 | \$2,938,000 |
| Ashburn | Turner County Airport | 90 | \$305,000 |
| Atlanta CCO | Newnan-Coweta County Airport | 71 | \$5,255,000 |
| Atlanta CVC | Covington Municipal Airport | 90 | \$706,000 |
| Atlanta FFC | Atlanta Regional Airport-Falcon Field | 67 | \$5,905,000 |
| Atlanta FTY | Fulton County Airport-Brown Field | 65 | \$9,351,000 |
| Atlanta PDK | DeKalb-Peachtree Airport | 64 | \$18,866,000 |
| Atlanta PUJ | Paulding Northwest Atlanta Airport | 97 | \$81,000 |
| Atlanta RYY | Cobb County International Airport-McCollum Field | 82 | \$4,652,000 |
| Augusta DNL | Daniel Field | 65 | \$6,804,000 |
| Bainbridge | Decatur County Industrial Air Park | 56 | \$34,239,000 |
| Baxley | Baxley Municipal Airport | 63 | \$1,602,000 |
| Blairsville | Blairsville Airport | 77 | \$1,117,000 |
| Blakely | Early County Airport | 72 | \$1,899,000 |
| Brunswick SSI | McKinnon-St. Simons Island Airport | 77 | \$3,131,000 |
| Buena Vista | Marion County Airport | 100 | \$0 |
| Butler | Butler Municipal Airport | 64 | \$2,261,000 |
| Cairo | Cairo-Grady County Airport | 75 | \$982,000 |
| Calhoun | Tom B. David Field | 71 | \$1,982,000 |
| Camilla | Camilla-Mitchell County Airport | 78 | \$1,490,000 |
| Canon | Franklin County Airport | 70 | \$779,000 |
| Canton | Cherokee County Airport | 79 | \$1,121,000 |
| Carrollton | West Georgia Regional Airport-O.V. Gray Field | 68 | \$2,867,000 |
| Cartersville | Cartersville Airport | 62 | \$4,853,000 |
| Cedartown | Polk County Airport-Cornelius Moore Field | 68 | \$1,102,000 |
| Claxton | Claxton-Evans County Airport | 46 | \$3,097,000 |
| Cochran | Cochran Airport | 73 | \$1,211,000 |
| Cordele | Crisp County-Cordele Airport | 65 | \$4,476,000 |
| Cornelia | Habersham County Airport | 79 | \$1,715,000 |
| Cuthbert | Lower Chattahoochee Regional Airport | 58 | \$934,000 |
| Dahlonega | Lumpkin County-Wimpy's Airport | 92 | \$43,000 |
| Dalton | Dalton Municipal Airport | 69 | \$3,192,000 |
| Dawson | Dawson Municipal Airport | 68 | \$1,472,000 |
| Donalsonville | Donalsonville Municipal Airport | 68 | \$2,166,000 |
| Douglas | Douglas Municipal Airport | 73 | \$2,650,000 |
| Dublin | W.H. "Bud" Barron Airport | 71 | \$3,699,000 |
| Eastman | Heart of Georgia Regional Airport | 70 | \$3,050,000 |
| Elberton | Elbert County Airport-Patz Field | 70 | \$988,000 |
| Ellijay | Gilmer County Airport | 73 | \$660,000 |
| Fitzgerald | Fitzgerald Municipal Airport | 76 | \$1,987,000 |
| Folkston | Davis Field | 50 | \$815,000 |
| Gainesville | Lee Gilmer Memorial Airport | 62 | \$5,824,000 |
| Greensboro | Greene County Regional Airport | 92 | \$259,000 |
| Griffin | Griffin-Spalding County Airport | 60 | \$4,776,000 |
| Hampton | Henry County Airport | 70 | \$3,490,000 |
| Hawkinsville | Hawkinsville-Pulaski County Airport | 47 | \$1,428,000 |
| Hazlehurst | Hazlehurst Airport | 77 | \$1,759,000 |
| Hinesville | MidCoast Regional Airport/Wright Army Airfield | 90 | \$372,000 |
| Homerville | Homerville Airport | 61 | \$2,264,000 |
| Jasper | Pickens County Airport | 69 | \$1,586,000 |
| Jefferson | Jackson County Airport | 67 | \$2,614,000 |

| Associated City | Airport Name | 2018 Area-Weighted PCI | 5-Year Total Funding Needs |
|--|---|------------------------|----------------------------|
| Jekyll Island | Jekyll Island Airport | 66 | \$1,354,000 |
| Jesup | Jesup-Wayne County Airport | 76 | \$1,618,000 |
| LaFayette | Barwick LaFayette Airport | 55 | \$2,876,000 |
| LaGrange | LaGrange-Callaway Airport | 65 | \$8,039,000 |
| Lawrenceville | Gwinnett County Airport-Briscoe Field | 49 | \$20,283,000 |
| Louisville | Louisville Municipal Airport | 62 | \$1,765,000 |
| Macon MAC | Macon Downtown Airport | 54 | \$5,461,000 |
| Madison | Madison Municipal Airport | 63 | \$1,777,000 |
| McRae | Telfair-Wheeler Airport | 70 | \$815,000 |
| Metter | Metter Municipal Airport | 71 | \$1,267,000 |
| Milledgeville | Baldwin County Airport | 56 | \$4,901,000 |
| Millen | Millen Airport | 70 | \$1,263,000 |
| Monroe | Monroe-Walton County Airport | 72 | \$1,894,000 |
| Montezuma | Dr. C. P. Savage Sr. Airport | 73 | \$1,048,000 |
| Moultrie MGR | Moultrie Municipal Airport | 75 | \$3,170,000 |
| Moultrie MUL | Spence Airport | 27 | \$20,510,000 |
| Nahunta | Brantley County Airport | 83 | \$251,000 |
| Nashville | Berrien County Airport | 65 | \$1,866,000 |
| Perry | Perry-Houston County Airport | 73 | \$2,654,000 |
| Pine Mountain | Harris County Airport | 78 | \$637,000 |
| Quitman | Quitman-Brooks County Airport | 82 | \$563,000 |
| Reidsville | Swinton Smith Field At Reidsville Municipal Airport | 90 | \$184,000 |
| Rome | Richard B. Russell Regional Airport-J.H. Towers Field | 75 | \$5,111,000 |
| Sandersville | Kaolin Field | 65 | \$2,922,000 |
| Soperton | Treutlen County Airport | 75 | \$411,000 |
| Statesboro | Statesboro-Bulloch County Airport | 71 | \$5,509,000 |
| Swainsboro | East Georgia Regional Airport | 69 | \$2,463,000 |
| Sylvania | Plantation Airpark | 57 | \$5,015,000 |
| Sylvester | Sylvester Airport | 78 | \$575,000 |
| Thomaston | Thomaston-Upson County Airport | 68 | \$4,298,000 |
| Thomasville | Thomasville Regional Airport | 53 | \$21,258,000 |
| Thomson | Thomson-McDuffie Regional Airport | 68 | \$1,963,000 |
| Tifton | Henry Tiff Myers Airport | 63 | \$5,868,000 |
| Toccoa | Toccoa Airport-RG LeTourneau Field | 73 | \$2,371,000 |
| Vidalia | Vidalia Regional Airport | 62 | \$21,973,000 |
| Warm Springs | Roosevelt Memorial Airport | 76 | \$737,000 |
| Washington | Washington-Wilkes County Airport | 75 | \$1,347,000 |
| Waycross | Waycross-Ware County Airport | 71 | \$4,670,000 |
| Waynesboro | Burke County Airport | 87 | \$40,000 |
| Winder | Barrow County Airport | 64 | \$9,845,000 |
| Wrens | Wrens Memorial Airport | 30 | \$1,159,000 |
| General Aviation Airports Total | | | \$354,174,000 |

| Commercial Service Airports | | | |
|--|--|----|----------------------|
| Albany | Southwest Georgia Regional Airport | 75 | \$13,964,000 |
| Athens | Athens/Ben Epps Airport | 70 | \$7,724,000 |
| Augusta AGS | Augusta Regional Airport At Bush Field | 79 | \$15,812,000 |
| Brunswick BQK | Brunswick-Golden Isles Airport | 93 | \$3,042,000 |
| Columbus | Columbus Airport | 76 | \$9,834,000 |
| Macon MCN | Middle Georgia Regional Airport | 70 | \$23,680,000 |
| Savannah | Savannah-Hilton Head International Airport | 83 | \$15,941,000 |
| Valdosta | Valdosta Regional Airport | 72 | \$11,203,000 |
| Commercial Service Airports Total | | | \$101,200,000 |





Preserving Georgia's Critical Airport Pavement Infrastructure

FOR MORE INFORMATION, PLEASE CONTACT

Georgia Department of
Transportation Aviation Programs
600 West Peachtree Street NW
Atlanta, Georgia 30308
(404) 631-1990
dot.ga.gov/aviation

THIS DOCUMENT WAS PREPARED BY

Applied Pavement Technology, Inc.
115 West Main Street, Suite 400
Urbana, Illinois 61801
(217) 398-3977
www.appliedpavement.com

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