Streetcars in the United States

Definition: A streetcar is a vehicle that runs on tracks embedded in the street, typically within a shared lane with automobile traffic. Although streetcars are able to run in segregated right-of-way, the flexibility of the vehicles to share the road with bicycles, buses, and cars is a significant benefit of the technology. Streetcars are commonly used for short trips, linking key destinations in a downtown environment, but lines may be extended to serve longer trips.

Streetcar systems were a common form of public transportation in the United States during the 1800s and early 1900s until they were supplanted by bus service. In fact, the streetcar was the dominant mode of transportation in the Twin Cities until 1920. At its peak, Twin City Rapid Transit operated 524 miles of track, stretching from Stillwater to Deephaven.

Today, modern streetcar systems aim to provide an easy-to-use, convenient, high-frequency public transportation option, while minimizing the impacts to other modes of transportation.

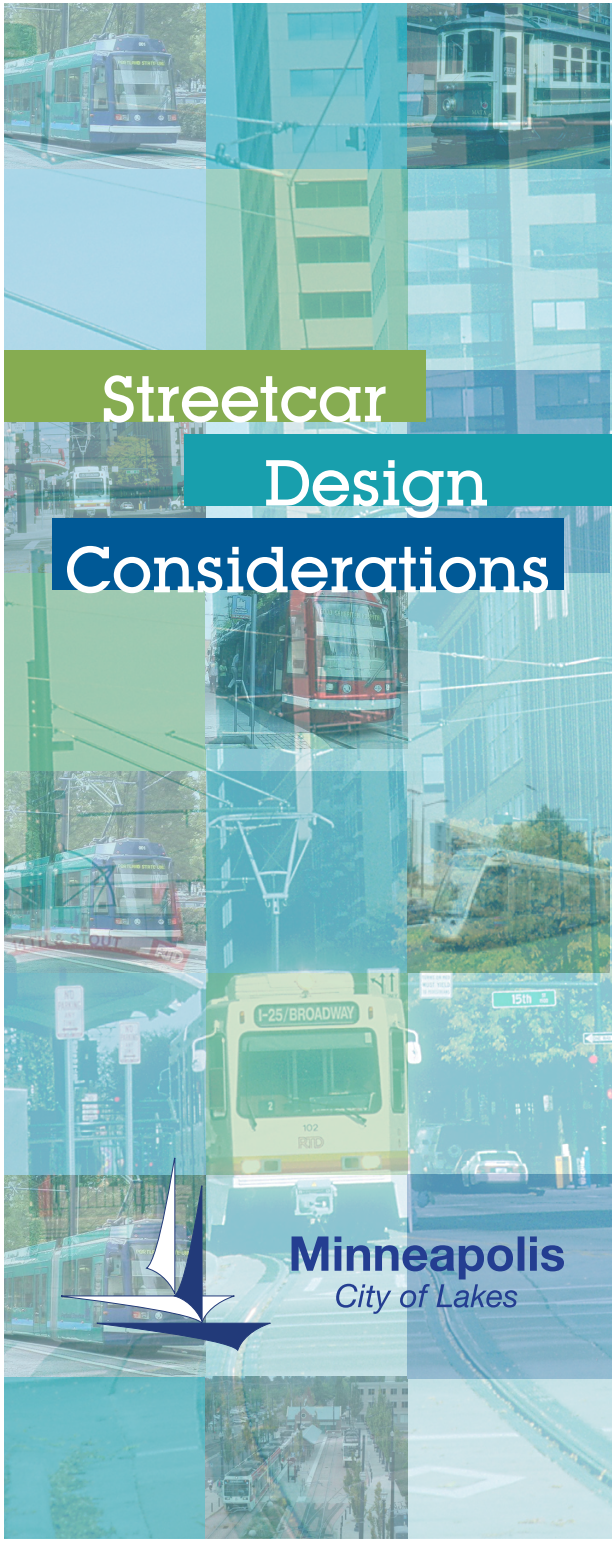
Modern Systems	Portland	Tacoma	Seattle
Year Opened	2001	2003	2007
System Length	3.9 miles	1.6 miles	1.3 miles
Daily Ridership	12,500	2,900	1,800
Stops	22	5	11
Stop Spacing	1/5-mile	1/4-mile	1/5-mile
Headway	12-15 mins.	10 mins.	15 mins.

Streetcar systems are currently in the planning or design phase in 22 cities in the United States.

Minneapolis
City of Lakes

Kimley-Horn and Associates, Inc.

Streetcar Design Considerations



Streetcar Design Considerations

Minneapolis
City of Lakes

Vehicles

- **Style:** Heritage streetcars draw attention to the historical context of the neighborhood. Modern units provide a sleek, fresh look.
- **Dimensions:** Streetcar widths range from 7 feet, 6.5 inches up to 8 feet, 1inch and 8 feet 8 inches for standard, modern designs. Historic streetcars were typically 40 to 50 feet in length, with modern vehicles typically ranging from 66 to 95 feet.

- **Capacity:** Single unit vehicles require short body lengths to navigate tight turning radii. Articulated units allow for increased passenger carrying capacity. Typical capacity range of 30 to 70 seated, up to 115 to 150 seated and standing.
- **Directionality:** Single-ended vehicles require turnaround track or continuous loop operation. Bidirectional vehicles provide more flexibility of use.
- **Floor Level:** Partial low floor requires specific accessible boarding doors 100 percent low floor vehicles are fully accessible throughout.

Vehicle/Platform Considerations

- **Curb Height:** Fully level boarding requires a maximum vertical gap of 5/8-inch at all doors, requiring 14-inch curbs, creating compatibility issues with buses. Bridge plates at accessible doors may be used for nearly level boarding operation, reducing curb height requirements to around 11 inches.
- **Platform Length:** Platform length depends on vehicle type and accessible door location, from a minimum of 25 feet to a typical planning length of 66 feet. High capacity operation may use a long platform with one raised accessible boarding location.
- **Platform Edge Location:** Median stations typically need a 15-foot median, and require passengers to cross the street for access. Side street platforms reduce street parking by at least 150 feet per platform, but may enhance sidewalk activity. Bulbouts at platform locations may be used to minimize street parking reductions, requiring at minimum, 50 feet of curb space, but face compatibility issues with bicycle lanes.

Platform Elements

- **Shelters:** Shelters that provide benches, standing room, and trash bins draw attention to the system and provide passenger comfort. Shelters require wider platform areas.

- **Wayfinding:** System maps increase system awareness. Ramps, signs to accessible boarding locations, and tactile warning strips are required to satisfy ADA requirements.
- **Real-Time Information:** Digital real-time information may increase user perception and convenience, but require increased infrastructure costs.
- **Fare Collection:** On-board fare collection increases dwell time, disrupting traffic. Barrier-free ridership requires an automated fare collection system that is subject to vandalism and maintenance needs.
- **Security:** Lighting, emergency telephones, cameras, and regular security patrols reduce vandalism and improve passenger security.

Geometrics

- **Traffic Interaction:** Track location affects street parking supply and dwell time in traffic and at signals. Midblock stations minimize traffic disruption, but near side stations provide improved passenger access.
- **Turning Radius:** Vehicle type controls track curvature design, typically ranging from 60 to 82 feet. Vehicles with a large turning radius may require lane shifts prior to curves, reducing street parking in sections.

- **Turnarounds:** Turnaround track may be necessary for single-ended vehicles not operating in a continuous loop. Storage track design may be minimized with bidirectional operation.

Traction Power

- **Overhead Wires:** The aesthetics of overhead wires depends on suspension type and streetscaping. Decorative poles or cantilevers from shared-use poles minimize wire lengths. Spanwire may be tied directly to buildings for support.
- **Ground Level Switch Contact:** In-ground power is an expensive alternative to overhead power.
- **Substations:** Substation housing design depends on power requirements.