Tri-Rail Double-track Corridor Improvement Before-and-After Study (2011)

Miami, Florida

U.S. Department of Transportation

Federal Transit Administration

Learn more:
www.transit.dot.gov/before-and-after-studies

Double-Track Corridor Improvement Program, Segment 5 – Southeast Florida

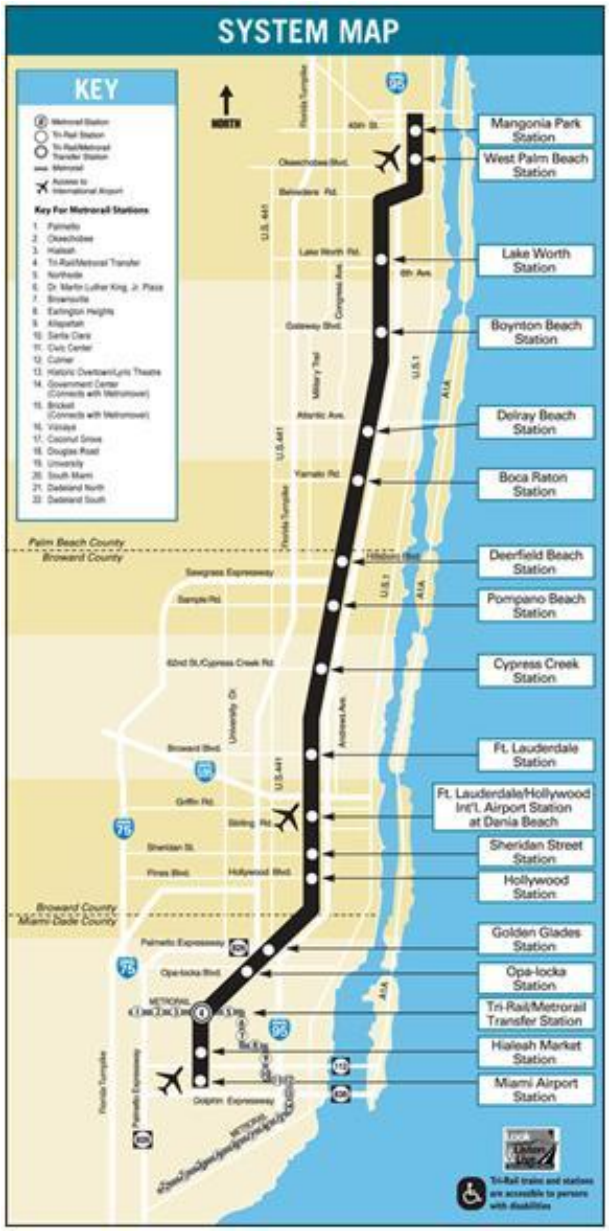

Figure 3. Tri-Rail

Tri-Rail is a 72-mile commuter rail line with 18 stations extending south from Palm Beach County parallel to Interstate-95, through Fort Lauderdale, to its southern terminus at Miami International Airport Station in Miami-Dade County. Figure 3 is a map of the Tri-Rail corridor.

Planning for the system began in 1983 and building the organization began in 1986. The current system was formed by the Florida Department of Transportation and began operation in 1989, originally to provide temporary commuter rail service while construction crews widened Interstate 95 and the parallel Florida's Turnpike.

The principal element of the Segment 5 project was the installation of 43.6 miles of second mainline track to address three specific transportation needs: improve regional intermodal connections, increase the effectiveness of public transportation and improve the safe and efficient movement of commuter, freight and passenger trains in the South Florida corridor.

The Segment 5 project also included improvements to the signal system and upgrades of 70 grade crossings, 24 new or upgraded bridges, one new station plus improvements to 10 existing stations, 336 new parking spaces at four stations (bringing total parking to 5,500 paces), the acquisition of two cab coaches and five refurbished diesel locomotives, and renovation of the maintenance/layover facility in West Palm Beach. Tri-Rail's fleet of 26 passenger rail cars and six diesel multiple units remained unchanged.

Tri-Rail was developed and built, and is now operated, by the South Florida Regional Transportation Authority (SFRTA), formerly known as Tri-County Commuter Rail Authority.

The "before" conditions for the Segment 5 Before-and-After Study are from spring 2005 (one year before opening) while the "after" conditions are from spring 2008 (two years after opening). It should be noted that the Tri-Rail project signed its original Full Funding Grant Agreement (FFGA) in May 2000, before FTA required Before-and-After Studies. As FTA introduced the Before-and-After Study requirements in 2001, the requirement was added as a term of SFRTA's amended FFGA in April 2004. Consequently, the Tri-Rail project plans did not include many of the requisite forecasts. The information presented below demonstrates the most complete information available.

Project Scope: The anticipated scope of the Segment 5 project at the time of the amended FFGA was consistent with the as-built project. However, a number of scope changes were implemented to reduce project costs to be consistent with the original estimates. These scope changes helped Tri-Rail control the total capital cost of the Segment 5 project in the amended FFGA.

Capital Cost: The actual capital cost of Double-Track Corridor Improvement Program, Segment 5 was $345.6 million in year-of-expenditure (YOE) dollars. The predicted cost was $327.0 million in YOE dollars, 5.4 percent lower than actual cost. The predicted cost in the original FFGA amended FFGA was $333.9 million in YOE dollars, 3.4 percent lower than the actual cost.

Table 5
Double-Track Corridor Improvement Program, Segment 5 – Southeast Florida
Capital Costs at Project Milestones

Milestone	As-Built	Entry to PE	Entry to FD	FFGA	Amended FFGA
Year of actual/forecast costs	2007	1999	1999	1999	2004
Costs in Year-of-Expenditure Dollars (millions)					
Planned/actual opening date	Spring 2006	Spring 2005	Spring 2005	Spring 2005	Spring 2006
Total ($ year of expenditure)	$345.6	$327.0	$327.0	$327.0	$333.9
Difference from actual	$ -	$ (18.6)	$ (18.6)	$ (18.6)	$ (11.7)
Difference from actual (%)	0%	-5.4%	-5.4%	-5.4%	-3.4%

The small difference in total project cost between the FFGA and the amended FFGA is attributable to scope changes that were made to maintain a relatively constant bottom line. The accuracy of the predictions were influenced by SFRTA's previous commuter rail construction experience, the ongoing construction of segments one through four of the Double-Track Corridor Improvement Program, and (for the amended FFGA) the post-FFGA work associated with Segment 5 construction.

Transit Service Levels: As the full double-tracking project reached completion, Tri-Rail increased its scheduled weekly service by 60 percent – from 176 trains per week to 282 trains per week – with 100 of the additional trains provided on weekdays. Weekday service improved from 90-minute headways all day to 60 minute-headways all day except for one hour in the morning and evening peaks during which headways are 20 minutes each way. End-to-end running time is approximately the same as before the double-tracking project. Bus connections are available at most Tri-Rail stations, provided by both Tri-Rail and local transit agencies. Service on Tri-Rail shuttle routes increased substantially from an average of 10 buses per hour stopping at the 18 Tri-Rail stations in 2005 to 53 buses per hour in 2008. Service on

feeder routes provided by local transit agencies declined modestly from 140 buses per hour in 2005 to 125 buses per hour in 2008.

Because Tri-Rail did not prepare a forecast of opening-year conditions, comparisons of predicted and actual service levels rely on predictions of horizon-year conditions for 2015 and for 2020 in the amended FFGA. Both sets of predictions closely match the actual 2008 service levels. SFRTA did not provide documentation on bus services levels at Tri-Rail stations predicted at the various milestones. Therefore, no comparisons were possible between predicted and actual feeder-bus services.

Operating and Maintenance Cost: SFRTA's commuter rail annual operating and maintenance (O&M) costs increased from $31.0 million in 2005 ($29.6 million in 2004 dollars) before completion of the double-tracking project to $52.8 million in 2008 ($44.2 million in 2004 dollars) after the full expanded service was in place. The increase in O&M costs was due primarily to the increase in commuter rail service, but also attributable to increases in fuel prices, additional security, and dispatching and maintenance for the New River Bridge**.**

At the project-development milestones up to and including the FFGA, Tri-Rail predicted O&M costs for commuter rail service of $41.1 million in 2006 dollars ($37.4 million in 2004 dollars). Predicted costs increased moderately in the amended FFGA to $45.1 million in 2007 dollars ($39.4 million in 2004 dollars). In constant 2004 dollars, the FFGA prediction was 15 percent less than actual O&M costs in 2008, while the amended FFGA prediction was 11 percent less. The under-predictions were attributable to the unforeseen increases in fuel prices, security, dispatching, and maintenance, plus SFRTA's decision to provide two additional weekday trains beyond the 48 anticipated at the project-development milestones.

Ridership: Average weekday Tri-Rail boardings grew from 9,400 in 2005 to 14,700 in 2008, an increase of 5,300 per day (56 percent). This increase is attributable to the double-tracking project as well as the apparent sensitivity of Tri-Rail ridership to gasoline prices – perhaps a reflection of the relatively longer trips made on the 70-mile-long line. Tri-Rail averaged 12,900 and 12,200 boardings per weekday in 2009 and 2010 when gasoline prices were significantly lower than in 2008, and averaged 13,600 boardings in early 2011 as prices increased.

SFRTA prepared ridership forecasts of the Tri-Rail double-tracking project only for horizon years; no opening-year forecasts are available**.** As the Tri-Rail project signed its original Full Funding Grant Agreement (FFGA) in May 2000, before FTA introduced the Before-and-After Study requirements in 2001, the requirement was added as a term of SFRTA's amended FFGA in April 2004. Consequently, the Tri-Rail project plans did not include many of the requisite forecasts. The forecast provided to FTA at entry into Preliminary Engineering (PE) in 1999, and used by FTA for approval of the project into PE, into Final Design (FD), and for the FFGA, was 42,100 average weekday boardings in 2015. A subsequent forecast used to estimate fare revenues for the revised financial plan for the amended FFGA in 2004 was 22,200 average weekday boardings in 2020. Initial ridership outcomes indicate that the ridership forecast of 42,100 weekday boardings in 2015 was an overestimate and will not be realized. The ability to determine why is limited because background documentation is not available. However, the less-than-anticipated growth in southeastern Florida population and employment offers a partial explanation.

Conclusion: The Tri-Rail project is an incremental improvement to an existing service. The project was built as effeciently as planned with marginal changes to help control costs. Cost increases over initial forecasts were largely the product of rapid general inflation in construction costs during the period of construction. While ridership increased by 56%, the forecasted ridership will not be realized partly due to less-than-anticipated growth in southeastern Florida population and employment.