

WHAT ABOUT STREETCARS?

Definitions, World Context, North American Systems

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As Bob Blymyer has related, practical electric streetcars were perfected in the late 1880s, and systems were built in cities and towns across the United States and throughout the world in the two decades after 1890 – including Sacramento. Overwhelmed by the automobile culture of the mid-20th century, streetcars nearly disappeared in North America and most other countries. For a time after World War II, it appeared the only transit choices were going to be heavy rail rapid transit lines like BART, and buses operating in traffic on the public streets. We now see these as the high and low ends of the transit spectrum. But where was the middle – technologies and services offering more than a local bus for areas that couldn't afford and didn't need the capacity of a full rapid transit railway?

Definitions

Starting in the 1970s, renewed interest in alternative transportation led to what can now be referred to as the light rail revolution, a renaissance of surface electric rail lines – now called light rail transit (LRT) – as the few surviving old systems were rebuilt and new starts blossomed in more than 20 North American cities. As in Sacramento, most of the new LRT lines serve as regional connections, forming the main lines of transit in the travel corridors they serve, and connecting with the area's bus network to form a multi-modal system.

Now, the streetcar itself is coming back, with enough new projects built to illustrate a variety of approaches for locating lines in streets, and selecting modern, replica or vintage vehicles. How do these new streetcar lines compare with LRT? Table 1 highlights some of the primary differences between streetcars and LRT.

Table 1. Streetcars & LRT, Differences		
Item	Streetcars	Light Rail
Differences:		
-Operating units	Single cars	Trains up to 4 cars
-Vehicle size	L 66 ft or less, W ~8 ft	L 80 ft or more, W 8.75-9.50 ft
-Alignment location	Mostly streets, shared lanes	Mostly private r-o-w, some street
-Route lengths	Under 5 miles	10-20 miles
-Service function	Local circulation	Regional connection
-Composition of ridership	Residents & tourists	Mostly residents

There also are several areas of similarity between streetcars and LRT.

- Thoroughly proven electric railway technology
- Systems in operation worldwide
- Quiet and clean electric rail vehicles
- Electric power distributed via overhead wire
- Can operate in a variety of alignment types

Another way of looking at it is to think of streetcars as a part of the Light Rail Spectrum, where different levels are characterized by different alignment combinations and operating patterns:

- Light Rapid Transit
 - Mostly exclusive right-of way
 - Higher speeds
 - Longer trains
 - Longer distances between stations (one mile or more)
- Light Rail Transit
 - Reserved r-o-w, some in-street segments
 - Medium speeds
 - Shorter trains
 - Variable distances between stations (0.5-1.0 miles)
- Streetcars
 - Mostly in-street, shared lanes
 - Lower speeds
 - Single cars
 - Frequent stops (0.1-0.3 miles apart)

Edmonton, St. Louis and the Green Line in Los Angeles are good examples of Light Rapid Transit, while most of the other new lines, including Sacramento, are best described as Light Rail Transit. Four old survivor systems and several small new starts fit the streetcar mold

World Context

Light rail and streetcar systems operate in more than 300 cities around the world. In some countries, notably Germany and the Low Countries, old streetcar systems were retained and gradually upgraded to LRT with placement of tracks in reserved lanes and purchase of modern light rail vehicles. These systems became models for North American LRT planners in the 1970s and 1980s. European colleagues visiting the new LRT systems in the west, immediately grasp the rationale for their development and operation, and feel completely at home riding them.

The German model also has been followed in building new start LRT lines in the United Kingdom and France where, as in the US, virtually all the old streetcar systems were abandoned after World War II in favor of buses. In Europe, most of the surface electric rail lines are, in fact, light rail; but many retain a significant mileage of in-street trackage that is operated in the fashion of streetcars:

- Germany – 56 cities. Augsburg to Zwickau, and many between!
- France – Grenoble, Nantes, Paris, Strasbourg, 7 others
- UK & Ireland – 6 in England (Manchester, Croydon, Leeds, Nottingham, etc) + Dublin
- Italy – Roma, Milano, others
- Portugal – Lisboa & Oporto
- Austria & Switzerland – 4 cities each
- Low Countries – 5 Belgium + 3 Netherlands

- Sweden – Goteborg, Stockholm, Norrkoping
- Baltic Countries – Helsinki, Tallinn, 3 in Latvia

Streetcars also have survived elsewhere, especially in places where a capital-poor economy caused a lack of funding for reinvestment, or where passenger loads are too heavy for buses alone. Many cities in the former East Bloc countries fit this mold:

- Russia – Moskva & 48 (!) others
- Ukraine – Kiev, Odessa, 23 others
- Poland – Warsawa, Krakow, 12 others
- Kazakhstan – Almaty, 5 others
- Czech Republic (7), Slovakia (3), Hungary (4)
- Romania (15), Belarus (4)
- Croatia (2) + Beograd & Sarajevo
- Yerevan, Baku, Sofia, Tbilisi, Tashkent

Along the western rim of the Pacific lies another cluster of streetcar systems, virtually all surviving old systems that have been or now are being modernized:

- Japan – Tokyo, Kyoto, Hiroshima, 16 other cities
- China – Anshan, Changchun, Dalian
- Hong Kong
- North Korea – Pyongyang, Kumsusan
- Australia – Melbourne, Adelaide, Sydney (new start streetcar)
- New Zealand – Wellington (new heritage streetcar line)

Elsewhere, streetcars thrive or survive in cities here and there:

- Turkey – Istanbul, Antalya, Konya (mostly new LRT lines)
- Egypt – Cairo, Alexandria, Heliopolis, Helwan
- India – Kolkata (very dilapidated, closure threatened)
- Brazil – Campos de Jordao, Santos

North American Systems

Here in North America, several of the new LRT projects include downtown segments that “feel” like streetcars, and a couple – Portland and San Jose – even have supplemented their LRV fleets with a few old or replica streetcars operated as downtown shuttles.

Elsewhere, operations representing four sub-categories of streetcar system can be identified:

- Survivor Systems – Toronto, Philadelphia, San Francisco (Muni), New Orleans
- Modern Streetcars – Portland, Tacoma operating; Miami, Atlanta, others planning
- Replica Trolleys – Tampa, Little Rock, Charlotte, Lowell
- Vintage Streetcars – Seattle, Memphis, Kenosha, San Francisco (F Line)

Toronto and New Orleans, and much of the San Francisco Muni and Philadelphia systems are pure streetcar, though all have some areas of lane reservation and street median running, and each – except New Orleans – even has a streetcar subway. Three of these cities have purchased new light rail vehicles tailored to fit their streetcar-type alignments. New Orleans continues to use cars built for the city in 1924 on two of its lines; while new replica cars of similar appearance are used on the newly reinstated Canal Street route. On its popular F-Fishermans Wharf line, San Francisco uses a mix of its own older cars and trolleys brought in from other cities in the US and abroad. This fleet includes groups of PCC and pre-PCC cars.

In 2001, Portland opened its 2.5-mile streetcar line. Except for a block-long plaza shared with pedestrians at the Portland State University campus, it is located entirely in mixed traffic street lanes. Stops are 0.1-0.3 miles apart, and the schedule speed is under 10 mph. As a circulator, however, the line is quite successful, connecting the central business district and MAX regional LRT with the PSU campus and several new and resurgent neighborhoods adjacent to downtown.

A new 1.6-mile line in Tacoma serves a similar circulation function, and uses modern streetcars of the same design as in Portland. However, this line is located mostly in reserved median and curb lanes. Its facilities are designed to LRT standards to accommodate such regional service if the line now being built in Seattle is eventually extended south to Tacoma.

Other cities, starting with Seattle in the early 1980s, have built circulator lines using old streetcars displaced from their original systems. In Seattle, ex-Melbourne cars delight riders on the Waterfront Streetcar; in Memphis, cars from Portugal now travel up and down Main Street, along the riverfront, and to the Medical Center. In Kenosha, former Toronto PCCs navigate a one-mile loop linking a large redevelopment site and the shore of Lake Michigan with the business district and commuter train station.

Replica streetcars are new vehicles built to old designs. They have the advantage of being new, while retaining the charm of earlier cars. Supplied primarily by Iowa's Gomaco Trolley Company, these cars are being used on new start streetcar lines in Lowell National Historic Park, and in the downtowns of Tampa, Little Rock, and Charlotte.

Some of the new lines using heritage or replica cars may serve as the nucleus around which larger LRT systems will evolve over time. Both Memphis and Tampa are taking this approach.

So Why Streetcars?

Tom Matoff will talk about specifics for Sacramento; but in general, there are several good reasons for building a streetcar line or system:

- Fill a niche – Local circulation
- Sized to function – Single cars, smaller vehicle profiles compared to LRVs
- Neighborhood friendly – Okay in shared lanes, quiet, non-polluting
- Easier construction – Less intrusive, less costly
- People like them – Streetcars are fun!