

KANSAS CITY OPENING – MAY 2016



# Streetcar Mobility Benefits

APTA Rail, Baltimore, June 13, 2017  
David Vozzolo, Streetcar Program Director



# Agenda

- What Streetcar is and isn't
- Recent History and Evolution
- U.S. Streetcar Ridership Experience
- A Few Case Studies



**Modern Streetcar** isn't only about **Economic Development**.

**It's also about Urban Mobility!!!!**



# STREETCAR IS NOT...

## Light Rail, Metro-Rail or Commuter Rail



### ***Light Rail/Metro-Rail/Commuter Rail Service:***

- *Dedicated, Exclusive Right-of-Way*
- *Longer Distances Between Station Stops*
- *Higher Speeds*
- *Several Rail Cars in a "Train"*
- *Longer Distances Served – More Oriented toward Suburban to Downtown Travel*

# STREETCAR IS TYPICALLY...

## Designed as Urban Circulator



### ***Typical Urban Circulator Service:***

- *Shorter Routes Serving Downtown & Adjoining Neighborhoods*
- *Often Operates in Mixed Traffic*
- *More Frequent Service, Smaller Vehicles*
- *Designed for Quick "On" and "Off" the Vehicle*
- *Riders Take Shorter Trips*

# STREETCAR IS EVOLVING...

## Into Urban Hybrid Operations

Urban Circulator that also Serves Longer Trips on Dedicated Guideway



### ***Urban Hybrid:***

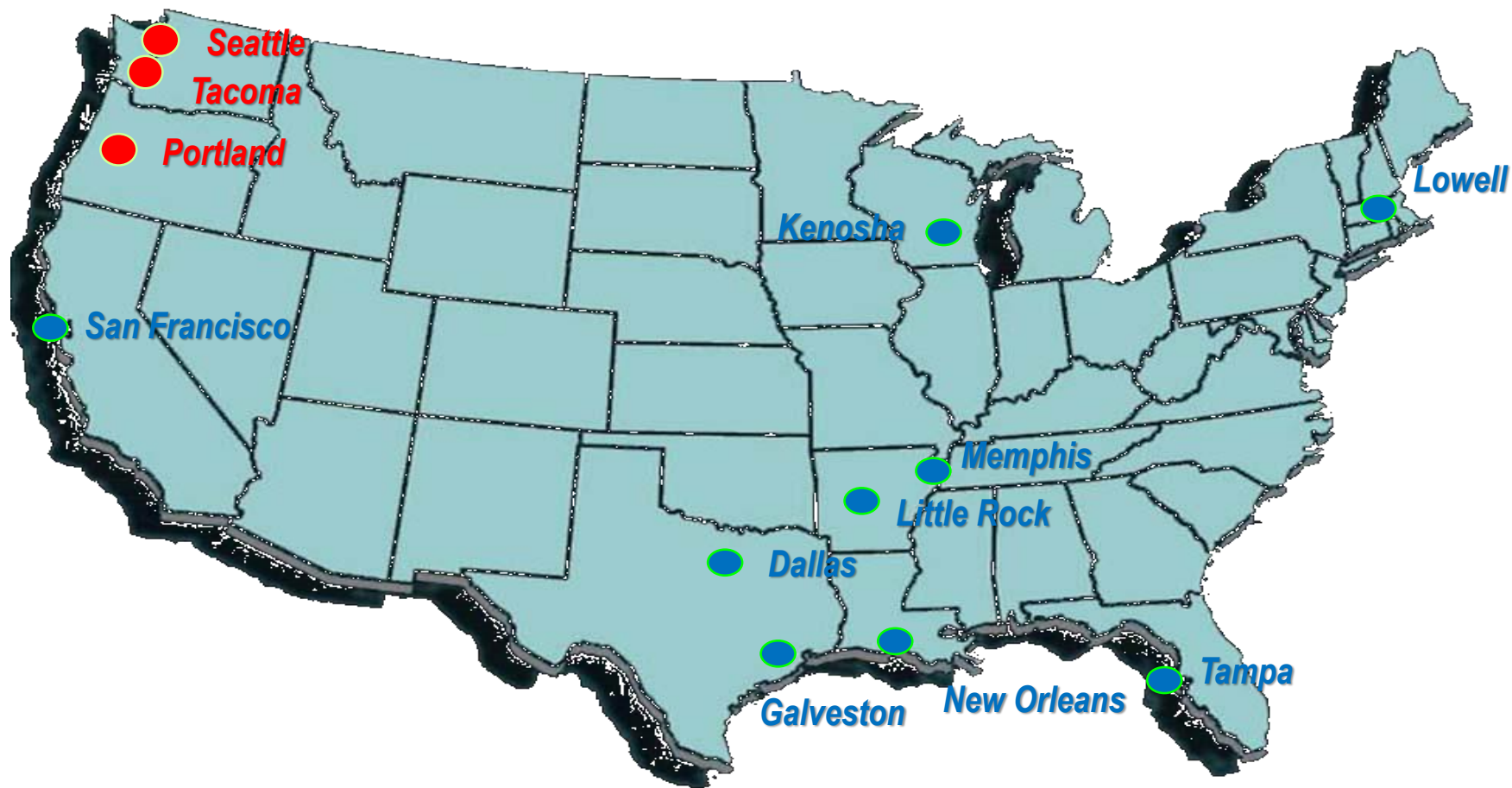
- *Mixed Traffic in Urban Center and Dedicated Lanes in Select Urban Segments or Outlying Areas*
- *More Frequent Service with Closer Stops in Urban Center; Less Frequent Service with Fewer Stops in Outlying Areas*
- *May Use Same Vehicle Technology or Different Vehicles on Different Segments*



# Modern Streetcar as “Pedestrian Accelerator”



# 2013 Operating U.S. Streetcars (Modern and Vintage)



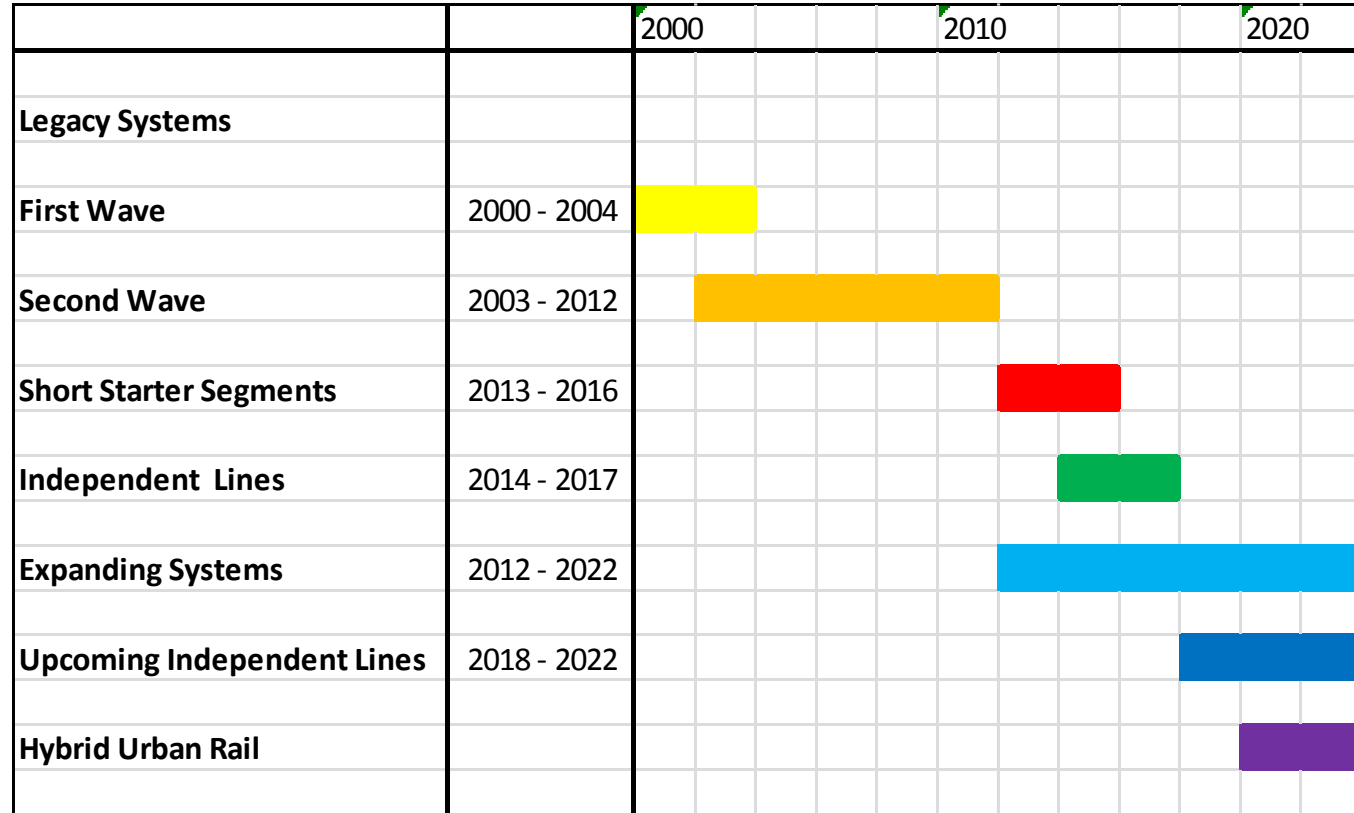


# Today Operating U.S. Streetcars (Modern and Vintage)



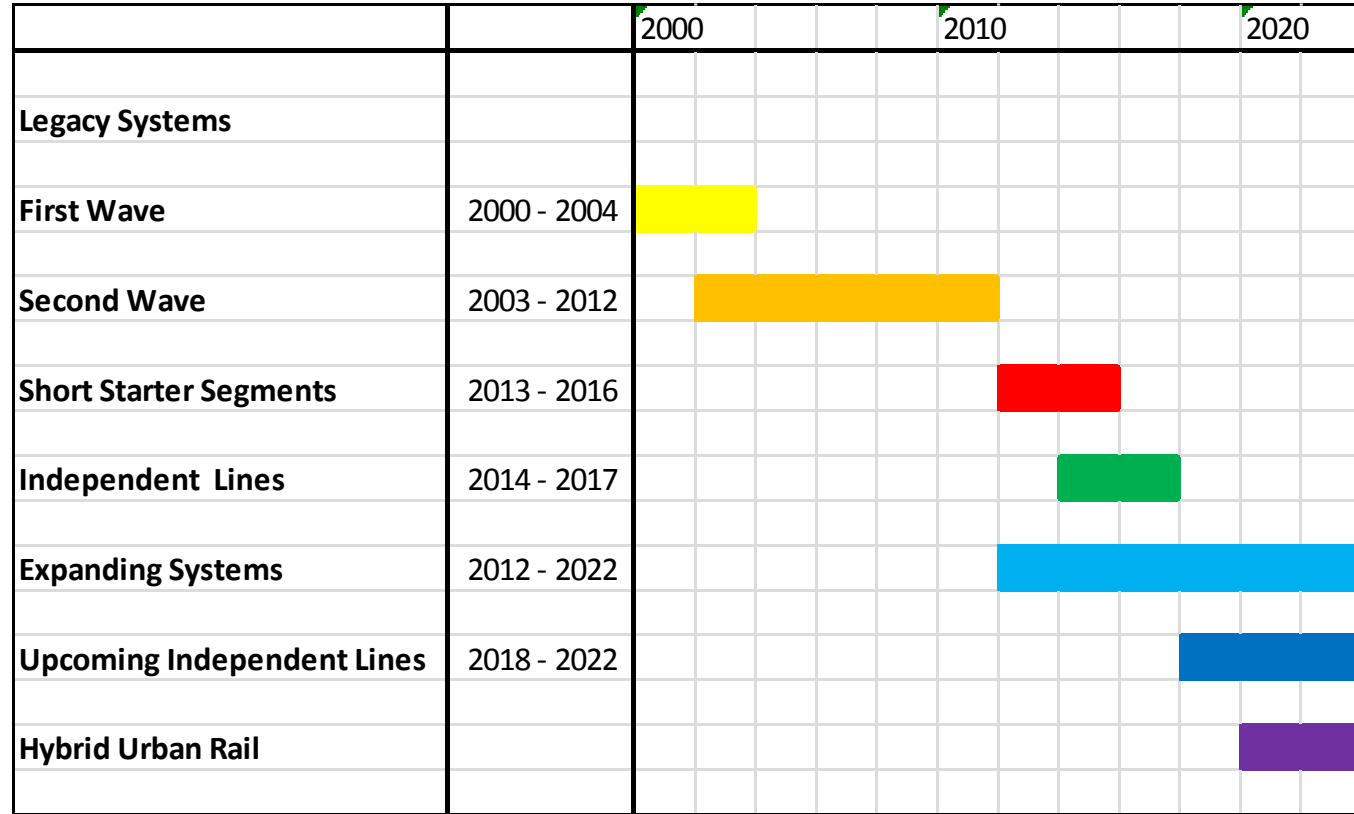
# Evolution of Modern Streetcar

New Orleans  
Philadelphia  
San Francisco



# Evolution of Modern Streetcar

Kenosha  
Portland  
Tampa  
Little Rock  
Memphis





# Evolution of Modern Streetcar

Tacoma  
Seattle  
Portland Extension



|                            |             | 2000 | 2010 | 2020 |
|----------------------------|-------------|------|------|------|
| Legacy Systems             |             |      |      |      |
| First Wave                 | 2000 - 2004 |      |      |      |
| Second Wave                | 2003 - 2012 |      |      |      |
| Short Starter Segments     | 2013 - 2016 |      |      |      |
| Independent Lines          | 2014 - 2017 |      |      |      |
| Expanding Systems          | 2012 - 2022 |      |      |      |
| Upcoming Independent Lines | 2018 - 2022 |      |      |      |
| Hybrid Urban Rail          |             |      |      |      |

# Evolution of Modern Streetcar

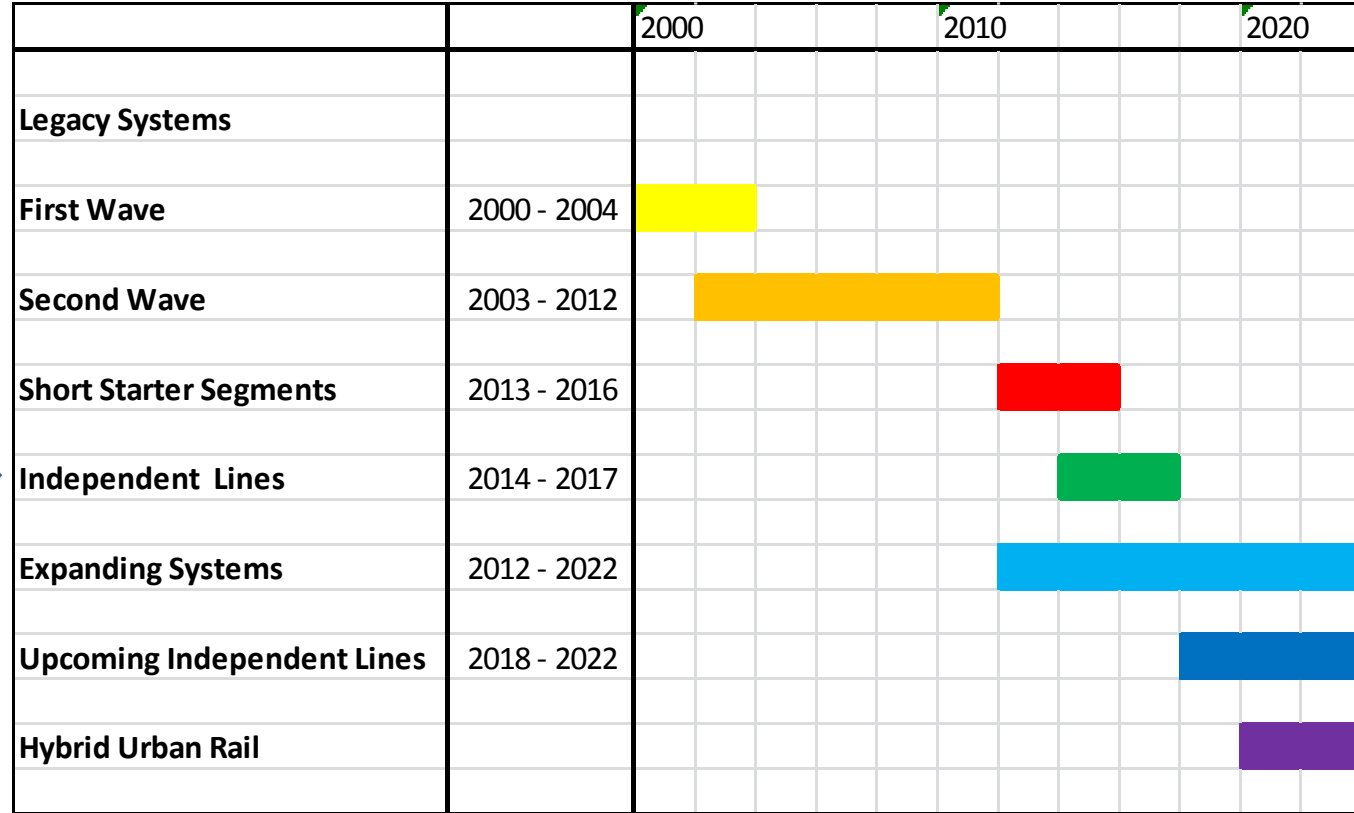
Salt Lake City  
Washington, DC  
Dallas Oak Cliff  
Atlanta  
Charlotte Gold Line



|                            |             | 2000 | 2010 | 2020 |
|----------------------------|-------------|------|------|------|
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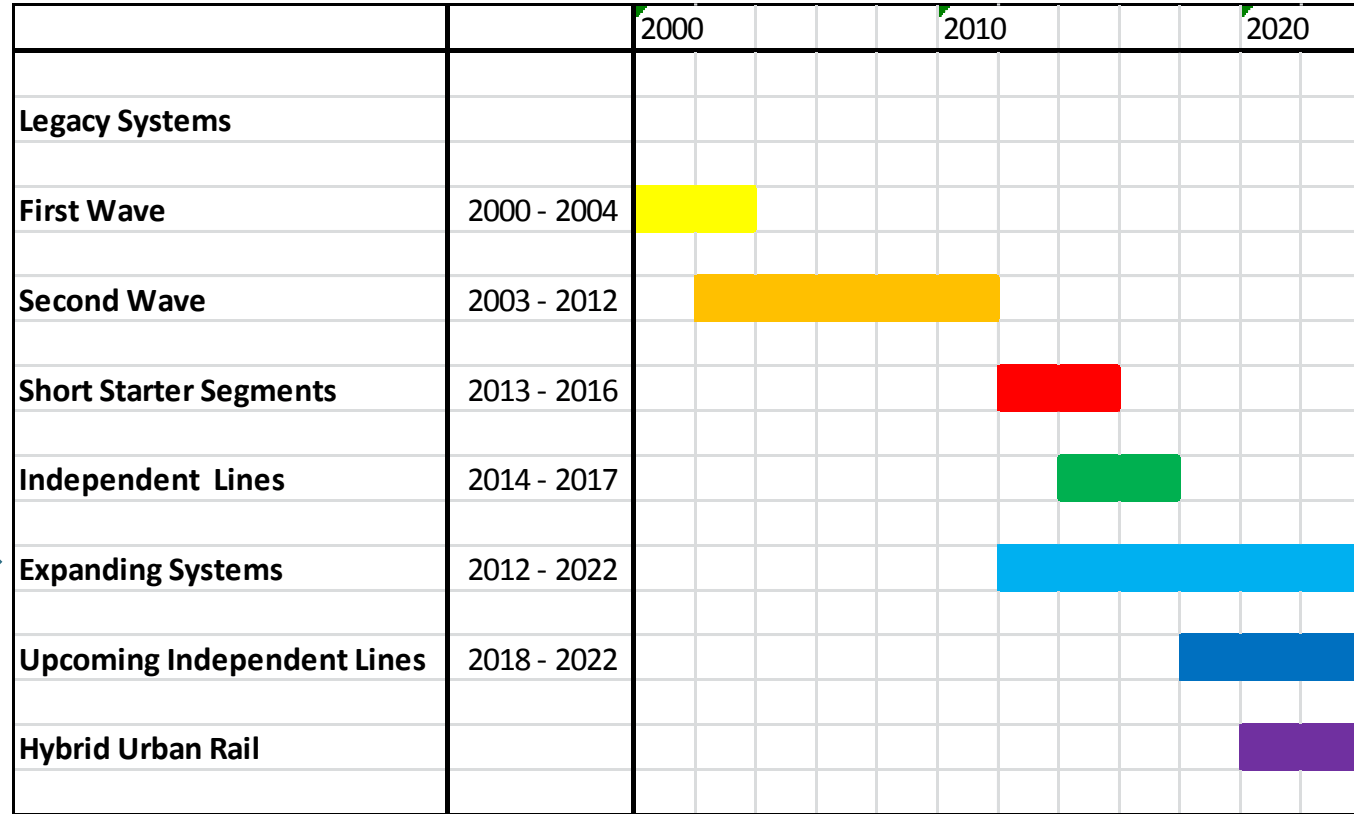
Tucson  
Kansas City  
Cincinnati  
Detroit





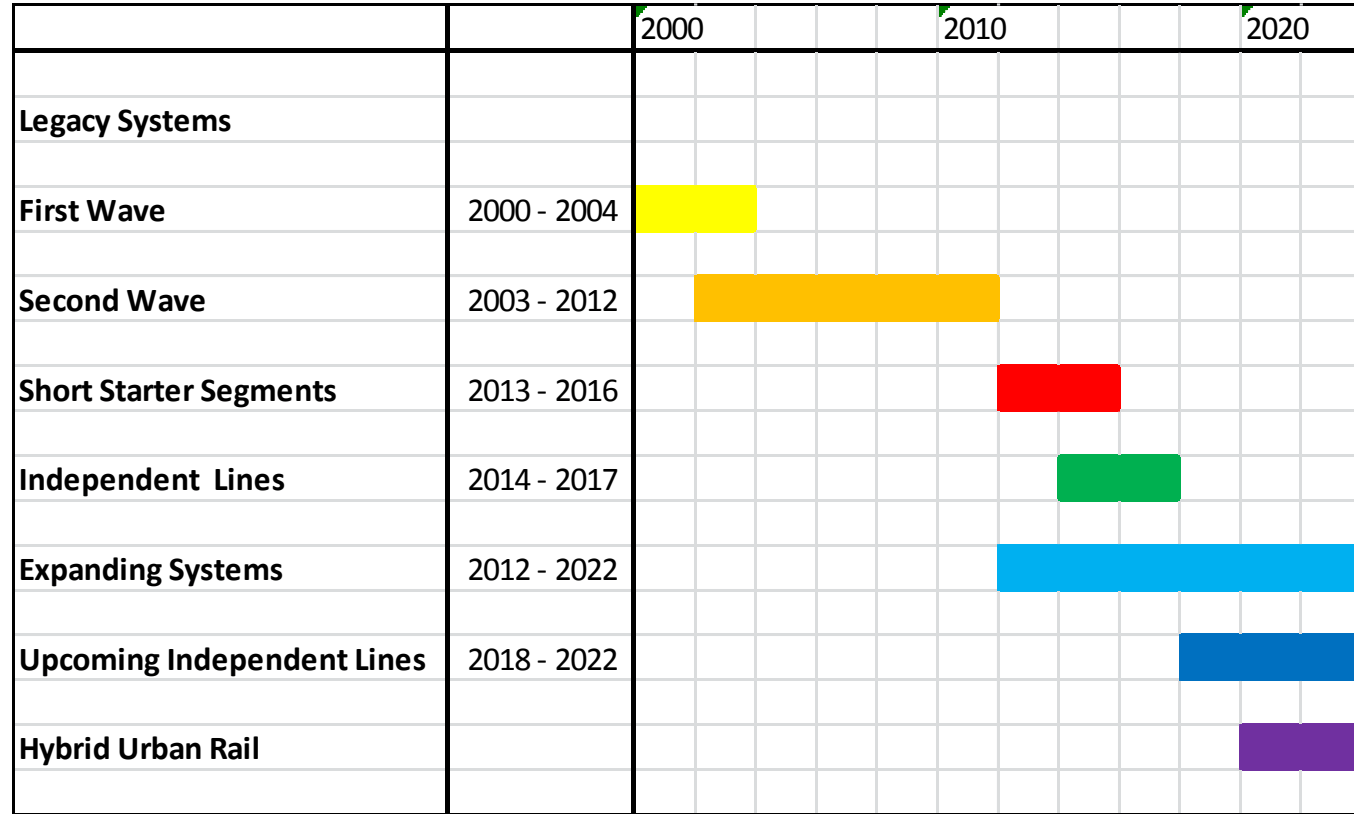
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Portland  
Seattle  
New Orleans  
Tacoma  
Charlotte  
Kansas City  
Dallas

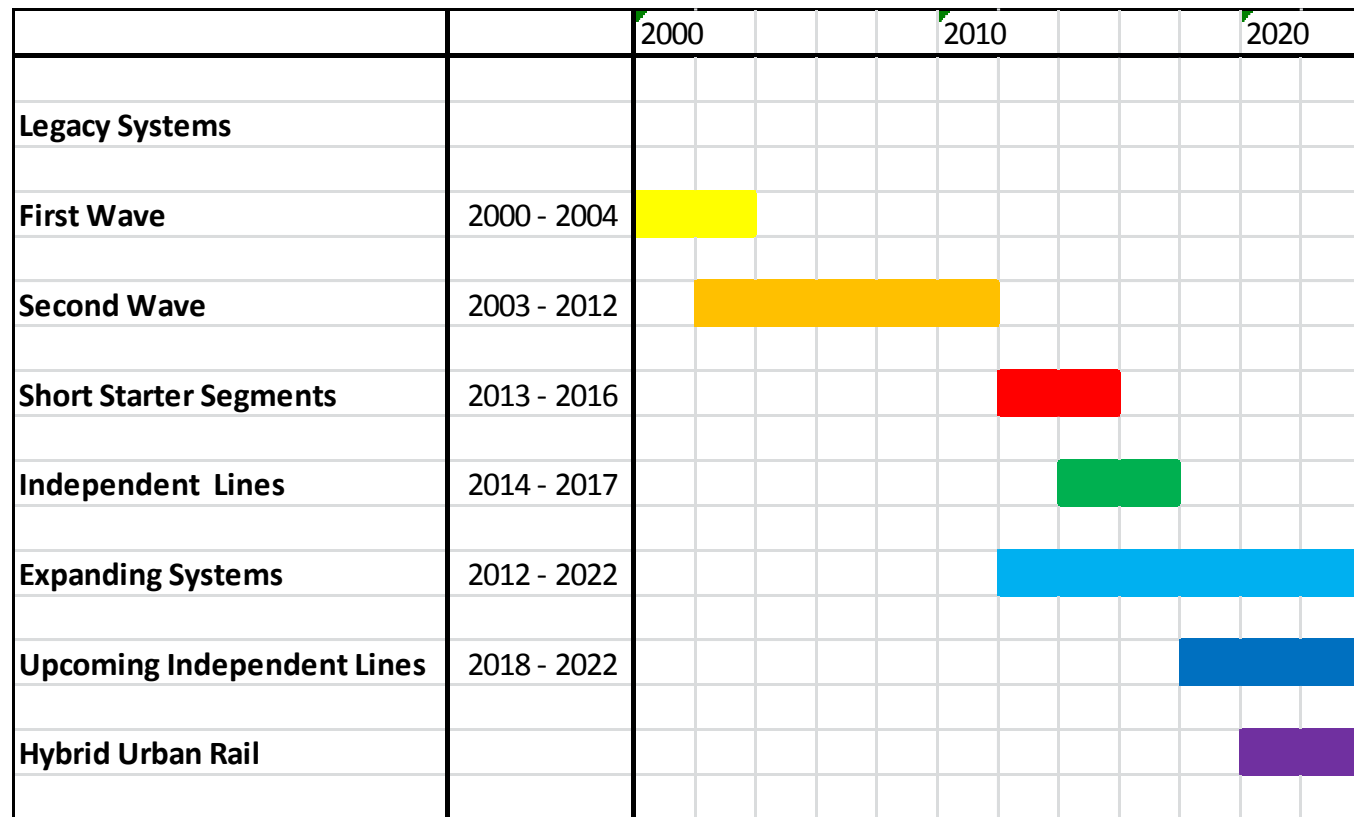


# Evolution of Modern Streetcar

Oklahoma City  
Fort Lauderdale  
Santa Ana  
Tempe  
Sacramento  
Milwaukee  
Los Angeles



# Evolution of Modern Streetcar



Brooklyn-Queens  
Connector





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**It's also about Urban Mobility!!!!**

# Streetcar Ridership – Operating Systems

| Streetcar System                           | Route Miles | Weekday Headways | Avg Daily Ridership | Riders per Route-Mile |
|--|-------------|------------------|---------------------|-----------------------|
| <u>Established Systems</u>                 |             |                  |                     |                       |
| Portland OR (including Loop)               | 7.4         | 7/15/20          | 15,100              | 2,041                 |
| Seattle WA - South Lake Union & First Hill | 3.8         | 10/15/20         | 4,600               | 1,211                 |
| Tacoma Link                                | 1.6         | 12/20            | 3,400               | 2,125                 |
| New Orleans                                | 22.3        | 10/20            | 22,100              | 991                   |
| <u>Short Starter Segments</u>              |             |                  |                     |                       |
| Salt Lake City S Line                      | 2.0         | 20/30            | 1,300               | 650                   |
| Washington, DC H-Benning                   | 2.4         | 10/15            | 2,800               | 1,167                 |
| Dallas Oak Cliff/Bishop Arts               | 2.5         | 20/30            | 600                 | 240                   |
| Atlanta, GA                                | 1.3         | 10/15/20         | 1,000               | 769                   |
| Charlotte, NC Gold Line Phase 1            | 1.5         | 15/20            | 1,200               | 800                   |
| <u>Independent Lines</u>                   |             |                  |                     |                       |
| Tucson AZ                                  | 3.9         | 10/15/20         | 4,200               | 1,077                 |
| Kansas City, MO                            | 2.2         | 10/20            | 5,500               | 2,500                 |
| Cincinnati, OH                             | 1.8         | 12/15            | 2,000               | 1,111                 |
| Detroit, MI M-1 Rail                       | 3.3         | 8/12             | 6,000               | 1,818                 |

# Streetcar Ridership – Opening 2017-2022

| Streetcar System                 | Route Miles | Weekday Headways | Avg Daily Ridership | Riders per Route-Mile |
|----------------------------------|-------------|------------------|---------------------|-----------------------|
| <b>Systems Opening 2017-2020</b> |             |                  |                     |                       |
| Charlotte, NC Gold Line Phase 2  | 4.0         | 15/15            | 5,300               | 1,325                 |
| Milwaukee, WI                    | 2.3         | 10/15            | 2,000               | 870                   |
| Oklahoma City, OK                | 3.5         | 10/15            | 1,200               | 343                   |
| Seattle, WA - includes Connector | 5.5         | 5/10/15          | 24,300              | 4,418                 |
| Santa Ana, CA                    | 4.1         | 10/15            | 7,500               | 1,829                 |
| Sacramento, CA                   | 3.3         | 15/20            | 2,800               | 848                   |
| Tempe , AZ                       | 3.0         | 10/15/20         | 1,000               | 333                   |
| Fort Lauderdale, FL Wave         | 2.6         | 10/12/15         | 2,700               | 1,038                 |
|                                  |             |                  |                     |                       |

# Comparison of Streetcar Ridership

| Operating Systems                   | # Systems | Riders per Route-Mile | Range         |
|-------------------------------------|-----------|-----------------------|---------------|
| Starter Streetcar Lines             | 5         | 725                   | 240 - 1,170   |
| Independent Streetcar Lines/Systems | 8         | 1,610                 | 990 - 2,500   |
| LRT - high ridership                | 11        | 2,540                 | 2,070 - 3,340 |
| LRT - moderate ridership            | 7         | 1,200                 | 860 - 1,480   |
| LRT - light ridership               | 7         | 560                   | 260 - 810     |



# Keys to Streetcar Mobility Benefits

- *Route serves mix of existing and new activities*
- *Alignment fits the urban environment*
- *High quality service – frequency and reliability*
- *Real-time information*
- *Convenient fare payment, access/egress*
- *Safe and secure environment*



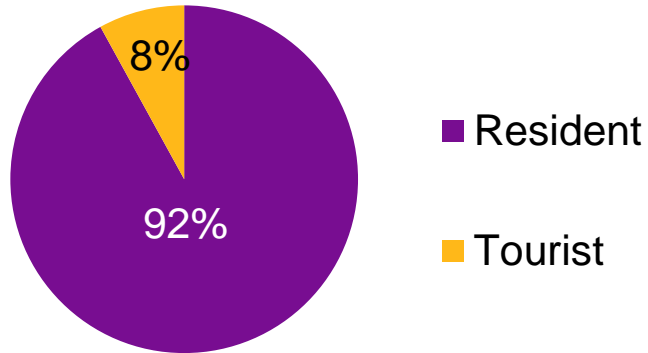
# New Orleans

- Oldest line opened in 1835
- Newest line opened in 2016
- 4 Streetcar lines and 32 track miles
- 22,000 daily riders

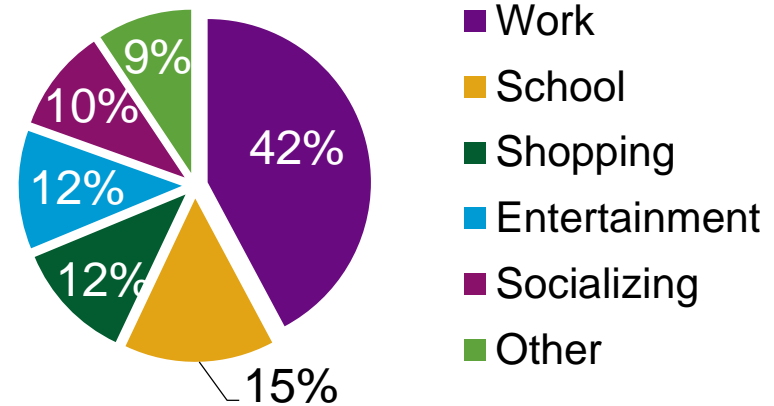


# OUR CUSTOMERS

## Rider Type

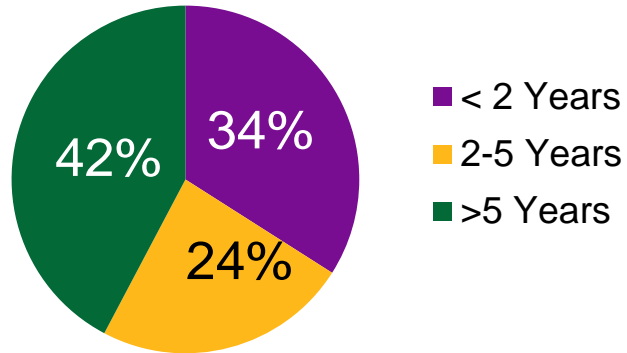


## Trip Purpose

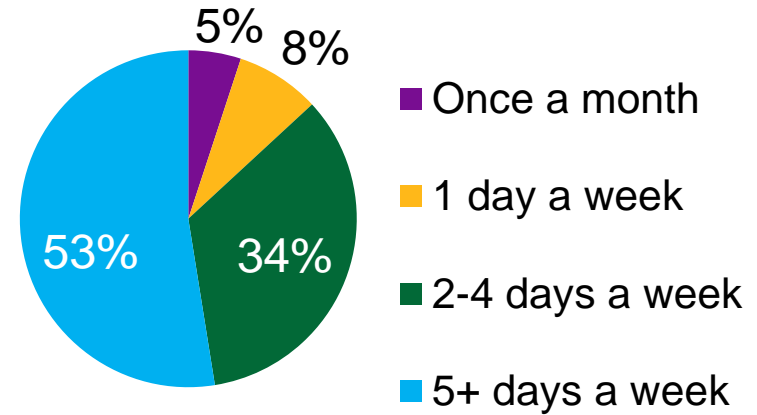


# RIDING HABITS

## Ride History



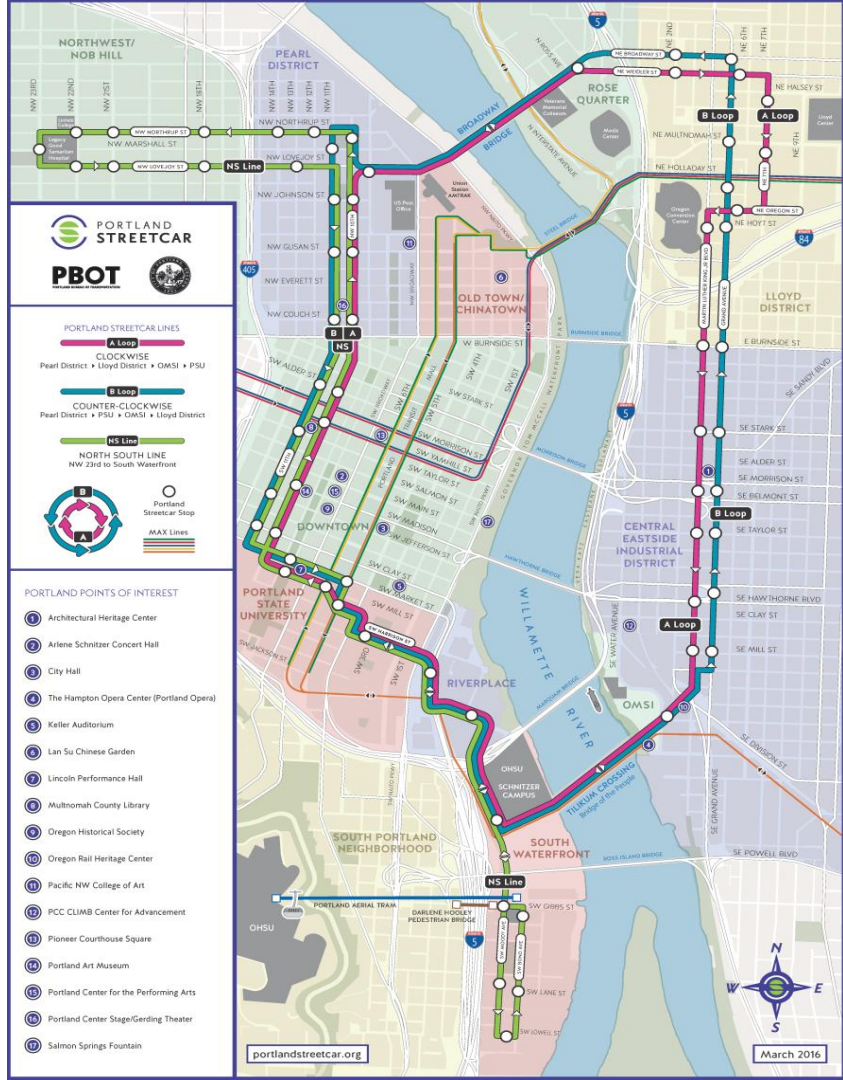
## Ride Frequency





# Portland

- Opened four extensions between 2001 and 2015
- 16 miles, 35 stops, 17 streetcars
- \$256 million capital cost for system
- 15,000 daily boardings
- Over \$4.5 billion new development since 1998

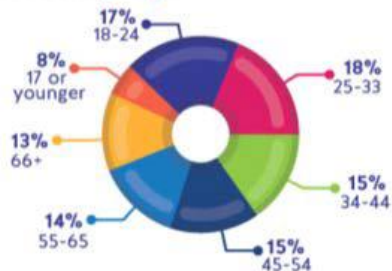




# Portland

A system that serves everyone

## Ridership Age:



**LESS THAN 5%**  
of riders are tourists

**38%**

of streetcar riders  
come from  
households  
without  
a car



25% of  
streetcar riders  
earn less than  
**\$20,000**  
per year

23% of streetcar riders  
do not have a  
**driver's license**



## Connecting the Entire Community

From home to work to class to shopping



**4K Riders**

Daily streetcar ridership  
has increased from **4,000**  
users per day in 2001 to  
**15,000** users per  
day in 2015.



**15K Riders**



The top destinations  
for Portland Streetcar riders:

Work 32%

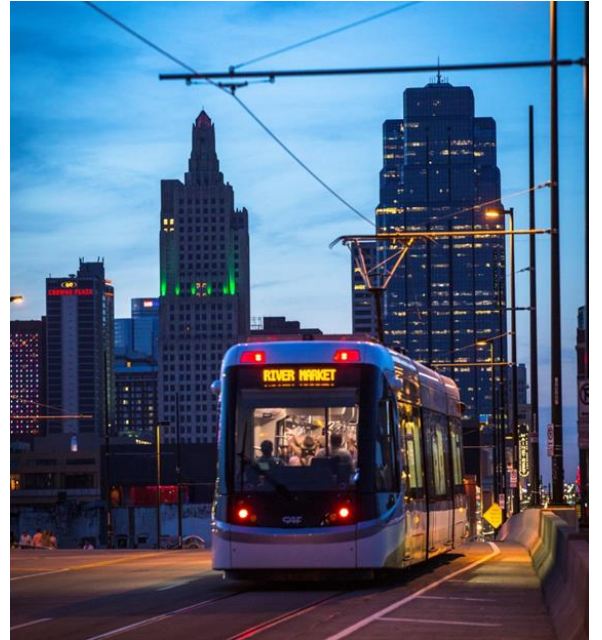
Shopping/Dining 26%

College Class 17%

**66%** of streetcar  
trips begin  
at home

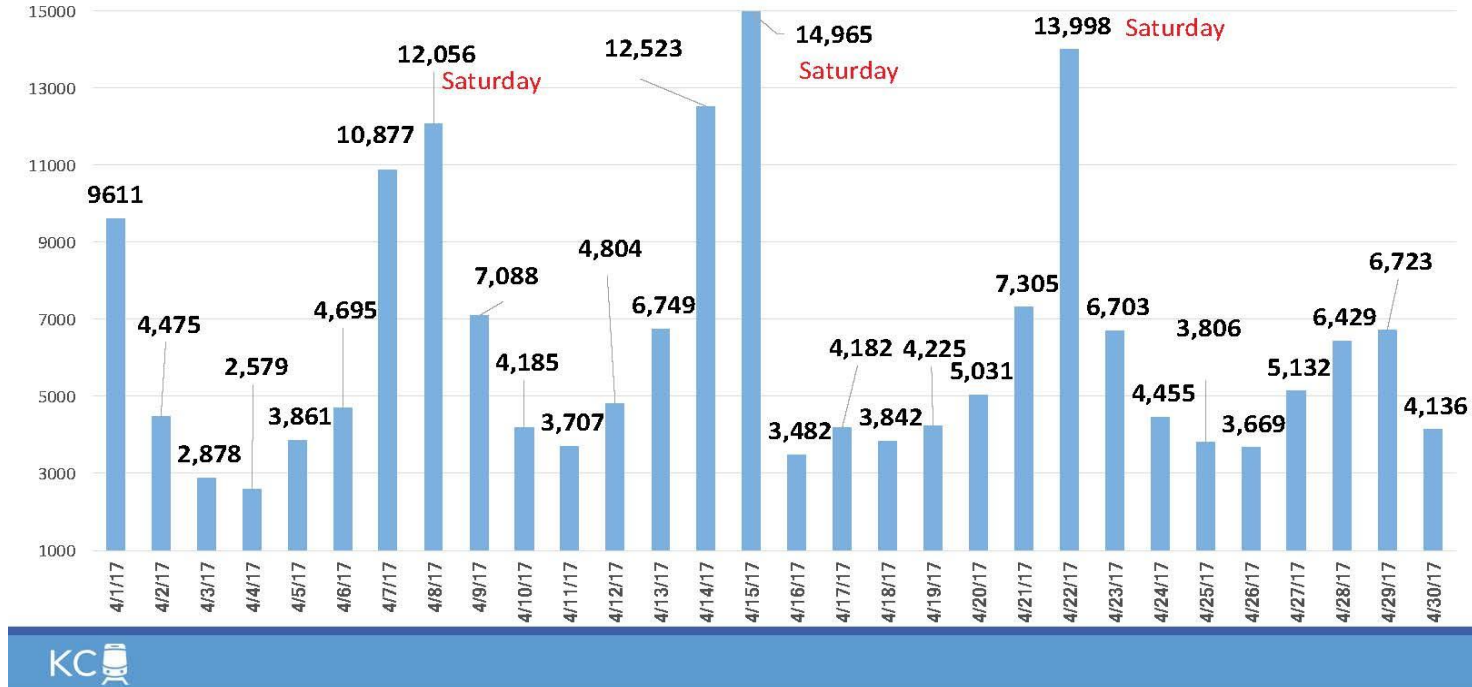
# Kansas City

- Opened May 2016
- 2 miles, 10 stops
- 4 streetcars
- \$102 million capital cost
- 10/12 minute headways
- 5,500 weekday boardings, >10,000 on weekend days
- Free Fare



# Kansas City

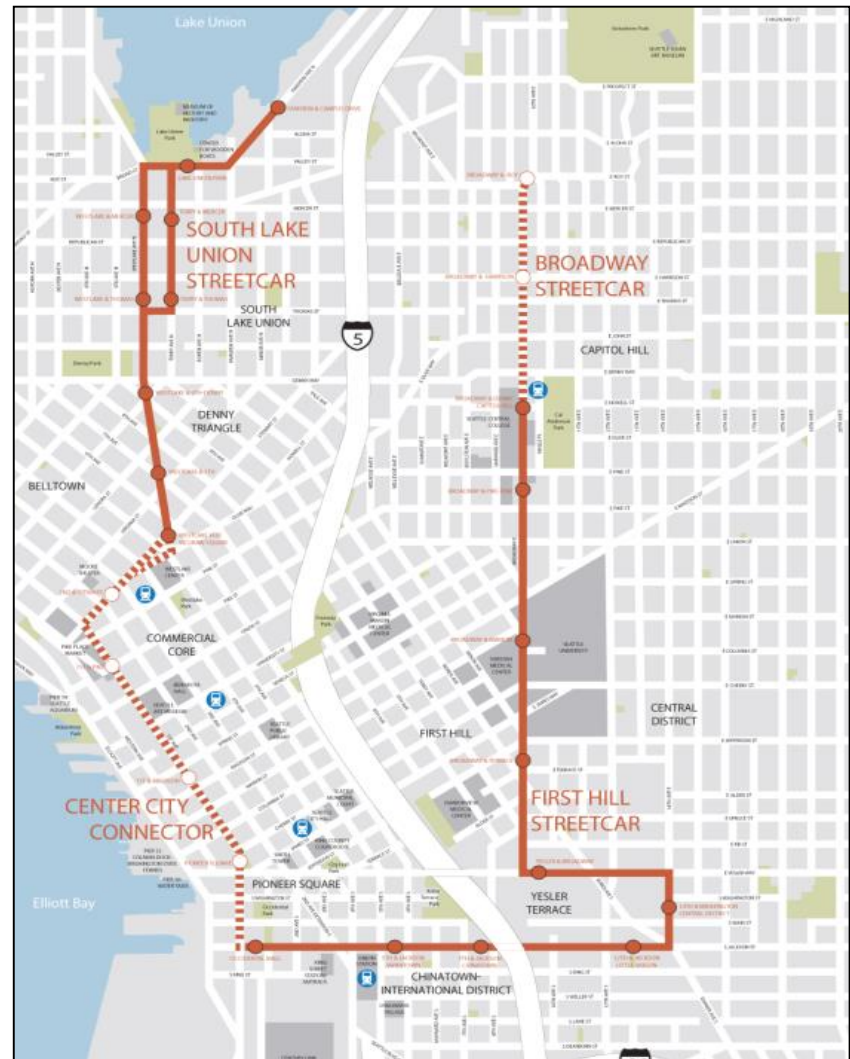
KC STREETCAR RIDERSHIP APRIL 2017: 188,171





# Seattle

- South Lake Union (1.3 miles) opened in 2007
- First Hill (2.5 miles) opened in 2016
- 21 stops and 9 streetcars
- 4,500 daily boardings
- Center City Connector scheduled to open in 2020.
- 5-10 minute headways
- 24,000 daily boardings for total system.





*Produced by HDR*



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