LRT *news*

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On the Internet!

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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. Jack W. Boorse, editor. Dr. Gregory L. Thompson, Chair, TRB Light Rail Transit Committee. Ms. Jennifer A. Rosales, TRB staff. Submit news items to LRT News, Mr. Jack W. Boorse, e-mail boorse@pbworld.com.

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FROM THE EDITOR:

THE CORNER—This One for the Streetcars

Basic electric railway technology is employed by a broad spectrum of rail modes. The scale ranges from High-Speed Rail (e.g. the London-Paris Eurostar trains) to the venerable streetcar. Between these bookends are commuter, or regional, rail systems characterized by New York's Long Island Rail Road and Chicago's Metra Electric; rapid transit systems such as Washington's Metro and Toronto's Subway; and light rail systems of various shapes and sizes.

However, the boundaries between the several modes are not always sharp. Some tend to look and perform like neighbors in the array. For example, on Chicago's "L", a heavy rail rapid transit system, there are locations where streets and sidewalks cross the tracks at grade as they do on numerous light rail lines, while the Green Line of the Los Angeles light rail system is entirely grade-separated from the street network. There are segments of the LRT systems in Sacramento and Salt Lake City where trains operate in the manner of streetcars, traveling along roadway lanes that are open to general traffic. In Philadelphia streetcars on lines that share lanes with general traffic on their outer ends dive into a 4-kilometer [2.5-mile] subway with eight underground stations to reach the city's core.

Streetcars are widely viewed as a version of LRT, rather than as a discrete mode, although that perception is still not universal. What does seem clear is that whichever way streetcars might be categorized, they are attracting new interest, often in connection with Transit Oriented Development (TOD) and we shall be tracking the status of existing, expanding and emerging systems.

Toward that end, the "corners" in selected issues of LRT News will present articles and reports on happenings related to the streetcar mode/version. It will occasionally include a Streetcar Project Progress Table, patterned after the traditional tables that document the status of LRT systems. The first of such appears in this issue.

Because of the aforementioned absence of crisp boundaries between modes and versions there will be some overlap of the two tables. For example, the Memphis system that was originally just a single short heritage streetcar line has been, and will continue to be, included in the LRT table because it is an electric railway system that now performs traditional transit functions.

For this initial round we are being a bit stingy in awarding the status of Advanced Conceptual Planning We want to be reasonably certain that we are tracking viable projects.

Comments to the editor are always welcome.

Jack W. Boorse, Editor
Principal Professional Associate
Parsons Brinckerhoff
Emeritus Member, TRB Committee AP075, Light Rail Transit

SAN FRANCISCO MUNICIPAL TRANSPORTATION AUTHORITY
THIRD STREET LIGHT RAIL PROJECT
PHASE 2 ENTERS FINAL DESIGN

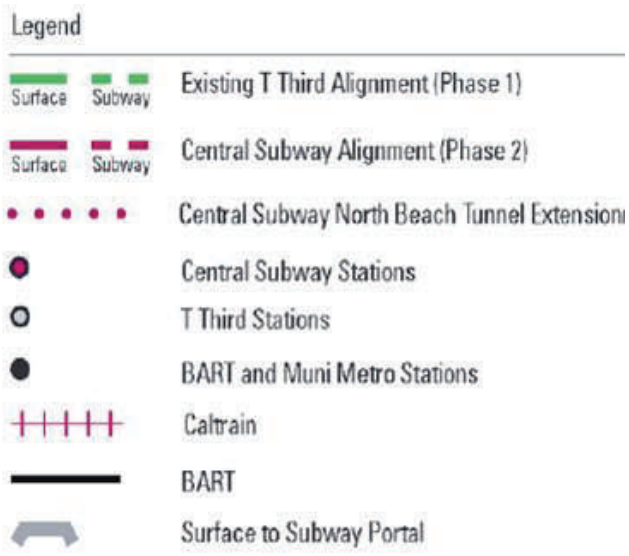
By Lewis Ames and Betty Chau, San Francisco Municipal Transportation Agency-Central Subway Project

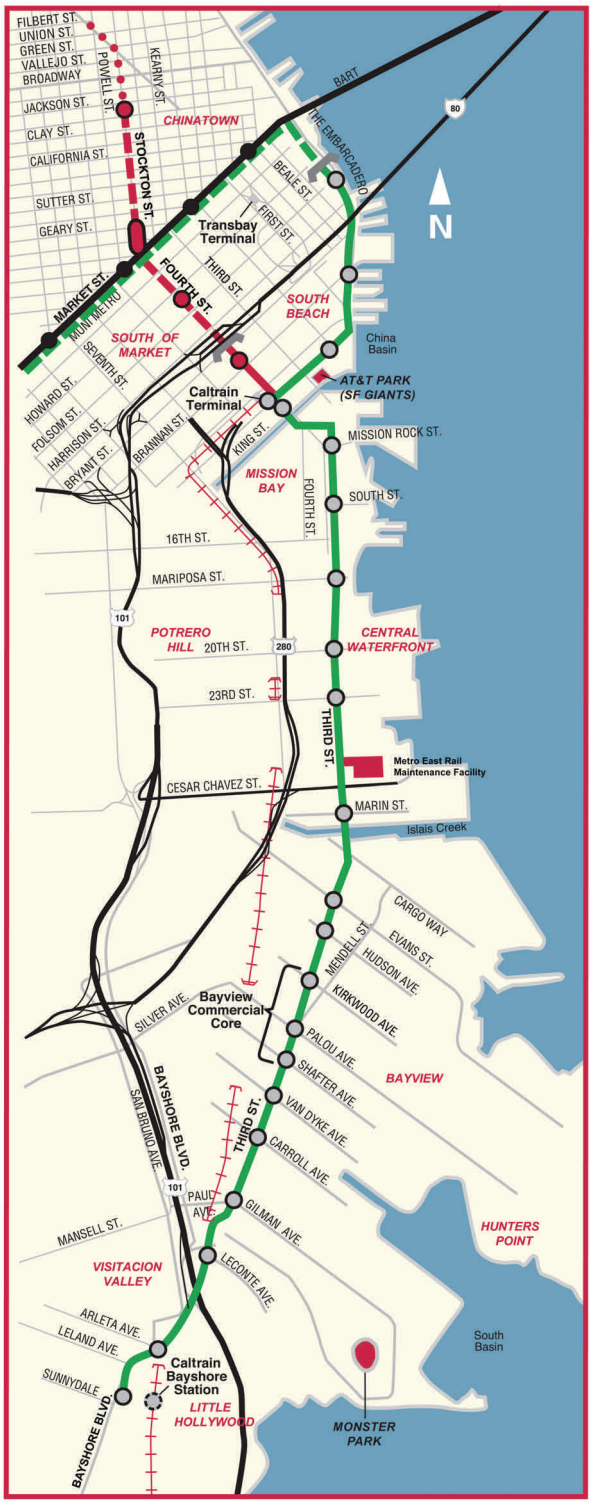
The Third Street Light Rail Project is the largest extension project in the San Francisco Municipal Transportation Authority's (SFMTA) recent history.

Transportation improvements for the Third Street corridor were identified in the 1993 Bayshore Transit Study. In 1995 it was prioritized as the highest-ranking project in the City in the San Francisco County Transportation Authority's Four Corridors Study. This study formalized the desirability of a light rail link between the Third Street and the Chinatown/North Beach Corridors.

The 6.8-mile [11-kilometer] project is bringing light rail service to the heavily transit-dependent Third Street corridor in eastern San Francisco, and will extend light rail service to Chinatown, one of the most densely populated areas in the country not currently served by modern rail transportation.

It will also serve a number of regional destinations, such as Union Square, Moscone Convention Center, Yerba Buena, SOMA (South of Market) and AT&T Park. It is intended to serve as a key infrastructure improvement to help support revitalization of communities along the corridor and to directly serve Mission Bay, San Francisco's largest redevelopment project, which covers 303 acres [123 hectares] of land between San Francisco Bay and Interstate-280. The T Third Line project is segmented into two phases.





Phase 1- T Third

Phase 1, now operating as the T Third Line, is 5.1 miles [8.2 km] of surface rail. Construction began in May 2002 and revenue service began April 2007.

The line extends light rail south from Fourth and King streets adjacent to the Caltrain regional rail terminal, crosses the Fourth Street Bridge and runs along Third Street and Bayshore Boulevard, ending at Bayshore and Sunnydale in Visitacion Valley.

This line was constructed in the center of the street, primarily in semi exclusive right of way, to improve safety and reliability. Eighteen stops have high level platforms with safety improvements at intersections. Fifteen LRVs were acquired as part of a larger order to serve Phase 1.

Phase 1 also includes the Muni Metro East (MME) Operating and Maintenance Facility that opened in September 2008 at about the mid-point of Phase 1 near Caesar Chavez Street on a 13 -acre [5.26-hectare] parcel that was part of the former Western Pacific Railroad yard site. This modern facility has storage and maintenance, for 80 Muni light rail vehicles with the shops of about 180,000 square feet [15,300 m2] sized to accommodate 100 LRVs.

Metro East Operating and Maintenance Facility

As San Francisco's second maintenance base, MME both serves the T Line and relieves overcrowding at Green Division, Muni's long standing light rail maintenance facility.

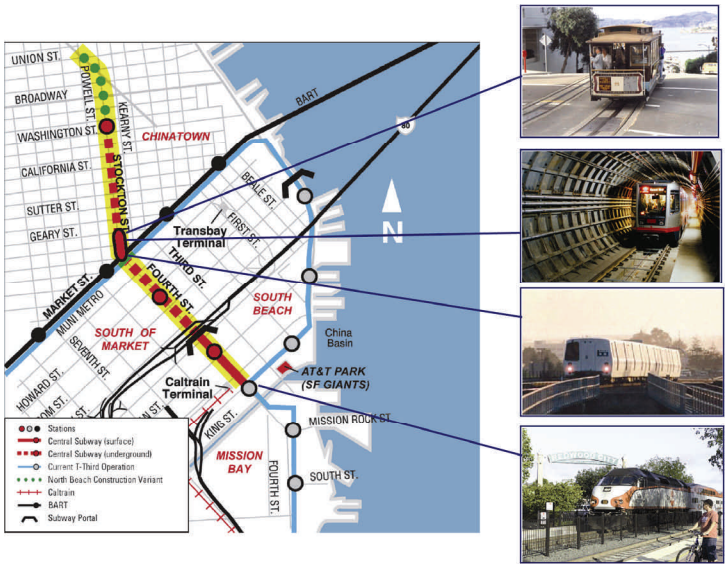
Phase 1 was funded through local sales tax as well as Federal Section 5309 Rail Modernization funds, Federal Surface Transportation Program funds, State Transportation Improvement Program funds, and California Traffic Congestion Relief Program funds.

Phase 2-Central Subway

Phase 2 will add 1.7 miles [2.7 km] of light rail track north from the northern end of the Phase 1 at Fourth and King streets, to a terminal at Stockton and Washington streets in Chinatown.

Phase 2 alignment, shown with connections to other transit services in the map below, will run along Fourth Street in the South of Market area and going north underneath Stockton Street to Jackson Street in Chinatown.

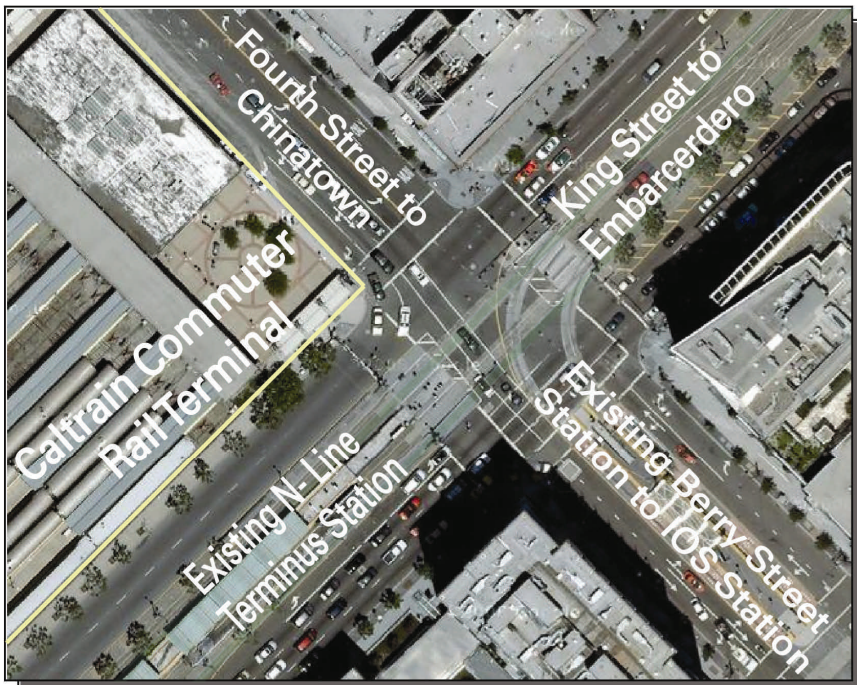
The line will be operating on Fourth Street surface level from King Street and will descend to a Portal underneath the I-80 Freeway between Bryant and Harrison streets. From there it will run north underground. It will include three sub-surface stations located



Phase 2 Connections to Other Transit Services

at Moscone Center, Market Street/Union Square and Chinatown and one surface station on Fourth Street between Bryant and Brannan Streets.

Phase 2 has two major intermodal connections: a) transfers with Caltrain at Fourth and King streets and b) transfers with Bay Area Rapid Transit (BART), the Muni Metro subway and F line streetcar, bus and trolley bus lines at Fourth and Market streets.



The Fourth and King Streets intersection is the junction of the T Third Line initial operation segment (IOS) and the Central Subway next to the Caltran terminus

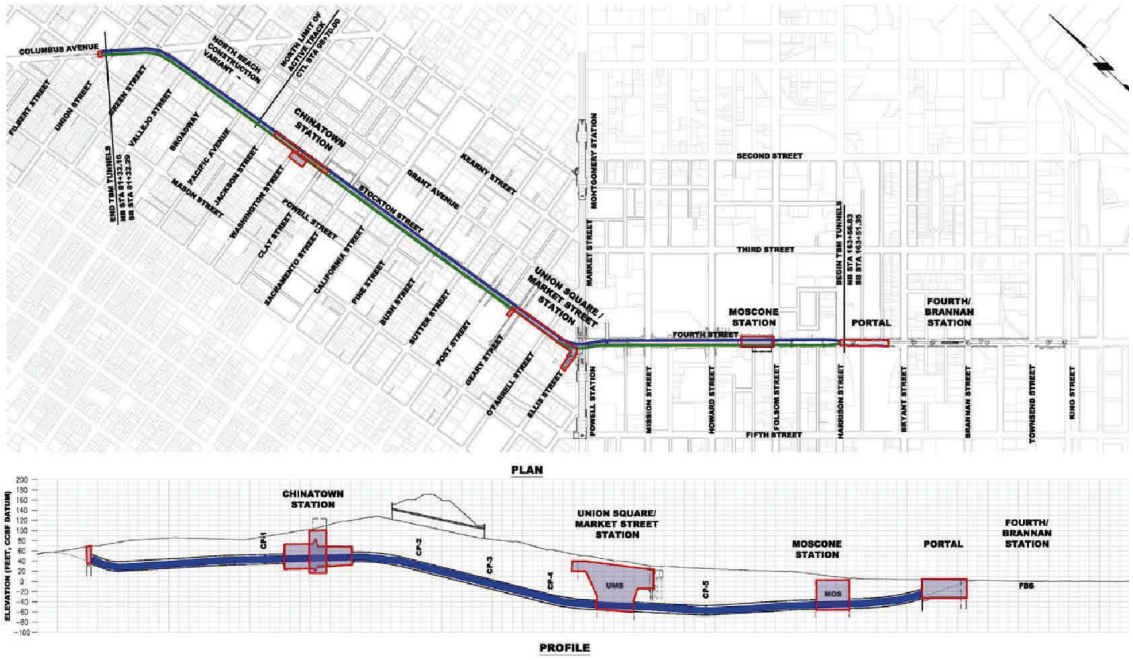
The table below summarizes Phase 2 milestone progress and dates.

Phase 2 Milestone Event	Milestone Date
Completed Supplemental Environmental Impact Statement/ Supplemental Environmental Impact Report	September 2008
FTA issued the Record of Decision	November 2008
Preliminary Engineering Completed	May 2009
FTA granted approval to enter into final design	January 2010
Utility relocation NTP for Tunnel Portal and Moscone Station	January 2010
Final Design Contracts issued Notice to Proceed (NTP)	January – April 2010
Annual New Starts Report "Medium High" Overall Rating	February 2010

At entry into Final Design, the FTA made an initial determination to fund approximately 60 percent of the Phase 2 program from Section 5309 New Starts funds. More than half of the non-Section 5309 funds have been committed, and the Agency is on track to secure the remaining non-Federal funds.

Central Subway Project Funding Sources (YOE $ Millions)			
Federal	$	948.43	60%
State	$	342.00	22%
Local	$	287.87	18%
Total	$	1,578.30	100%

As Final Design proceeds, the Project will achieve a cumulative funding level in 2011 of approximately $300 million at the time of the Full Funding Grant Agreement.



Route and Profile of the Phase 2 Central Subway

Central Subway Construction Methods

The Central Subway requires a number of underground structures, including guideway tunnels, stations, tail tracks, rail crossovers, and emergency cross-passages. These structures will be constructed in a variety of geologic conditions, ranging from rock to soft ground, and will be located adjacent to existing structures and utilities that are sensitive to ground movements. Available geologic information for the alternative Central Subway align-ments indicated that the tunnels would encounter highly variable conditions ranging from saturated sand, silt and clays to weathered and highly fractured sandstone and siltstone bedrock of the Franciscan Formation. Mixed-face conditions (i.e., rock and soil in the excavation face) are expected where the tunnels transition into and out of the bedrock.

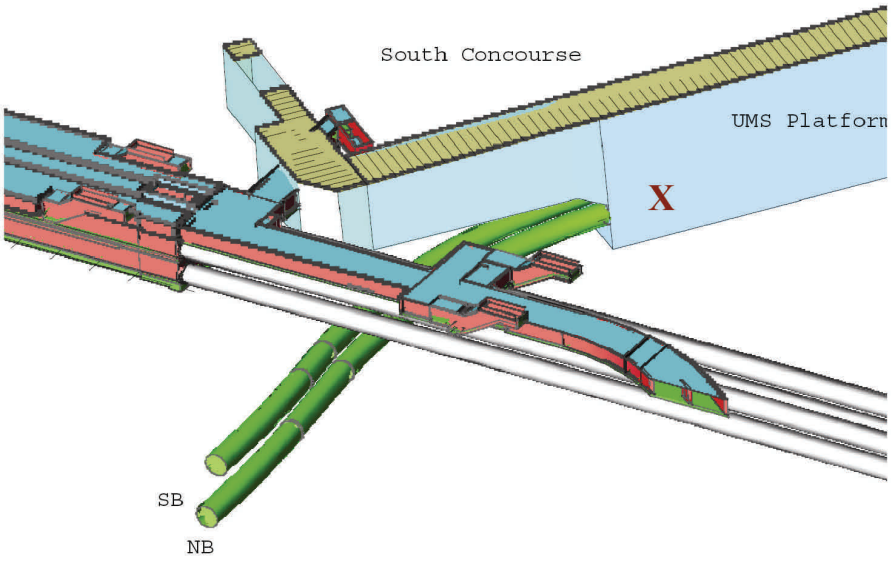
The sequential excavation method (SEM) is being used to construct the platforms of two of the three underground stations. This is a mined method of tunnel construction used worldwide for small to large openings in a variety of ground types. The objective of the method is to control deformations and thereby mobilize and maximize the self supporting capacity of the surrounding rock or soil. The tunnel excavation is carried out sequentially in increments, which are supported with sprayed concrete immediately after exposure, followed by the installation of additional steel and "shotcrete" support elements until a safe stable opening is created. The SEM provides a high degree of flexibility during construction and makes it possible to control virtually all kinds of ground conditions, thereby greatly reducing the risks of construction.

The cut-and-cover also known as top-down method will be used to construct two of the three underground stations. This method trench excavated and roofed over construction used to build the side support walls and capping beams are constructed from ground level, using slurry walling or contiguous bored piles. The surface is then reinstated except for access openings. This allows early reinstatement of roadways, services and other surface features.

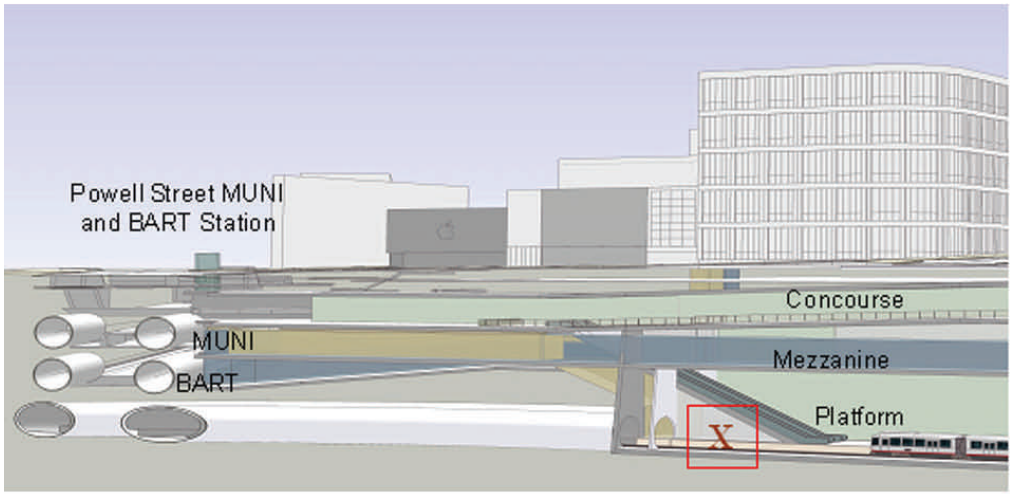
Excavation machinery is then lowered into the access opening, and the main excavation is carried out under the permanent tunnel roof, followed by constructing the base slab.

Each tunnel will be excavated and formed by a Tunnel Boring Machine (TBM) which consists of a rotating cutterhead within a cylindrical steel shell.

The TBM is pushed forward along the axis of the tunnel while excavating the ground through the cutterhead. The steel shield supports the excavated ground as required until the preliminary or final tunnel lining is built in the rear of the shield. The shield is

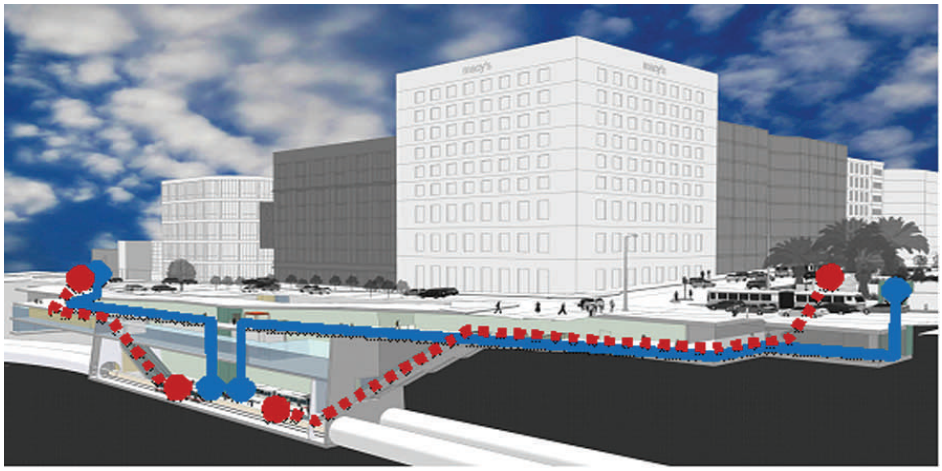


Bored tunnels for the Central Subway shown in green pass below the existing BART tunnels shown in white along Market Street. The "X" is shown again in the next figure of the completed new Union Square Station



At completion, the bored tunnels pass below the BART Market Street tubes and enter the new Union Square/Market Street (UMS) Station—see the "X" in the above diagram

propelled along temporary rails using hydraulic jacks that thrust against the erected tunnel lining system. The TBM is used in conjunction with a prefabricated ground support system, which most commonly consists of pre-cast concrete segments that are bolted together with gaskets between each segment to form a watertight lining. After completion of TBM excavation and installation of the lining, the temporary rails are removed, the invert (floor) is cleaned.

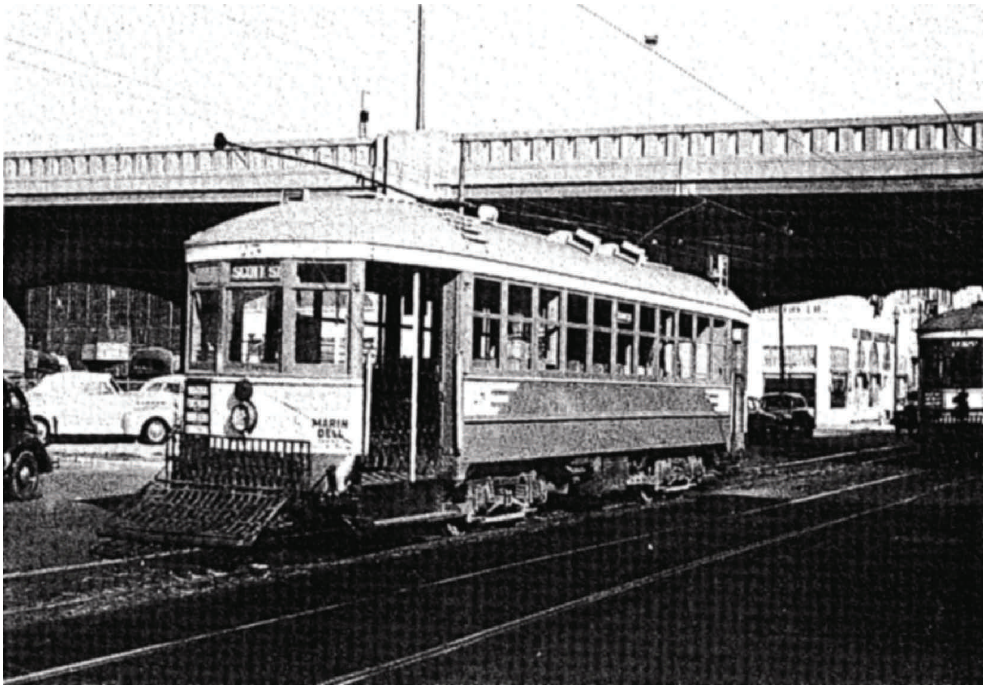


There will be two entrances at the UMS station. The blue lines indicate elevator access and the red dotted lines indicate stair/ escalator access to the station's platform

Past to Present - the National Trend Continues

Phase 2 is in fact a rail restoration project that mirrors the national trend of light rail often being built exactly where street cars had once run a generation or more in the past.

During the first half of the 20th century, the city enjoyed a North-South rail connection that was complementary to the East-West rail car service that still exists today. Until the year 1952, a citizen in North Beach and/or Chinatown could have hopped onto a rail car traveling down Columbus, Stockton/4th Street to the train terminal.



John McKane collection

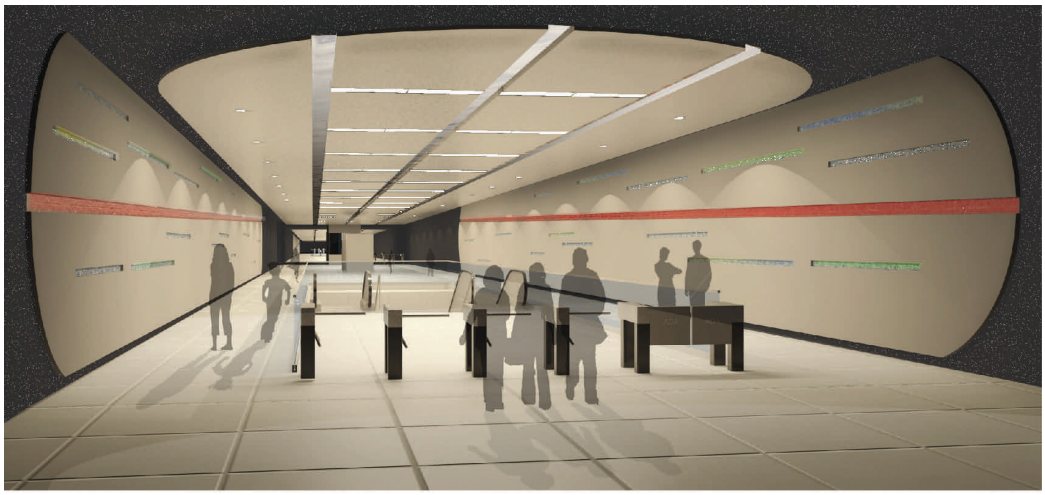
Streetcars south of Market Street that connected with the Southern Pacific (now Caltrain) Station on King Street

Vernon J. Sappers photo

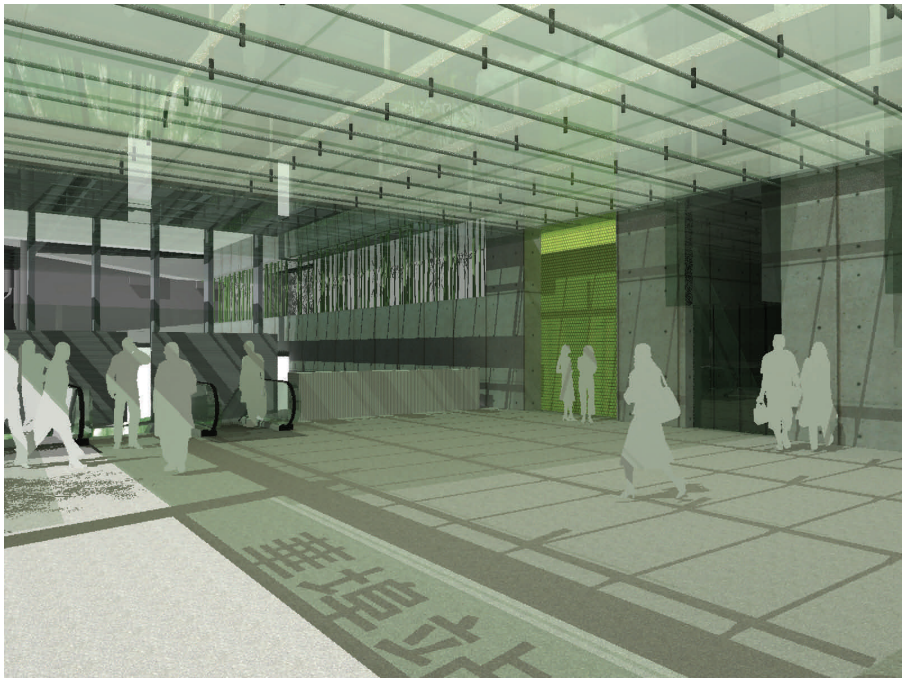
The former streetcar line on Stockton Street north of Market Street

The Future ...

Vignette of Moscone Station Platform



Union Station/Market Street Station (Vignette of the Concourse-Fare Gates)



Vignette of the Chinatown Station Lobby Level

Looking ahead, the combination of Phase 1 and Phase 2 is scheduled to open in 2018. Current 2030 projections are for the two-phase Third Street complete line will carry approximately 64,000 average daily riders with travel times from the southern terminus in Visitacion Valley to Chinatown reduced by up to 14 minutes.

SACRAMENTO LIGHT RAIL SYSTEM EXPANSIONS

By Diane Nakano, Sacramento Regional Transit District

In 1987, the Sacramento Regional Transit District (RT) opened the lowest cost per mile, federally funded light rail system in the nation at $9.5 million per mile. It had a route length of 18.3 miles [29.4 kilometers] which included long segments of single track.

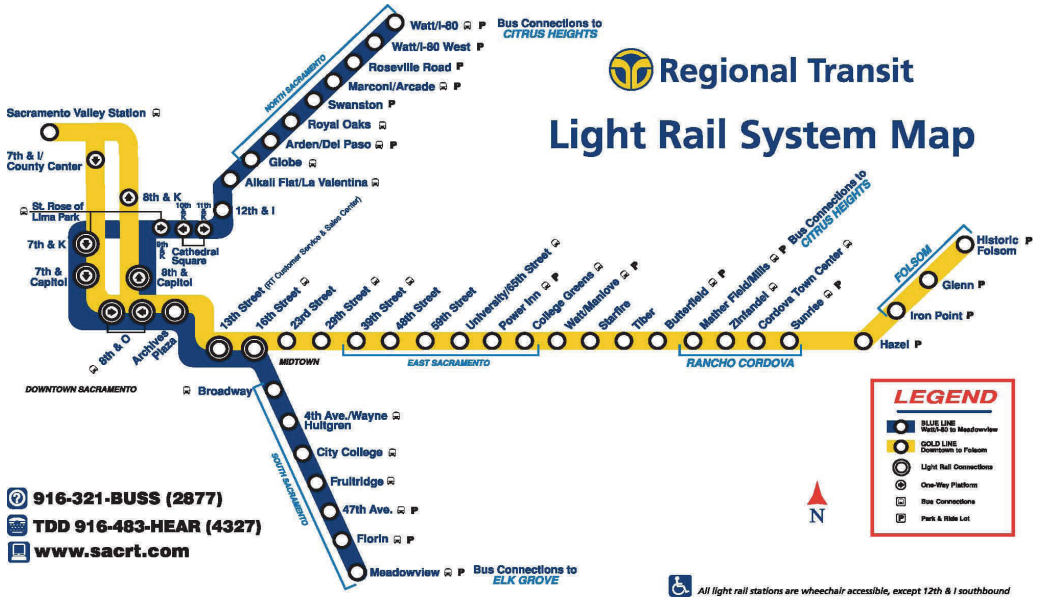
As the "starter line" expanded, RT continued to be a pioneer of cost-saving efficiencies – setting precedent by finding creative ways to fund its light rail extensions. The first 10 years were spent enhancing the system by reducing the length of single-track zones to 31 percent from an initial 61 percent. These improvements allowed for more flexibility of scheduling and for operations to recover more quickly on those rare instances when disruptions would occur.

The first true extension to the light rail system was completed in 1998. The 2.3-mile [3.7-km] extension to the Mather Field/Mills Station at the easterly terminus included one station with a park-and-ride lot and bus transfer center.

Meanwhile, RT started the work necessary to enter the South Sacramento Corridor Project, also known as the South Line, into the Federal Transit Administration's (FTA) New Starts process. The Alternatives Analysis began in 1993 and culminated in the start of construction of the 6.3-mile [10.1-km] South Line Phase 1 (SLP1) project in 2000, which opened for service in September 2003. Prior to the completion of SLP1, RT's light rail system operated as a single line. Following the opening of SLP1, the service pattern was altered and RT began operating the system as two separate lines. They were designated as the Blue Line, with a north and south routing and the Gold Line, which runs east and west.

In the years immediately following, RT implemented a number of expansion projects with an aggressive schedule (see list on the next page). Of particular note was the extension to the Amtrak Sacramento Valley Station. That extension was RT's first construction project in the downtown Sacramento area since the construction of the original line in the mid-1980s. This section of the project was, by far, the most challenging. Working in the streets of a 150+-year old city, the construction included preserving "hollow" sidewalks above the flood-prone streets of the original city about 10 feet [3 meters] underground, encountering Native American remains and artifacts, and the presence of what seemed to be every underground utility in existence – but not always recorded on the construction drawings!

Even before the SLP1 project was opened for service, the next 4.3-mile [6.9-km] segment of the Blue Line to Cosumnes River College was underway with RT staff beginning the work necessary to obtain the State of California and federal

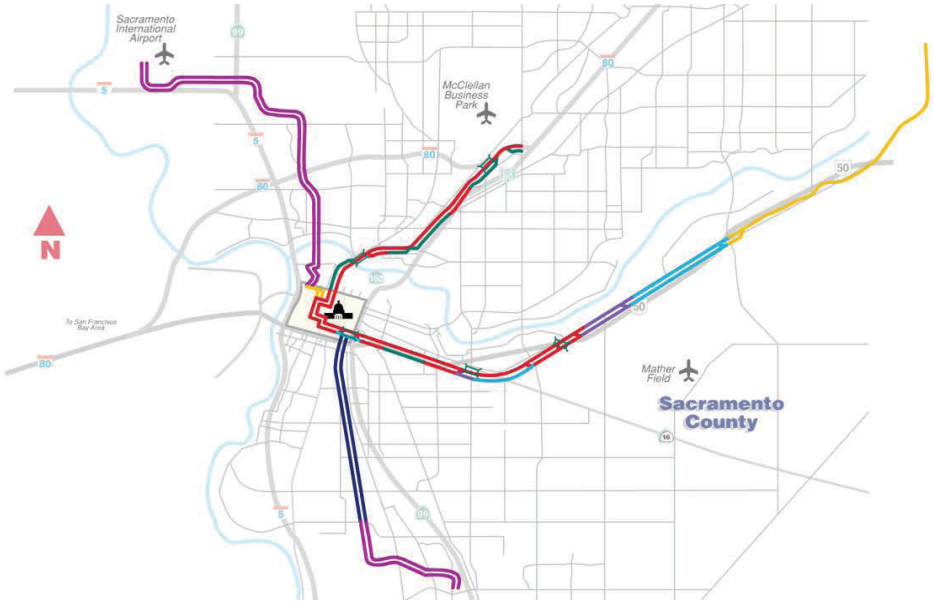


environmental clearances. As most agencies can likely attest, that process was extremely slow. The effort that began in 2000, including the entry into the Federal New Starts process, finally culminated in a Record of Decision from the FTA in December 2008. Since that time, the agency and project has undergone a risk assessment, value engineering, Technical Capacity and Capability analysis, and Financial Capacity Assessment (FCA).

The FCA has become a challenge for RT. The State of California's budget woes and raids on transit funding, combined with a major decline in state and local sales tax revenues, in general, have resulted in a medium-low rating. The medium-low rating must be remedied before the FTA will advance the project into Final Design. The stability and reliability of revenues is the key to raising the rating to a medium level. This will likely result in a projected revenue operations date in late 2014 instead of December 2012 as was originally planned.

The other corridor being actively pursued by RT is the Downtown Natomas Airport corridor, which will be designated as the Green Line. There are two segments being implemented concurrently. The first element is a 1.1-mile [1.8-km] line segment to the River District. This is RT's first design-build project and is expected to be in revenue service in early 2011. The next extension of the Green Line will be to the airport. Currently, it is undergoing a project development study to determine the location of an interim terminus in order to identify a project that will compete successfully for federal New Starts monies. RT plans to enter the National Environmental Policy Act process for the Green Line to the Airport project in early 2011.

The most exciting work has been to complete the update to RT's 30-year transit master plan (TransitAction Plan), as it shares a vision with the region and shows the key role transit plays now and into the future. The TransitAction Plan was built around the Sacramento Regional Blueprint document (Blueprint), which was developed and adopted by Sacramento's Metropolitan Planning Organization. The Blueprint is a document that integrates transportation and land use planning to establish "Smart Growth" principles. This is especially significant at the national level as the FTA's emphasis on livable communities and sustainability is advanced.



Light Rail System Map (Planned and Existing)

KEY: **RED** – original starter line; **NAVY BLUE** – South Line Phase 1 (south); **VIOLET** – Downtown Natomas Airport line (Planned – north); **VIOLET** – South Line Phase 2 (Planned – south); **Purple** – Butterfield Extension (east); **Blue Green** – First 10 years of double-track projects; **Cyan** and **Gold** – Amtrak/Folsom projects

Sacramento is the third-fastest growing metropolitan community in California. By 2030, the greater Sacramento region is expected to grow by nearly one million people, more than 400,000 new jobs and more than 400,000 new households. Now is the time to address the issues of increased traffic congestion and worsening air quality that will parallel this growth. That's why it's more important than ever that the Sacramento region have a balanced, comprehensive transit system to be competitive with other urban areas for economic development, housing, employment and overall quality of life.

Description	Year	System Route Miles/ Km	Stations/ Parking lots	# of LRVs	Cost (millions)	Daily Ridership
Starter system	1987	18.3/29.4	27/8	26	$174.5	10,000
Double-track projects	1990-7	18.3/29.4	29/9	36	$16.9	27,000
Mather Field Extension	1998	20.4/32.8	30/10	36	$33.1	29,000
South Sacramento	2003	26.7/43.0	37/13	60	$222	37,000
Sunrise Extension	2004	29.4/47.3	40/14	76	$98	47,000
Folsom Extension	2005	36.7/59.0	44/18	76	$123	58,000
Amtrak Extension	2006	37.4/60.2	47/18	76	$40	59,000
Green Line 1	*2011*	*38.5/61.9*	*1 new station*		*$37*	
South Sacramento 2	*2014*	*42.8/68.9*	*3 new stations*		*$270*	
Green Line 2 (Airport)	*2017+*	*55.6/89.4*	*TBD*		*TBD*	

As the economy recovers over the next year or two, RT stands ready to operate, maintain and construct a cost-effective transit system. Transit is integral to Smart Growth and RT is hopeful that our region and other communities nationwide recognize the importance of that role.

TROLLEYS IN LADY LIBERTY'S BACKYARD:

Enhancing the Mobility, Environment and Experience for Liberty State Park Visitors

By Bill McKelvey and S. David Phraner, Liberty Historic Railway

Directly across the Hudson River from the tip of Manhattan Island and a short distance upstream from the Statue of Liberty a lonely structure occupies the northeast corner of Liberty State Park, the largest urban park in New Jersey. The structure is Jersey City Terminal, the only remaining vestige of the once large and bustling rail facility that operated there. The park itself occupies land that in past years hosted a multi-track yard and maintenance complex.

In its earlier years the terminal accommodated ferryboats that transported train passengers to and from New York City and trains that carried them between Jersey City and points near and far, including Philadelphia, Baltimore, Washington, Pittsburgh, Chicago, Cincinnati and St. Louis. The owner and principal user of the terminal was the Central Railroad of New Jersey (CNJ), but up to the mid-20th century it also handled long-distance trains operated by the Reading Company and the Baltimore and Ohio Railroad. Workhorse CNJ commuter trains shared tracks and platforms with the *Blue Comet, Crusader, Wall Street, Capitol Limited, Royal Blue* and other streamliners.

Now, the ferryboats and streamliners are gone and the commuter trains have been routed to other stations. The Jersey City Terminal is in deep hibernation. However, it is on the verge of rising from its slumber.

In the fall of 2007, under the Train Shed at the Jersey City Terminal, the *Central Railroad of New Jersey Veteran Employees Association* unveiled their granite milepost monument to past employees of the CNJ. Speakers at the event called for restoration of tracks to bring rail equipment to the location for display, interpretation, and interpretive rail ride experiences in a restored terminal.

Early in 2008 a meeting was held with Park staff to explore how to proceed with the initiative to provide rail access to Liberty State Park, Liberty Landing Marina and Jersey City Terminal. We were advised that a feasibility study would be required. With the assistance of members of the New Jersey Transportation Heritage Center, the Rutgers University, Bloustein School of Planning and Public Policy was approached to enquire if they might perform such a study for us. They agreed, and a studio which attracted thirteen graduate students was formed; advised and overseen by transportation professionals; and proceeded with a Liberty State Park Rail Access Feasibility Study

The study conclusions included a recommendation for a heritage trolley connection between the Liberty Science Center station of the Hudson Bergen Light Rail system and the CNJ Terminal/Statue of Liberty & Ellis Island Ferry Docks as well as a connection with Conrail Shared Assets to facilitate display of rail equipment. The latter line could also be used to provide transportation in the form of an historic rail ride experience to the south end of the Park.

In the course of developing these recommendations the study team and leaders recognized two objectives: shifting public access to and within the Park from auto dependency to public transit and designing a means for bringing historic rail artifacts to the Terminal for interpretation of Park heritage with exhibits authentic to the Park site. The provision of convenient rail shuttles could entice visitors to leave their autos home and take public transit. Reducing the impact of autos and the carbon footprint of the Park were highly desirable goals. Such a shift to transit would make the Park more livable and better for the enjoyment of visitors as well as to provide broader public access and increase the capacity of the Park for special events.

The stakeholders and professional experts told us where the rail rights of way should be located to minimize impacts on the park's open space, view planes, special places and peacefulness. We painstakingly followed their guidance. The planning studio team explored current examples of vintage rail transit in other parks and recreation centers and found that the successful trolley shuttle service at the Lowell National Historic Site in Massachusetts was an outstanding model. Public presentations were made of the positive conclusions of the Bloustein Studio at the end of 2008 as well as in 2009 and a final report was completed.

At present, Liberty State Park is auto dominated. A significant proportion of greenhouse gases is produced in urban areas, such as where Liberty State Park is located. A smarter, greener and more sustainable future will require us to move away from the auto and the use of fossil fuels, especially at urban locations. A measurable reduction could be achieved by reducing auto vehicle miles traveled in and around the Park. A majority of Park visitors would utilize transit more if it were conveniently available and well promoted. At present the walking distance between that Hudson Bergen Light Rail station and the CNJ Terminal is about 1.6

kilometers [one mile]. Connectivity by transit is sorely needed in Liberty State Park and a rail mode is particularly suitable.

Railway tracks lay lightly on the land and they can be landscaped. Their footprint does not shed rainwater runoff as do paved roads and parking lots. The open track structure allows rain penetrate the soil and grass to grow in the trackway.

Increased use of rail transport is already helping to reduce global warming and America's dependence on foreign oil. Electric rail transit is a green alternative which helps reduce pollution and will give us a more sustainable future. In the United States there are about a dozen heritage trolley, or small scale streetcar, systems and the list is being expanded. This simple, reliable form of transit from the early 20th century years ago can bring history to life for 21st century users.

Rail shuttles will avoid the paving of additional areas of the park to build more roadways for visitors by automobile. We know that use of Liberty State Park will grow and visitor travel within the Park will increase. Managing that growth with minimal environmental impact should include getting park visitors out of their cars and into rail transport.

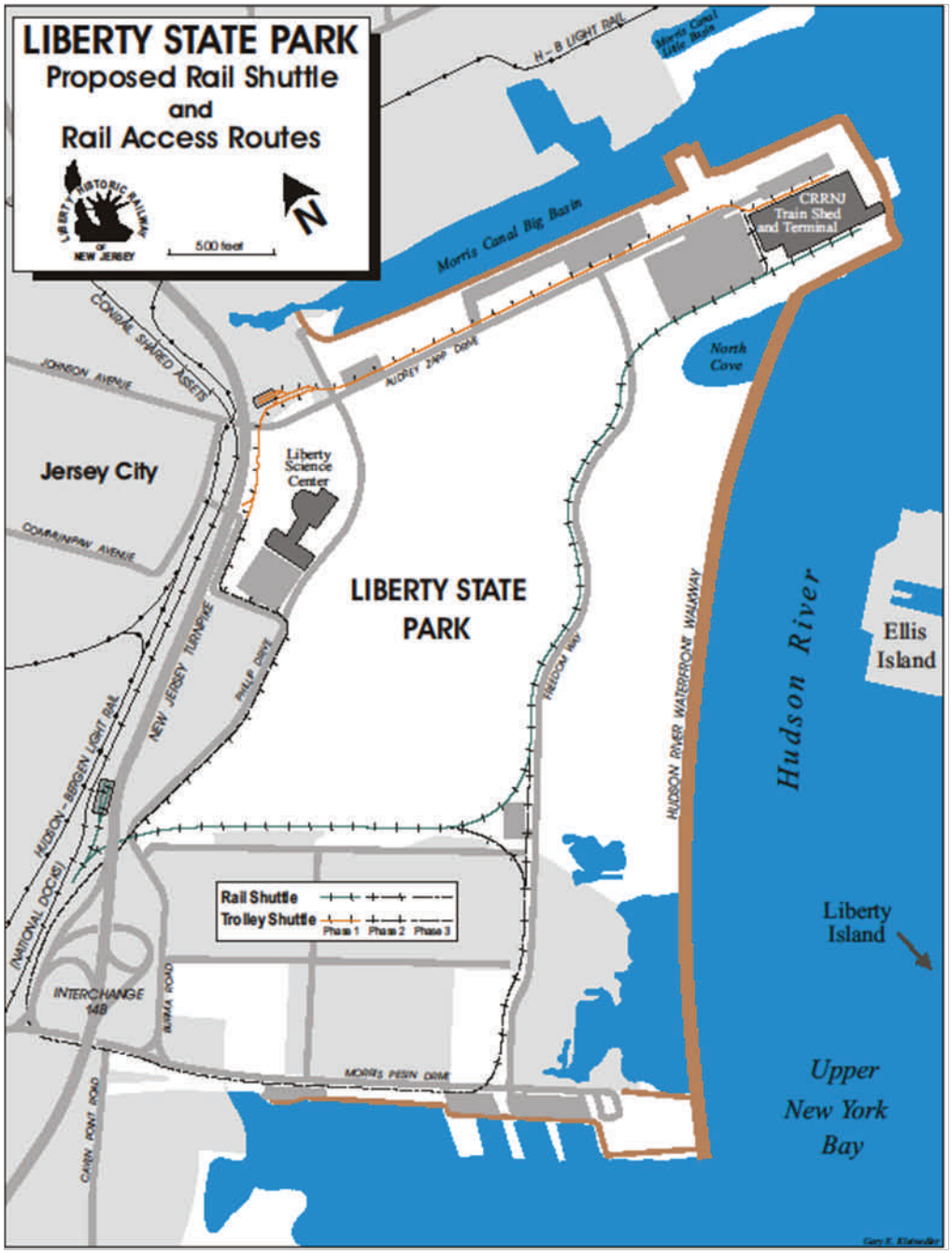
Electric rail transit is particularly suitable here. Unlike combustion engines, electric motors produce nil pollution in its area of use. Electricity is an open-ended energy carrier that can be generated from a variety of sources including solar, wind, water, biofuels, etc. - all with environmental benefits.

Phase one of the planned Liberty Historic Railway includes a single track heritage trolley shuttle. This line would begin at Jersey City Boulevard, on the west side of Liberty Science Center, about 300 feet [91 meters] from the Liberty State Park Station of the Hudson Bergen Light Rail System. It would extend north along the east side of the elevated NJ Turnpike extension and cross Audrey Zapp Drive to an undeveloped plot of land at the northwest corner of Liberty State Park. In this area, in the shadow of the Turnpike, a proposed trolley car barn and maintenance facility would be built. That facility would include a passing siding for operating flexibility. This complex is near a contemplated future realignment of the Hudson Bergen Light Rail Line, which might include a new station. East of this point the planned route would run along the north side of Audrey Zapp Drive, south of Liberty Landing Marina. Before reaching the Central Railroad of New Jersey Terminal the track would cross Zapp Drive and terminate on the existing display track along the north side of the shed.

John Harrington Riley photo Railroad Avenue Enterprises collection

Replicas of trolleys that once served the Hudson River waterfront are envisioned for use on the new shuttle

Phase one also includes rail connector to an active Conrail freight line at the south end of Liberty State Park. It would begin at the south side of the terminal train shed and run along the west side of Freedom Way to connect with Conrail along McGovern Drive. This will allow historic railroad rolling stock, including some that once used the Terminal, to reach a display location under the train shed, when it is restored.



As shown above, the Liberty State Park rail connectors would be developed in three phases

Future phases would expand the track network within the Park, eventually reaching the planned new picnic area in Freedom Field, at the south node of the Park. The trolley shuttle would also eventually terminate under the restored train shed.

Further information is available on the Liberty Historic Railway web site: www.LHRy.org.

STREETCAR PROJECT PRGRESS REPORT TABLE

(As of April 2011)

Focus City	In Advanced Conceptual Planning	In Final Design	Under Construction	In Regular Service
CHARLOTTE	I	-	-	-
CINCINNATI	I	I	-	-
DALLAS	E	-	-	I
DETROIT	I	-	-	-
FT. LAUDERDALE	I	-	-	-
GALVESTON [2]	-	-	-	S[1]
JERSEY CITY	I	-	-	-
KENOSHA	E	-	-	I
LITTLE ROCK	-	-	-	S
LOWELL	E	-	-	S
MEMPHIS	-	-	-	S
NEW ORLEANS	E	E	-	S
PHILADELPHIA	-	-	E	S
PORTLAND	E	E	E	I
SAN DIEGO	I	-	-	-
SAN FRANCISCO	E	-	-	S
SAN JOSE	-	-	-	I
SAVANNAH [2]	-	-	-	I
SEATTLE	-	-	-	S[1]
TACOMA	-	-	-	I
TAMPA	-	-	-	I
TORONTO	E/U	-	U	S
TUCSON	E/U	-	-	I
WASHINGTON	I	-	I	-
	15	**3**	**4**	**17**

Legend: E = Expansion of existing facilities (extension, new route, added trackage, etc.)
I = Initial or basic one-corridor route
S= System (more than one line or corridor)
U= Upgrading of existing facilities (same basic route)

[1]Some service currently suspended
[2]Streetcars with diesel engines (no trolley wire)