SPRINTER Light Rail Project Before-and-After Study (2011)

Oceanside, California

U.S. Department of Transportation

Federal Transit Administration

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SPRINTER Light Rail – Oceanside, California

The North Coast Transit District's (NCTD) 22-mile, 15-station SPRINTER light-rail line connects the cities of Oceanside, Vista, San Marcos and Escondido via an alignment that parallels California State Route (SR) 78, the primary east-west corridor in northern San Diego County. Figure 2 is a map of the corridor and the project. Much of the alignment is a rehabilitated freight rail line that continues to serve freight traffic during overnight hours. Twelve of the stations have park-ride lots that provide a total of 1,755 spaces. The scope of the project also includes 12 diesel multiple unit (DMU) light-rail vehicles, a maintenance and storage facility for the rail vehicles, and centralized train control.

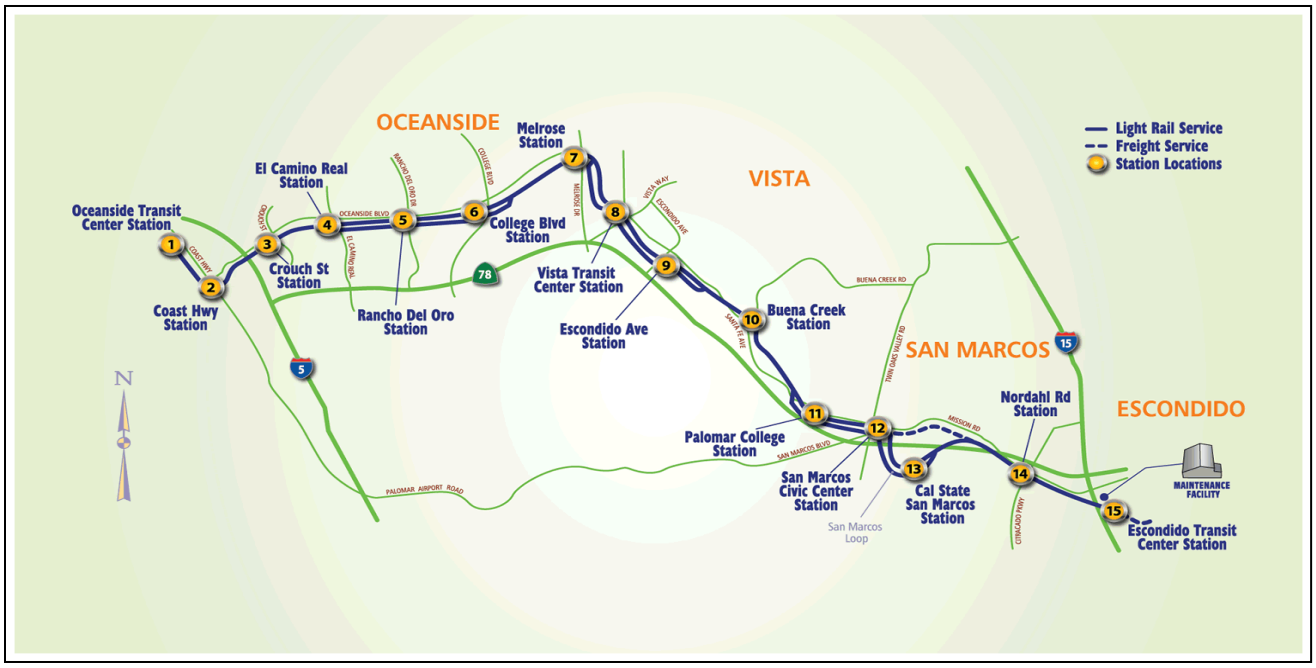

Figure 2
SPRINTER Light Rail and Surrounding Areas

Studies of passenger rail service in the SR 78 corridor began in 1978. During the 1980s, SPRINTER (known at the time as the Oceanside-Escondido Rail Project) was identified as part of a multimodal strategy to address traffic congestion and projected growth in population and employment in the SR 78 corridor. In 1987, San Diego County voters approved Proposition A, a half-cent sales tax dedicated to local transportation projects, including SPRINTER.

The "before" conditions for the Before-and-After Study are from 2003, while the "after" conditions are from 2010. The San Diego Association of Governments prepared the Before-and-After Study for the project.

Project Scope*:* Broadly, SPRINTER was built largely as conceptualized in the advanced planning: a DMU-based light rail service along the rehabilitated freight corridor**.**

Capital Cost: The actual capital cost of the Sprinter light rail project was $477.63 in year-of-expenditure (YOE) dollars over the period of construction. In YOE dollars, the cost predictions at each project development milestone (Completion of Advanced Planning, Entry into Final Design, Full Funding Grant Agreement (FFGA)) consistently underestimated the as-built costs, but by a smaller amount as project development proceeded. Table 3 summarizes the as-built capital cost and the predicted costs prepared for each project-development milestone.

Table 3
SPRINTER Light Rail – Oceanside, CA
Capital Costs at Project Milestones

Milestone	As-Built	Completion of Advanced Planning	Entry into Final Design	FFGA	Amended FFGA
Year of the actual/forecast	2008	1995	2000	2002	2006
Costs in Year-of-Expenditure Dollars (millions)					
Actual/planned opening date	Mar. 2008	2001	Aug. 2005	Dec. 2005	Jul. 2008
Total ($ year of expenditure)	$ 477.63	$ 213.70	$ 332.30	$ 351.52	$ 484.14
Difference from actual		$ (263.93)	$ (145.33)	$ (126.11)	$ 6.51
Difference from actual (%)		-55 %	-30 %	- 26 %	1 %

The differences between predicted and actual capital costs reflect several factors including: high construction bids due to an active market; construction delays resulting from right-of-way access restrictions unanticipated at FFGA execution; and design changes, related in part to the substitution of a longer DMU vehicle. The specific model of DMU vehicle around which the project was designed was no longer in production by the time of vehicle procurement. NCTD opted for a longer model that required design changes to stations and the maintenance facility.

Transit Service Levels: Two years after SPRINTER opened service hours were 4:00am to 9:30pm daily (17.5 hours), and headways were 30 minutes on weekdays and during daytime hours on weekends and 60 minutes during weekend morning and evening periods. The FFGA service plan anticipated 30-minute headways and 18 hours of service every day. The longer actual weekend headways resulted from lower-than-expected operating revenue. The slight reduction in the hours of daily service resulted from the need for time for transition activities such as raising and lowering boarding ramps and shuttling SPRINTER trains to and from the storage yard. The result was a full six-hour nightly window for freight operations.

NCTD implemented several bus service changes concurrent to SPRINTER's opening, including schedule changes to provide timed connections with trains and the reduction/elimination of service on six routes that duplicated rail service. Over the two years after opening, however, NCTD discontinued 11 of the 37 routes that served stations along the line due to reduced operating funding as a result of the economic downturn.

Operating and Maintenance Cost: During its first two full years of service, SPRINTER's operating and maintenance (O&M) costs were $15.7 million in fiscal year 2009 and $13.4 million in fiscal year 2010. The FFGA anticipated that the project would open in 2006, with O&M costs of $11.1 million ($11.8 million in 2009 dollars) during the first full year of service.

Actual O&M costs exceeded the FFGA projection by 33 percent in FY 2009 and by 14 percent in FY 2010. Areas of discrepancy between actual O & M costs and the FFGA projection were expenses for management salaries, fuel, supplies, communication and insurance and security service expenses which exceeded the FFGA projections and maintenance-of-way expenses which were lower than expected.

Ridership: In May 2008, two months after opening, SPRINTER averaged 6,600 weekday boardings. By FY 2010, the second full year of revenue service, ridership had grown by 15 percent to 7,600 weekday boardings. Table 4 summarizes the changes in NCTD service and ridership from before to after the opening of SPRINTER service. NCTD's combined bus and light rail ridership increased by 5 percent between FY 2007 and FY 2010 despite a 16 percent reduction in overall NCTD service.

Table 4
SPRINTER Light Rail – Oceanside, CA
Changes in Service Levels and Ridership

Characteristic	Weekday Vehicle-hours (annual thousands)				Average Weekday Boardings			
Milestone	Before (FY 2007)	After (FY 2010)	Change	% Chg.	Before (FY 2007)	After (FY 2010)	Change	% Chg.
NCTD Bus Routes	**498**	**396**	**-102**	**-20%**	**35,324**	**29,460**	**-5,864**	**-17%**
Parallel	132	42	-90	-68%	10,566	2,628	-7,938	-75%
Connecting	366	354	-12	-3%	24,758	26,832	2,074	8%
SPRINTER Light Rail	**---**	**22**	**22**	**---**	**---**	**7,569**	**7,569**	**---**
Bus and Light Rail Total	**497**	**418**	**-79**	**-16%**	**35,324**	**37,029**	**1,705**	**5%**

NCTD prepared several forecasts of project ridership during project planning and development. The forecast prepared at entry to preliminary engineering anticipated 15,100 average weekday trips in 2015. A second forecast prepared for the FFGA anticipated 11,955 average weekday trips in 2005, increasing to 19,000 by 2020. In 2006, SANDAG used an updated version of the travel model and updated employment estimates to produce an opening-year ridership forecast of 7,700 weekday trips -- much closer to the 6,600 actual trips that SPRINTER carried in 2008.

NCTD and SANDAG attribute the over-estimate of ridership during the first two years of SPRINTER service to weaknesses in the travel model and unanticipated consequences of the weak regional economy including: (a) delayed commercial and residential development in the corridor; (b) a drop in commuter travel and traffic congestion because of high unemployment; and (c) reductions in NCTD transit services because of lower operating revenues.

Conclusion: The SPRINTER project is unusual in that it serves no large employment concentration -- it is effectively a cross-town service far from the core of metro San Diego. As a consequence, ridership is low relative to other light rail projects receiving New Starts funding. The long period of project development contributed to substantial changes in constant-dollar costs that, combined with rapid inflation in construction costs during project construction, yielded actual YOE costs that doubled the cost forecasts developed during project planning. Inaccurate forecasts of costs and ridership have been a continuing problem for initial projects for individual project sponsors and for projects in atypical settings. The SPRINTER project is part of that tendency.