



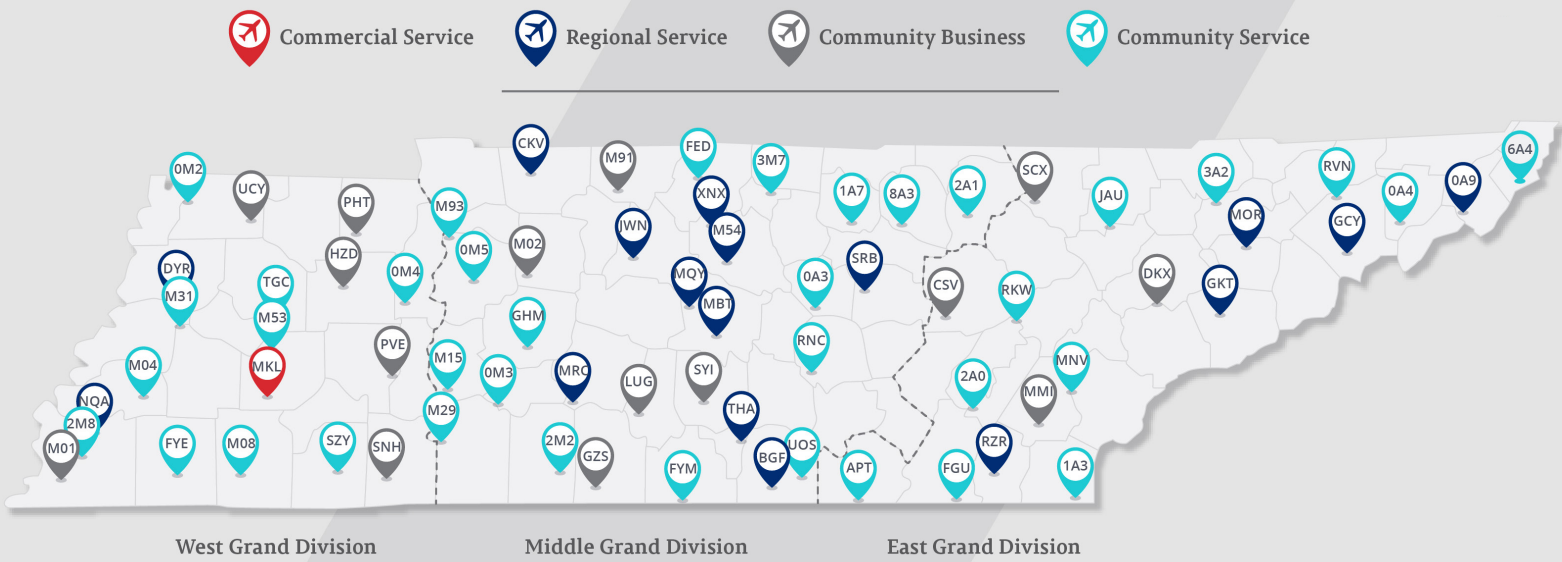
# 2022-2023 Tennessee Airport Pavement Management Program Update

## Project Overview

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

Recognizing a need to protect this critical capital investment and to maintain safe operational conditions at the airports, the Tennessee Department of Transportation (TDOT) Aeronautics

monitor pavement condition as well as the tools needed to make cost-effective decisions about the maintenance and rehabilitation (M&R) of the pavement infrastructure while understanding the long-term impacts of the decisions made. The APMP also provides airport sponsors with the ability to fulfill most of the Public Law 103-305 and Grant Assurance 11 requirements for maintaining an effective pavement maintenance management system, which are required for airports that are part of the National Plan of Integrated Airport Systems (NPIAS).



Division maintains a statewide Airport Pavement Management Program (APMP) to monitor the condition of the pavement system and to proactively plan for its cost-effective preservation. The 2022-2023 APMP Update is evidence of the Aeronautics Division’s commitment to maintaining its airport infrastructure, which coincides with the priorities of the Federal Aviation Administration (FAA) for continued maintenance of existing pavement.

Tennessee’s APMP yields many benefits. It provides easy access to information needed to

The project included the evaluation of seventy paved airports in Tennessee, one of which is privately owned-public use and not eligible for state funding (Johnson City Airport, 0A4). It did not include Lovell Field (CHA), McGhee Tyson (TYS), Memphis International (MEM), Nashville International (BNA), or Tri-Cities (TRI) Airports because they have their own APMPs. The map above shows the project airports, broken out by the Tennessee Airport System Plan (TASP) role.

The condition of pavements was assessed using the Pavement Condition Index (PCI) methodology,

as documented in FAA Advisory Circular 150/5380-6C, Guidelines and Procedures for Maintenance of Airport Pavements and ASTM D5340-20, Standard Test Method for Airport Pavement Condition Index Surveys. This procedure is the standard used by the aviation industry in the United States for visually assessing and monitoring the condition of airport pavements. 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 then used to develop a composite index that represents the overall condition of the pavement in numerical terms, ranging from 100 (no visible signs of deterioration) to 0 (failed).

Using the PCI results as a starting point, pavement-related needs over a 5-year period were identified. Pavement M&R plans to address those needs were developed using different funding scenarios and pavement condition goals.

## Deliverables

The deliverables include this APMP Primer, an Executive Summary Report, a Statewide APMP Report, individual APMP reports for each of the seventy airports, and an interactive web-based pavement data visualization tool.

The results of this project can be accessed through TDOT's website:

<https://www.tn.gov/tdot/aeronautics/engineering-documents--forms.html>

## Key Findings

- ◆ The pavement area at the seventy airports is 78.7 million square feet and the **area-weighted age at the time of last inspection in 2022 is 21 years**. The overall age of the system indicates that many of the pavements may be nearing the end of their design lives.
- ◆ The 2022 pavement condition of the project airports is an **area-weighted PCI of 73**, which is comparable to the PCI of 73 in 2019. This is evidence that the investments in pavement preservation, rehabilitation, and reconstruction projects are successful at maintaining the system average.
- ◆ Based on the PCI, it is estimated that the most cost-effective treatment for 44 percent of the

pavement area is rehabilitation or reconstruction, and the remaining 56 percent of the pavement area is in a condition range where maintenance (such as crack sealing and surface treatments) would be beneficial and delay the need for a rehabilitation or reconstruction project.

- ◆ If no funding for pavement M&R is expended on the project airports over the next 5 years, the overall area-weighted PCI is estimated to drop to 65 by 2027. This lack of investment in the pavement infrastructure would result in an increased need for pavement rehabilitation and reconstruction, which in turn would substantially increase the costs to keep the pavement system in safe and serviceable condition.
- ◆ If enough funding is provided to complete all identified M&R projects during the next 5 years at the project airports, it is estimated that **a total of \$403.8 million (or an average of \$80.8 million annually if distributed evenly over the 5 years) will be needed**. This can be further broken down into \$367.8 million for pavement rehabilitation and reconstruction projects and \$36.0 million for surface treatments and localized preventive maintenance. Under this scenario, **the overall area-weighted PCI would increase to 83 by 2027**.
- ◆ **To maintain the current overall area-weighted PCI of 73**, the budget needed for pavement rehabilitation and reconstruction projects will be approximately \$30.5 million.
- ◆ To achieve a goal of an overall area-weighted PCI of 75 the annual budget needed for pavement rehabilitation and rehabilitation projects will be **approximately \$41.4 million**.
- ◆ If only the runway pavements are considered, approximately \$14.7 million will be needed annually for pavement rehabilitation and reconstruction projects to achieve an area-weighted PCI of 78.



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