



TRANSPORTATION RESEARCH BOARD / NATIONAL RESEARCH COUNCIL

VOL. 15, No. 1 JUNE 2000 WASHINGTON, D.C.



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Transportation Research Board
National Research Council
2101 Constitution Avenue, NW
Washington, DC 20418

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Mark Your Calendar: November 11–15, 2000

Preliminary information available for the
Eighth Joint Conference on Light Rail Transit
<http://www.apta.com/meetings/lrail/index.htm>

LRT News is published intermittently by the Transportation Research Board to disseminate information on new developments in light rail transit planning, technology, and operations. The newsletter also reports on new studies, completed research, and current literature. The publication of *LRT News* is made possible through funding under the Technical Assistance Program of the Federal Transit Administration. Donald O. Eisele, editor. John W. Schumann, Chairman, TRB Committee on Light Rail Transit. Peter L. Shaw, TRB staff. Submit news items to *LRT News*, Transportation Research Board, 2101 Constitution Avenue, NW, Washington, DC 20418, telephone 202-334-2966. ISSN 0162-8429.

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NJ TRANSIT LAUNCHES HUDSON-BERGEN LIGHT RAIL SYSTEM

On Saturday, April 15, New Jersey Governor Christine Todd Whitman was joined by a host of federal, state, county, and local dignitaries, and transportation supporters for the kickoff of Hudson-Bergen light rail service in Bayonne and Jersey City. The project is a major component of the Governor's Transportation Vision for the 21st Century promoting increased mobility, new job opportunities, and economic growth in the most densely populated region in New Jersey.

Governor Whitman arrived for the ceremony at Liberty State Park Park/Ride onboard one of the sleek new light rail vehicles. She hailed the launch of the affordable and environ-



New Jersey Governor Christine Todd Whitman exits a Hudson-Bergen light rail car after arriving at Liberty State Park Park/Ride for opening day festivities. She is joined by NJ TRANSIT Board Chairman and New Jersey Transportation Commissioner James Weinstein (immediately behind Whitman) and NJ TRANSIT Executive Director Jeffrey A. Warsh (stepping off light rail car).

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mentally friendly light rail system and pointed to the economic boom and job creation taking place along the path of the light rail system in Bayonne and Jersey City.

The grand opening festivities included free inaugural day rides for visitors and celebrations at many of the stations along the light rail line, including live radio broadcasts, high school bands, musical and dance entertainment, rides, games, face painting, food and craft vendors, raffles, and other community-based activities.

The first segment of Hudson–Bergen light rail spans 7.5 miles and serves 12 stations: East 34th and 45th Streets in Bayonne; and Danforth Avenue, Richard Street, Liberty State Park, Jersey Avenue, Marin Boulevard, Essex Street, West Side Avenue, Martin Luther King Drive, Garfield Avenue, and Exchange Place in Jersey City.

Hudson–Bergen light rail uses a proof of payment (POP) fare-collection system, a popular method used by nearly a dozen other light rail systems across the United States and currently in use on NJ TRANSIT's Newark City Subway System. The POP



The inaugural Hudson–Bergen light rail car loading passengers at Liberty State Park Park/Ride Station in Jersey City before its trip to the East 34th Street station in Bayonne.

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system allows riders to quickly and easily board the cars and eliminates waiting lines and light rail car dwell times at stations.

The opening day segment of Hudson–Bergen light rail is part of a 9.5-mi initial operating segment that will eventually span as far north as NJ TRANSIT’s Hoboken terminal. The next phase of the project—operation between Exchange Place and Newport—is scheduled to open later this year. Phase three, operation between Newport and Hoboken, is scheduled to open early 2002.

NJ TRANSIT expects to begin construction soon on the next segment of Hudson–Bergen light rail, which will operate between the Hoboken terminal and Tonnelle Avenue in North Bergen. The system is designed to eventually span more than 20 miles between Bayonne and Ridgefield.

—Ken Miller, NJ TRANSIT

THE OTHER LIGHT RAIL LINE IN NEW JERSEY

The Newark City Subway, referred to by one newspaper reporter as “Newark’s best kept secret,” opened on May 26, 1935, and allowed cars on lines as far away as Caldwell, New Jersey, rapid access to the central business district. Following the route of the former Morris Canal, the 4.3-mi-long line is entirely on private right-of-way and uses a fleet of exquisitely maintained Presidents’ Conference cars. The line is being extended 1.2 miles and will soon be serviced by a fleet of new LRT cars almost identical to the vehicles now operating on the Hudson–Bergen light rail transit.

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SACRAMENTO LIGHT RAIL DOUBLES SIZE

In 2003 when Sacramento Regional Transit District (RT) in California celebrates the thirtieth anniversary of its 1973 activation and the sixteenth year of LRT service, two major extensions will be brought into revenue service. These additions will expand the original system from a two-corridor, 18.3-mi-long, 26-car system to a three-corridor, 34.8-mi-long system using at least 76 light rail vehicles (LRVs).



LRT continues to gain popularity in Sacramento, California.

Incremental Growth

Sacramento's light rail system has been growing. Between 1987 and 1997, ridership doubled from 13,000 per weekday to over 26,000. The LRV fleet increased to 36 cars, and much of the single-track line had a second main track added. Currently, with the system's first small extension in service, weekday ridership is topping 30,000.

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Completed and in-progress improvements represent a program of the incremental improvement and extension of the starter line to increase capacity and expand the LRT service area:

Year	Investment	Miles of Line	No. of Light Rail Vehicles
1987	Starter line completed and in service	18.3	26
1989	Increased peak carrying capacity	—	10
1990s	Increased double track from 40% to 70%	—	—
1998	Extended Folsom Line to Mather Field Road	2.3	—
2002	Extend Folsom Line to Downtown Folsom	7.2	16
2003	Complete South Line, Phase 1 to Meadowview Rd.	6.3	24
	Extend Downtown Line from K Street to Amtrak Sta.	0.7	—
Totals		34.8	76

New Extensions

Most new mileage will be located in existing or former railroad rights-of-way; for example, the Folsom extension will use the old Southern Pacific right-of-way purchased by the public several years ago. Separate tracks will be built for LRT and for the remaining sporadic local freight switching service. This track currently terminates east of Hazel Avenue and from that point the alignment is entirely devoid of track.

The South Line diverges from the existing Folsom Line at the west end of the Bee Bridge near 17th and R Streets. From that point, Phase 1 uses a portion of the Union Pacific's ex-Western Pacific line south to Meadowview Road, again with separate tracks for LRT and freight trains. The extension project, in addition to building LRT facilities, includes moving the freight track to provide required safety clearances between freight trains and LRVs.

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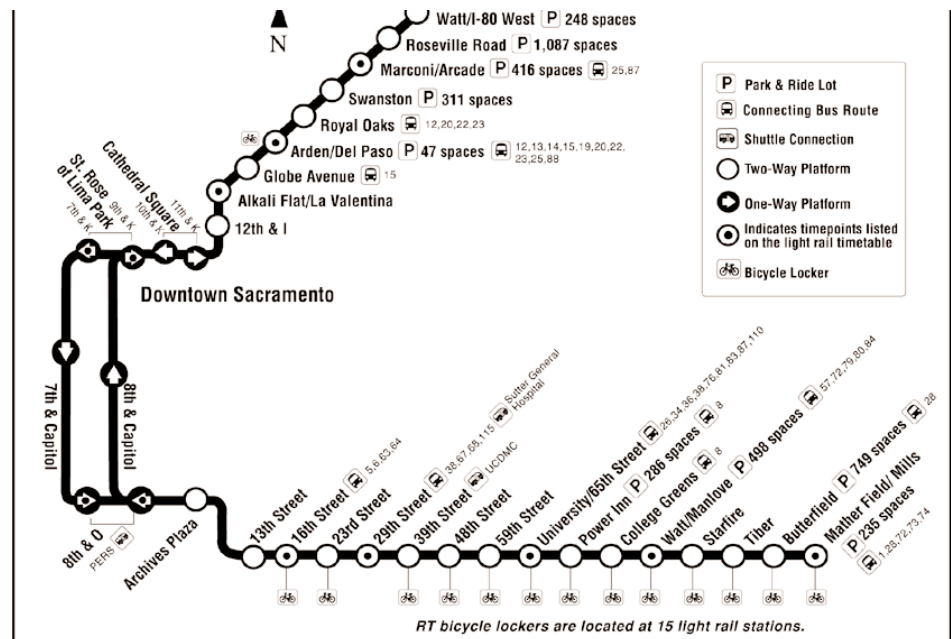
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The Amtrak station extension will provide direct connections at the former Southern Pacific depot between LRVs and Amtrak passenger trains. The east-west part of the LRT line will be placed on H Street, with connecting tracks north from K on Eighth and south from H on Seventh.

Operating Patterns, Present and Future

When all of these new line segments are completed, RT will initiate some major changes in the LRT operating pattern. Currently, trains serve a through-route from Watt/I-80 in the northeast, through Downtown Sacramento, and east to Mather Field Road. From 2003, Watt/I-80 trains will run south to Meadowview Road, and Folsom Line trains will run east from the Amtrak station to the city of Folsom. Most service will continue to run at 15-minute intervals on both lines, thus leading to an average 7.5-minute downtown headway between K Street and 16th Street. In the Folsom Corridor east of Sunrise Boulevard, 30-minute headways are being considered with a few a.m. and p.m. peak express trains supplementing the basic 15-minute service between Sunrise and K Streets.



Current LRT route map for Sacramento.

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Another Car Builder

RT advertised for its latest vehicle procurement in 1998. Four suppliers submitted bids; the lowest and winning offer was from the Spanish firm, CAF (Construcciones y Auxiliar de Ferrocarriles SA). Like RT's earlier Siemens cars, the new LRVs will be single-articulated, high-floor, step-entry cars about 80 feet long, with 4 double-width doors per side of each car. Access for people with disabilities will continue to be provided via the system's mini-high platforms (high blocks). The new cars, however, will be equipped with contemporary AC inverter drives.

Budget-Conscious Design and Operation

Sacramento's first light rail line was built within the constraints of a severely limited package: a federal Interstate Substitution grant plus matching state and local funds. The present extensions are similarly budget limited. Recognizing the continuing need to conserve capital, RT engineers still rely on the four key design principles listed in the original Design Criteria document:

- Use available rights-of-way,
- Limit the investment in facilities to essentials,
- Utilize to the extent possible proven "off-the-shelf" equipment, and
- Operate the system on an efficient, no frills basis.

By adhering to these principles, and by fully coordinating LRT and buses using timed transfer scheduling, RT is building a regional rail system forming the backbone of its entire transit system. This approach has proven attractive to riders. Total annual rail and bus ridership virtually doubled from 14 million in 1986-87, the last all-bus year, to nearly 27 million in 1996-97 (latest year available). Such growth is a significant achievement in a low-density, automobile-oriented urban area. The advent of LRT has made a principal contribution to building public acceptance of and financial support for transit in Sacramento.

—John Schumann, LTK Engineering Services

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PHOENIX VOTERS CHOOSE TO IMPROVE TRANSIT

On March 14, 2000, voters in Phoenix, Arizona, approved a .4 percent sales tax to be dedicated to transit improvements. Transit 2000, as the plan is referred to, includes an expansion of fixed-route and express bus service, dial-a-ride service, and funding for a light rail system. With the passage of Transit 2000, the local funding and public support are now in place for light rail construction to proceed.



The Transit 2000 map illustrates planned LRT construction.

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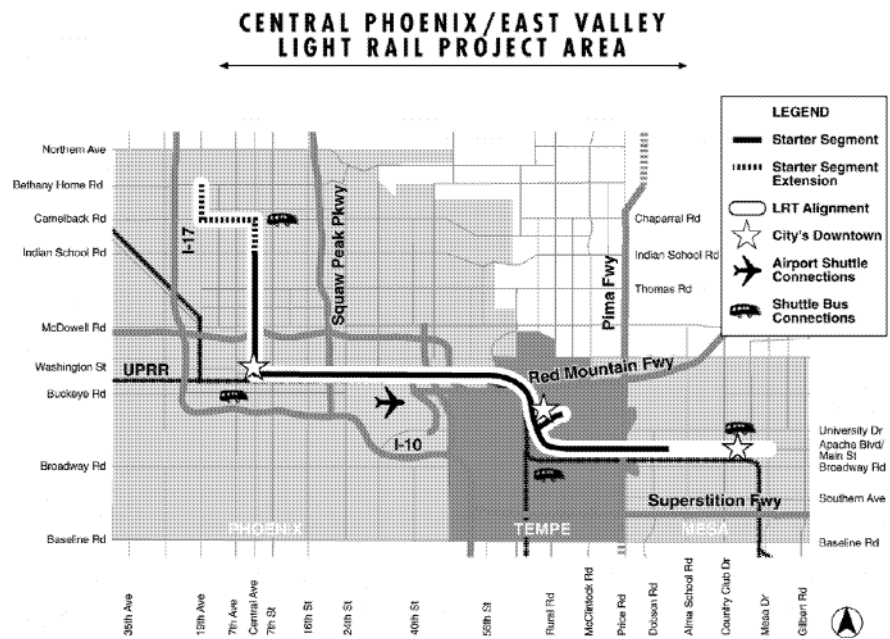
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The Transit 2000 light rail component calls for 24 miles of LRT to be constructed within the first 16 years of the plan. The timing of the 24 miles of LRT construction is as follows:

- By 2006—Sky Harbor Airport through downtown Phoenix to Chris-Town Mall,
- By 2010—Chris-Town Mall to Metrocenter, and
- By 2016—an additional 7 mile segment to be constructed in another corridor, depending on future travel demand.

Study efforts related to LRT are currently under way in Phoenix and the surrounding cities of Mesa and Tempe. An LRT corridor connecting the cities of Mesa, Phoenix, and Tempe has been identified as the primary LRT corridor for construction. This corridor has been included in the regionally adopted Long Range Transportation Plan.



The Central Phoenix/East Valley LRT Project is in the Preliminary Engineering/Environmental Impact Statement phase of the study.

Currently, this corridor, referred to as the Central Phoenix/East Valley (CP/EV) LRT Project, is in the Preliminary Engineering/Environmental Impact Statement (PE/EIS) phase of study. As part of this phase alignments, stations, and environmental impacts within the corridor are being identified. The con-

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ceptual engineering and draft environmental impact statement phase are nearing completion. The EIS is scheduled to be complete in the summer of 2001. Major milestones for the project include:

- Incorporating comments on the draft EIS and developing the final EIS,
- Developing guidelines for light rail station design,
- Completing the station area planning workshop series,
- Initiating an art-in-transit program,
- Determining operations and maintenance facility and vehicle type,
- Completing conceptual engineering plans,
- Creating alignment design and aesthetics, and
- Completing the Traffic Engineering Plan.

The current schedule for the CP/EV LRT project is as follows:

<u>Activity</u>	<u>Dates</u>
Completion of final design	Summer 2003
Construction	2003 to 2006
Start-up of revenue service	Late 2006

A series of public meetings in spring 2000 will focus on further discussions on the light rail study including station elements, traffic impact studies, the art-in-transit program, and plans for regional connectivity.

For further information on light rail transit in the Phoenix metropolitan area, contact Jyme Sue Olson of the Regional Public Transportation Authority (RPTA) at (602) 262-7584 or by e-mail at jolson@vm.maricopa.gov.

—*Jyme Sue Olsen, Regional Public Transportation Authority*

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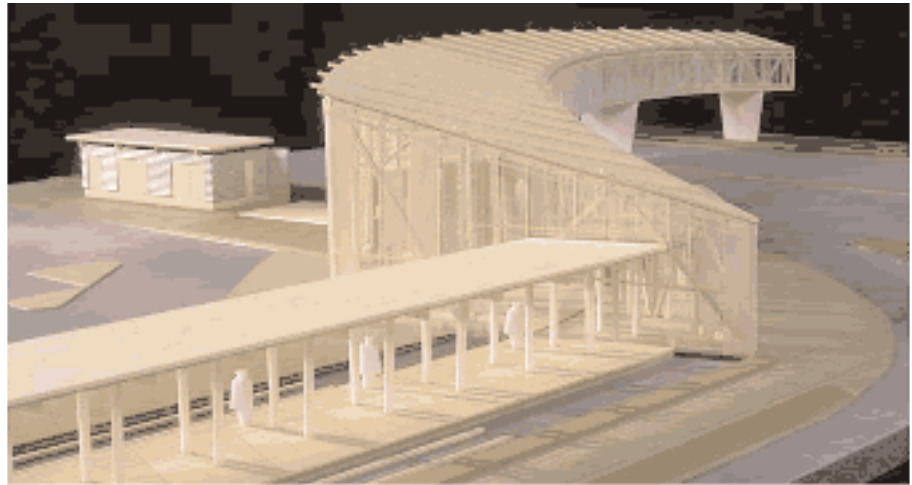
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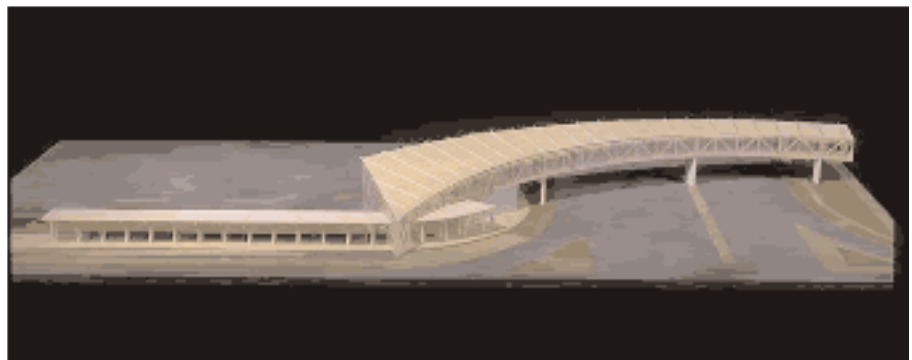


MALL OF AMERICA STATION PROCEEDS TO FINAL DESIGNS



The artist's rendition of the proposed station at the Mall of America suggests that it will be one of the more interesting LRT stations. The line will end at a simple, long station paired with a curving pedestrian bridge where a play of light and sound will greet passengers as they proceed 730 feet to the mall's entrance. At the end of the bridge, stairs and an elevator (escalators are still a possibility) will transport people the final 16 feet upward to the mall.

The Hiawatha LRT line (Minneapolis to Bloomington) got the "green light" from FTA on April 26, 2000, to start final design. Requests for design-build proposals were issued early in April to five prequalified contractors with a submittal deadline of June 10. Construction is expected to begin fall 2000 and to



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RTM, Inc./Finto Sweden's Graham Architects

end fall 2004. Revenue service from the Nicollet Mall to Fort Snelling is expected to begin summer 2003, followed by service from the airport to the Mall of America winter 2004.

—Jennifer Lovassen, Metropolitan Council

NORFOLK AND ORLANDO HEAT UP LRT PROJECTS

Hesitation on the part of some suburban districts to support the LRT projects planned for the Norfolk, Virginia, and Orlando, Florida, metropolitan areas caused both to be put on ice in the final weeks of 1999. Now both projects could be reheated sooner than predicted, but in scaled-down versions.

An 11.2-kilometer line that would be situated almost entirely within Norfolk is now being studied. The line is viewed as a starter segment, introducing the LRT mode to the region with intracity service. If a regional system develops, it would form a major component of that system.

Farther down the east coast, LYNX, the metropolitan Orlando transit agency, has commissioned a \$700,000 study to evaluate an LRT alignment in the northern corridor. The proposed line would extend from downtown Orlando to the southern part of Seminole County. The project that faltered last year proposed a primary line along the right-of-way of the former Atlantic Coast Line Railroad and a branch along Interstate Route 4. The new study will focus on a narrow zone along Interstate Route 4.

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<http://gulliver.trb.org/publications/nlv24no3.pdf> (Oct. 1998)

<http://gulliver.trb.org/publications/nlv24no2.pdf> (Sept. 1998)

Intercity Rail Passenger Systems Update

[http://gulliver.trb.org/publications/IRPS/
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