

**MONORAIL ASSESSMENT REPORT
FOR THE
I-24 SOUTHEAST CORRIDOR**

EXECUTIVE SUMMARY

Prepared for:



Tennessee Department of Transportation

Prepared by:

ATKINS

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INTRODUCTION AND PURPOSE

This executive summary provides the results of a technology assessment of monorail systems, and explores the feasibility of a monorail system operating in the 33.7-mile long Interstate 24 (I-24) Southeast Corridor Regional Rapid/Urban Rail Transit Corridor (Southeast Corridor), as identified by the Nashville Area Metropolitan Planning Organization (MPO). The MPO's 2035 Regional Transportation Plan, adopted in December 2010, recommended rapid transit but did not identify a specific technology for the Southeast Corridor. This report was prepared as directed under Public Chapter 1009 (2014) and its language is provided as follows.

SECTION 1. The department of transportation is directed to conduct a preliminary study to determine the feasibility of a monorail public transportation system along the Nashville Southeast Corridor that connects downtown Murfreesboro to downtown Nashville along Interstate 24. The study shall identify all public and private funding sources, including amounts, that can reasonably be anticipated and estimated costs and revenues. The department shall report its findings and any recommendations resulting from the study to the transportation and safety committee of the senate and the transportation committee of the house of representatives on or before February 1, 2015.

SECTION 2. This act shall take effect upon becoming a law, the public welfare requiring it.

The intent of this monorail assessment is to assist the Tennessee Department of Transportation (TDOT) in answering the question of whether it is feasible to construct, operate, maintain, and finance a monorail system in the Southeast Corridor. It is important to note that this report is not an assessment of all possible public transit technologies nor does it provide an overview and comparison of premium transit technologies based on vehicle types, performance, stations, alignments, amenities and costs. It is not a sufficient document for the implementation of a monorail system, but it does provide an analysis of the conceptual feasibility of a monorail technology as a premium guideway transit service.

FINDINGS AND RECOMMENDATIONS

Based on the analyses conducted in this assessment, the following findings are offered:

- The estimated project cost to develop a monorail transit facility in the Southwest Corridor along the alignment described is approximately \$1.63 billion in 2014 dollars and \$2.06 billion in year of expenditure dollars for a 2020 revenue service opening date.
- In the Southwest Corridor, along the I-24 segment, there is the opportunity to build a premium transit line in public right-of-way in a near at-grade configuration with cuts and fills

along the transit guideway profile, significantly reducing guideway costs. Constructing the I-24 segment of this alignment in a totally elevated configuration would add over \$550 million in 2014 and \$700 million to the project cost in 2020.

- The estimated annual operating cost for the monorail service, for the service assumptions listed in the assessment report, in 2014 dollars, is approximately \$17.22 million. It is noted in the assessment report that the operational component of the annual operations and maintenance cost is a function of the proposed service plan for monorail operations in terms of the hours of operation, the service frequencies during the day, and the vehicle requirements based on the scheduled operating speed and passenger load.
- While Tennessee has relied on traditional transportation revenue sources in the past, new revenue sources and more innovative transportation financing strategies may be required to expand Tennessee's transit infrastructure. This assessment identified a number of transportation financing mechanism strategies such as (1) traditional tax- and fee-based funding sources; (2) common business, activity, and related funding sources; (3) revenue streams from projects; (4) new "user" or "market-based" funding sources; (5) financing mechanisms; and (6) fare policies and strategies that could be implemented to help the State as well as regional and local governmental entities realize their transit goals.
- Although there is uncertainty about the reliability of the monorail technologies still under development, the existing systems have demonstrated a sufficient record of reliability and effectiveness. Because of this, monorail technologies may be considered as a technology alternative for new transit alignments in the Southeast Corridor.
- Ridership for the year 2040 in this hypothetical corridor as initially estimated by the MPO for a light rail transit option, with similar service characteristics to monorail, was 7,100 daily boardings, and 9,400 daily boardings with more transit supportive land uses around station areas. Desirably, ridership estimates should be much higher to support the more expensive transit technologies under consideration, including monorail. It is noted in the assessment report that the total forecast transit ridership in the corridor is approximately 16,000 daily boardings when the other proposed transit service components are considered. The MPO considers this value an upper end potential volume for the corridor, on the basis that the ridership for the other corridor services would be absorbed into the rapid transit option.

Development of a monorail transit facility in the Southwest Corridor along the alignment identified is generally feasible, although there are a great many design details that could not be addressed in this assessment. Moreover, an objective assessment of project impacts would also need to be conducted to determine if this particular concept causes any significant impacts that cannot be reasonably mitigated.