

GO BY STREETCAR

 SAINT PAUL
STREETCAR FEASIBILITY STUDY

Streetcar 101



The Most Livable
City in America.

What is Streetcar Service?

- Rail vehicles (similar to light rail bus smaller)
- Usually operates in mixed traffic
- Typically short length (2-3 miles)
- Close stop spacing (similar to local/standard bus)
- Focus on local trips within corridor
- Much less construction impact than LRT



Portland Streetcar

What are the Major Benefits of Streetcar Service?

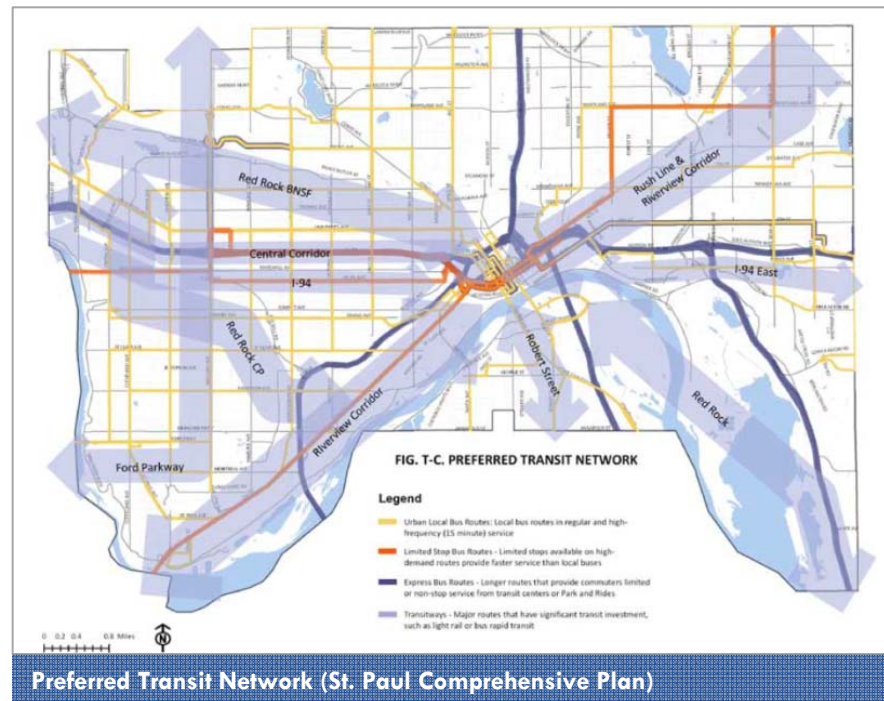
- Improve local circulation within streetcar corridor
- Provide connections with regional trunk lines
- Stimulate development



Seattle South Lake Union Streetcar

In Saint Paul?

- Same anticipated benefits as elsewhere, plus:
- Streetcar could help fulfill the transit vision outlined in the city's Comprehensive Plan
- Could complement/strengthen other planned improvements:
 - Green Line LRT
 - Arterial BRT
 - Rush Line Corridor
 - Red Rock Corridor
 - Gateway Corridor
 - Robert Street AA



Key Streetcar Characteristics

- Operating environment
- Vehicles
- Stations
- Route length
- Stop spacing
- Ridership
- Economic development
- Integration with other modes (vehicles, bikes, pedestrians)
- Capital costs

Streetcar Operating Environment

Streetcar/Bus

- Usually in mixed-traffic



Light Rail/BRT

- LRT usually exclusive right-of-way
- BRT in either exclusive or shared ROW



Operating Environment

There are also hybrids:

- Streetcar can run in exclusive right-of-way
- Streetcar and light rail have the same gauge track
- Light rail and BRT can run in mixed traffic too



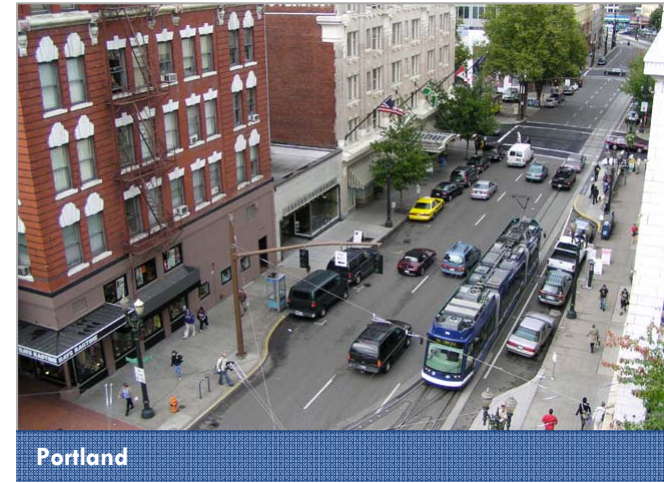
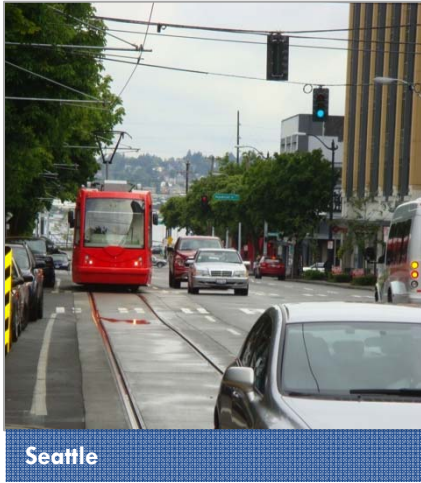
MBTA Green Line Light Rail in Mixed-Traffic, Boston



Green Line Construction, St. Paul

Operating Environment: Flexibility

- Streetcar lines are flexible



Operating Environment: Limitations

- Some physical features present fatal flaws, such as
 - Steep grades
 - Bridges
 - Vehicle loads similar to highway truck loads
 - But track and relate-infrastructures adds weight
 - Vertical Clearances
 - Roadway Cross Section/Tight turns
- Also need to locate a maintenance/storage facility, preferably close to the line
- Streetcar will be technically feasible in most corridors, but costs will vary significantly

Operating Environment: Limitations

- Electric Codes restrict vehicle power supply wire height over traffic lanes and pedestrian areas for safety
- Vehicle physical characteristics limit wire height
- Typical wire height: 18.5 – 19.0 ft



Streetcar Vehicle Types

Modern Streetcar

Low floor, higher capacity



Example applications:

- Portland
- Seattle
- Tacoma
- Toronto

Historic Streetcar

High floor, lower capacity



Example applications:

- Philadelphia
- Memphis
- San Francisco
- Boston

Historic Replica Streetcar

High floor, lower capacity



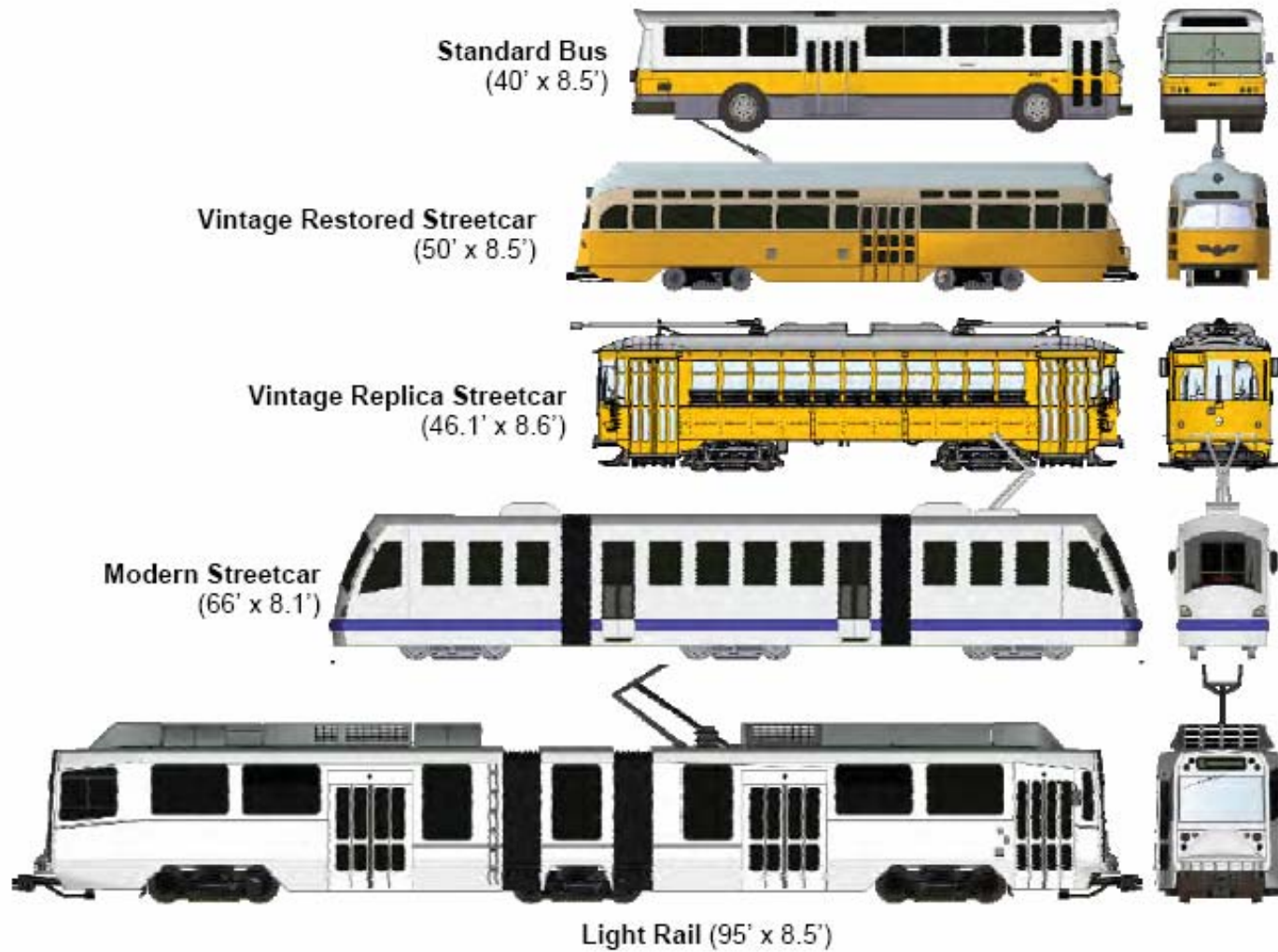
Example applications:

- New Orleans
- Lowell, MA

Modern Streetcar – Interior and Seating



Vehicle Types



Modern Streetcar – Current Availability

Brookville Equipment - Liberty Car
Dallas (in procurement)



CAF USA – Urbos
Cincinnati (in procurement)



Inekon
Portland and Seattle (in production)



Siemens S70 UltraShort
Salt Lake City, Atlanta Streetcar



Modern Streetcar – Current Availability

KinkiSharyo AmeriTram
Prototype being offered in US



Bombardier Flexity Freedom
Prototype being offered in US



United Streetcar
Portland and Tucson (in production)

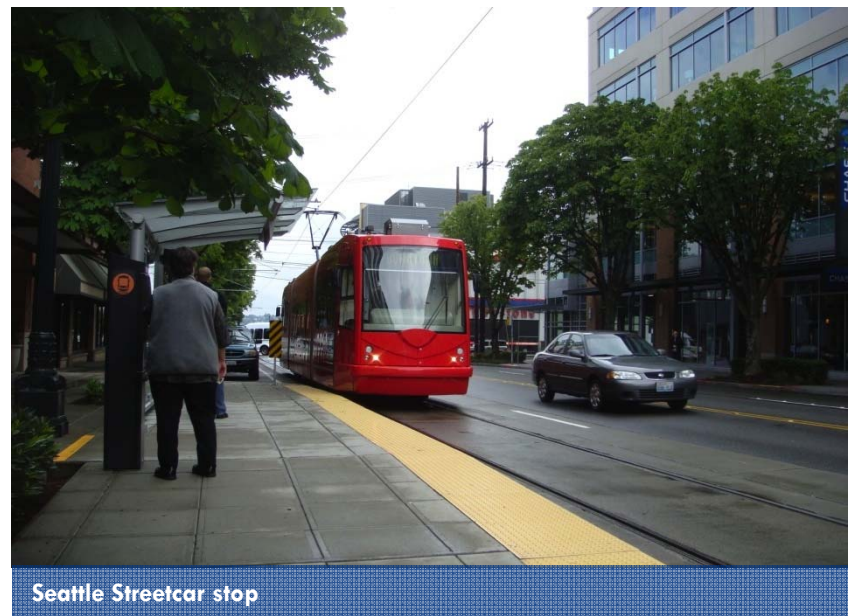


Other Foreign Manufacturers May Consider Entering the US Market



Typical Streetcar Stops

- Streetcar stops are basic, more like a “stop” than a “station”
- Amenities typically include:
 - Shelters, raised platforms, higher-end amenities (benches, signage, lighting, etc.), real-time information, fare payment



Streetcar Stops / Light Rail Stations

Streetcar/local bus

- Usually less elaborate
- Streetcar has shorter platform than light rail



Typical Streetcar Stop, Portland

Light Rail/BRT

- Usually more elaborate, longer platform
- Stations vary greatly for BRT



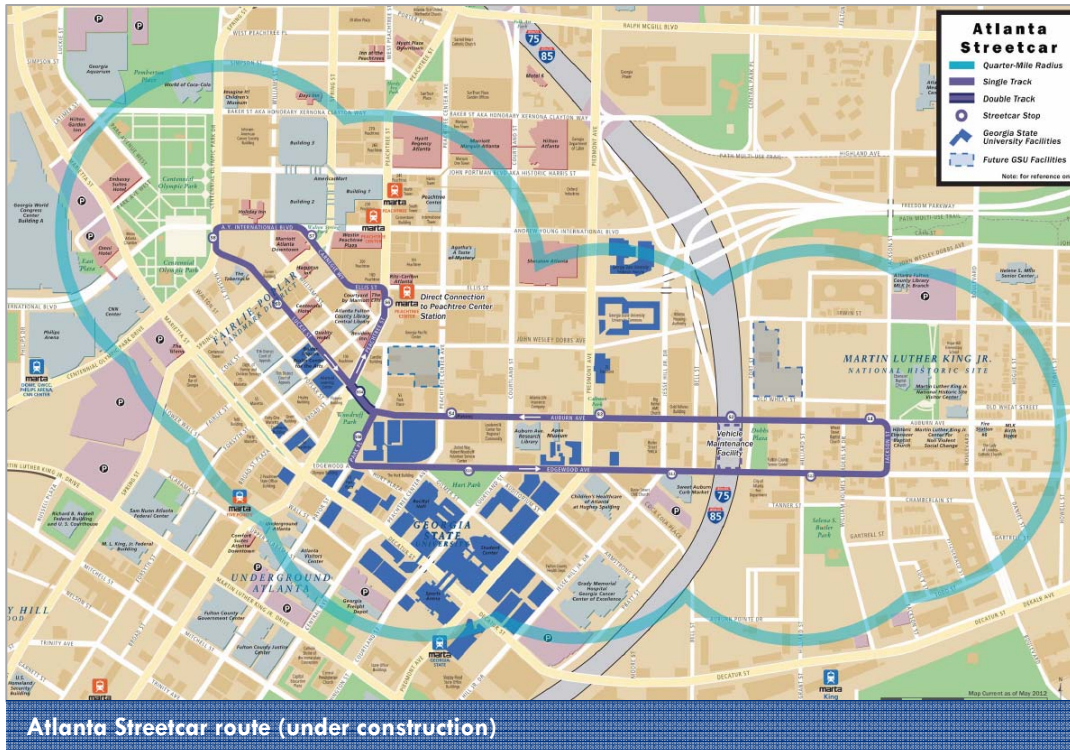
Future Westgate Station, St. Paul



Healthline BRT Station, Cleveland

Streetcar Stop Spacing

- Typically close—approximately every two blocks



Atlanta Streetcar route (under construction)



Cincinnati Streetcar route (under construction)

Stop Spacing

Streetcar/local bus

- Usually closely spaced stops



South Lake Union area, Seattle

Light Rail/BRT

- Usually 1/2 to 1 mile stop spacing
- Serves longer trips

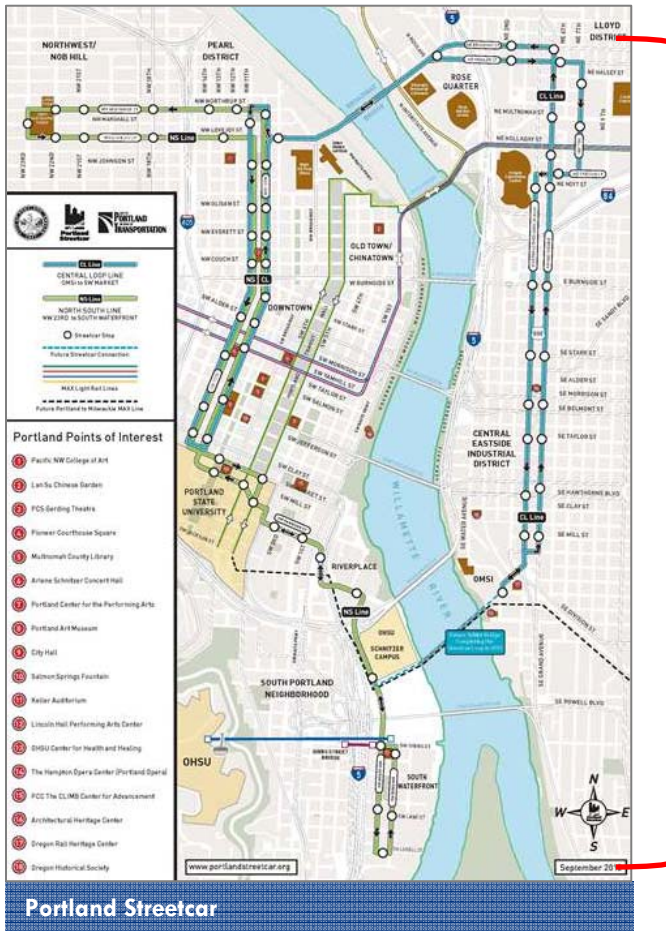


Hiawatha Line, Minneapolis

Route Lengths

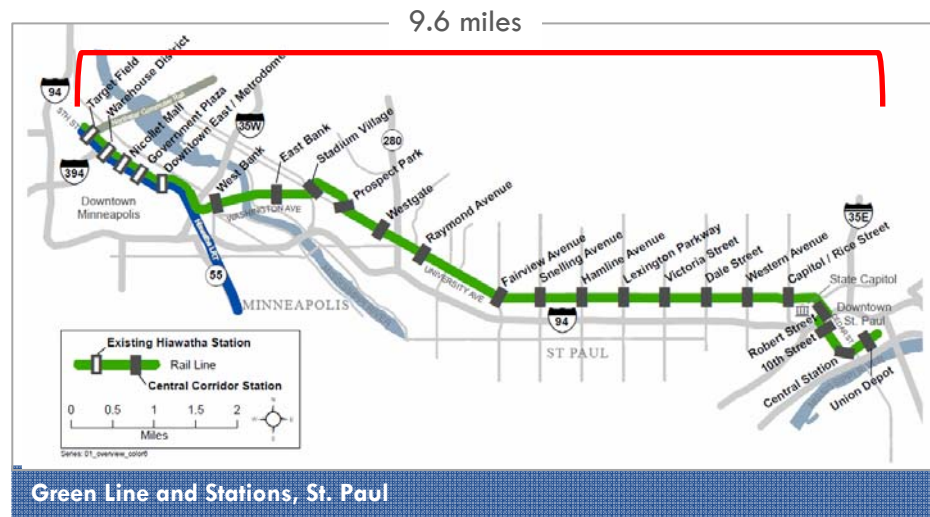
Streetcar/Local Bus

- Focus on shorter local trips



Light Rail/BRT

- Focus on longer and regional trips



Streetcar Ridership

- Strong ability to attract “choice” riders
- Attracts a wider mix of users (students, workers making midday trips, tourists, etc.)
- Fewer commuters; more non-work trips



Economic Development and Streetcars

- Streetcar best at concentrating investment and accelerating development
- Streetcar can strengthen or reinforce other goals (walkability, vibrant street life, etc.)
- Streetcar is a unique mode that attracts attention and development
 - As much about development as moving people
- Streetcar can be good way to revitalize inner-city, low-income neighborhoods



Pearl District, Portland

Economic Development

Streetcar

- Linear economic development



Light Rail

- Nodal economic development



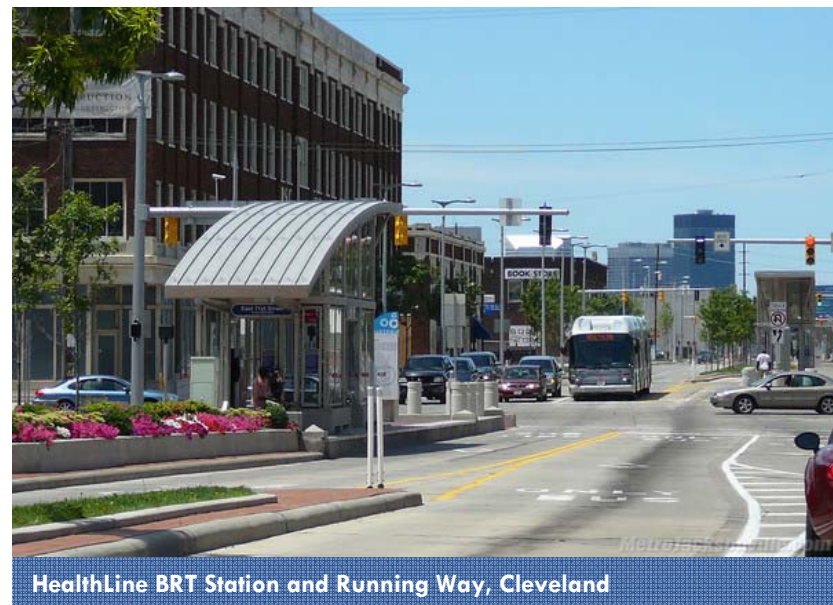
Economic Development

Bus Rapid Transit

- Depends largely on physical improvements
- Nearly always less than streetcar, but...
- There are exceptions:
 - Cleveland's Healthline spurred \$4-5B in development
 - However, infrastructure much more similar to LRT than typical BRT



HealthLine BRT Station, Cleveland



HealthLine BRT Station and Running Way, Cleveland

How do streetcars and other modes compare?

- Many similarities:
 - Light rail: Vehicle type and ride quality
 - BRT/Rapid Bus: Station facilities
 - Local bus: Stop spacings
- Many differences; key differences include:
 - Compared to light rail:
 - Streetcar in mixed-traffic rather than exclusive ROW
 - Focus on shorter, more local trips
 - Much less construction impact
 - Compared to BRT/Rapid Bus/Local Bus:
 - Greater sense of “permanence”
 - Much greater ability to spur development
 - Better ride quality

Streetcar versus Other Modes: Construction

Streetcar/BRT

- Lower impact; faster construction



First Hill Streetcar construction, Seattle

Light Rail

- Often much greater impact



Green Line construction, St. Paul

Summary

- Usually operates in mixed traffic
- Focuses on shorter, local trips
- Closer stop spacing, like local/standard bus
- Similar but smaller vehicles than LRT
- Less costly than light rail, more costly than BRT
 - Infrastructure between LRT and BRT
 - Capacity similar to BRT
- Strong ability to catalyze and organize development
 - Light rail and BRT can do this as well, but more nodal than linear
- Slower speeds, more like local bus
- Much less construction impact than LRT

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Michelle Beaulieu, PED
michelle.beaulieu@ci.stpaul.mn.us
651-266-6620

