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# U.S. Urban Rail Transit Lines Opened From 1980

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# Table of Contents

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<b>Introduction</b>	<b>5</b>
<b>I.) U.S. Urban Rail, Peoplemover and Monorail Segments Opened From 1980</b>	<b>7</b>
<b>Atlanta (HRT 1979)</b>	<b>7</b>
<b>Baltimore (HRT 1983, LRT 1992)</b>	<b>8</b>
<b>Boston (LRT 1897, HRT 1901)</b>	<b>8</b>
<b>Buffalo (LRT 1984)</b>	<b>10</b>
<b>Camden - Trenton (Diesel LRT 2004)</b>	<b>10</b>
<b>Chicago (HRT 1892)</b>	<b>10</b>
<b>Cleveland (LRT 1920, HRT 1955)</b>	<b>11</b>
<b>Dallas (LRT 1996)</b>	<b>12</b>
<b>Denver (LRT 1994)</b>	<b>12</b>
<b>Detroit (DPM 1987)</b>	<b>13</b>
<b>Fort Worth (LRT 1963)</b>	<b>13</b>
<b>Houston (LRT 2004)</b>	<b>13</b>
<b>Jacksonville (DPM 1989)</b>	<b>14</b>
<b>Jersey City (LRT 2000)</b>	<b>14</b>
<b>Las Vegas (Monorail 2004)</b>	<b>15</b>
<b>Los Angeles (LRT 1990, HRT 1993)</b>	<b>15</b>
<b>Memphis (LRT 1993)</b>	<b>16</b>
<b>Miami (HRT 1984, DPM 1986)</b>	<b>16</b>

<b>Minneapolis-St. Paul (LRT 2004)</b>	<b>17</b>
<b>Newark (LRT 1935)</b>	<b>17</b>
<b>New Orleans (LRT 1835)</b>	<b>18</b>
<b>New York (HRT 1871; includes NYCT, PATH, SIRy)</b>	<b>18</b>
<b>Philadelphia (LRT 1905, HRT 1907; includes SEPTA, PATCO)</b>	<b>19</b>
<b>Pittsburgh (LRT 1904; first stage reconstruction completed 1985)</b>	<b>21</b>
<b>Portland (LRT 1986)</b>	<b>23</b>
<b>Sacramento (LRT 1987)</b>	<b>23</b>
<b>St. Louis (LRT 1994)</b>	<b>24</b>
<b>Salt Lake City (LRT 1999)</b>	<b>24</b>
<b>San Diego (LRT 1981)</b>	<b>25</b>
<b>San Francisco (LRT 1917, HRT 1972)</b>	<b>26</b>
<b>San Jose (LRT 1987)</b>	<b>27</b>
<b>San Juan (Puerto Rico; HRT 2005)</b>	<b>28</b>
<b>Tacoma (LRT 2003)</b>	<b>28</b>
<b>Washington (HRT 1976)</b>	<b>29</b>
<b>2.) U.S. Urban Rail Transit Lines Under Construction For Opening After 2005</b>	<b>29</b>
<b>3.) Historic Opening Years</b>	<b>31</b>
<b>Boston</b>	<b>31</b>
<b>Cleveland</b>	<b>32</b>
<b>Philadelphia</b>	<b>33</b>
<b>Pittsburgh</b>	<b>36</b>
<b>San Francisco</b>	<b>38</b>

<b>4.) U.S. Urban Rail Passenger Traffic Statistics, 2002-2004</b>	<b>39</b>
<b>Acknowledgments</b>	<b>44</b>
<b>References</b>	<b>44</b>
<b>Document History</b>	<b>48</b>

## Introduction

This tabulation includes all heavy rail transit (HRT), light rail transit (LRT), downtown peoplemover (DPM) and monorail segments opened or closed in the United States from 1980. It was prepared as an update of a similar tabulation presented by Pushkarev, Zupan and Cumella (1982). Additional information provides details of segments that are not grade separated (e.g. reserved track and street track).

Sources consulted by the authors do not agree on the route lengths of all segments or systems, owing to differences in definition and other factors. The data presented below should be considered as estimates. "Cumulative route length" data may vary from total route implied by National Transit Database statistics.

"Cumulative Route Length" statistics include all rail transit operators serving the city, e.g. New York totals include New York City Transit (NYCT), Port Authority Trans-Hudson Corporation (PATH) and Staten Island Railway (SIRy). Each operator is counted once, and as a unit.

Memphis, New Orleans, Philadelphia (15-Girard Avenue, reopening pending) and San Francisco (F Line) operations with heritage rolling stock included in "LRT" route length because of the scale of operation and traffic. Other dedicated heritage lines were excluded from "LRT" totals because of the limited scale of operation.

Additional information on heritage lines is available online. Sources include:

APTA Heritage Trolley and Streetcar Site.

<http://www.heritagetrolley.org>

North American Vintage Trolley Systems.

<http://www.railwaypreservation.com/vintagetrolley/vintagetrolley.htm>

Information on the Morgantown Personal Rapid Transit System, which was completed prior to 1980, is available online. Sources include the official webpage:

<http://www.wvu.edu/~facserv/prt.htm>

Information on the Seattle Center Monorail, which was completed prior to 1980, is available online. Sources include the official website:

<http://www.seattlemonorail.com>

Airport circulator systems and other “intramural transit systems” were excluded from this tabulation. Online sources include the following:

Airport Transit System (Chicago-O’Hare):

[http://www.ohare.com/ohare/parking/parking\\_ats.shtm](http://www.ohare.com/ohare/parking/parking_ats.shtm)

AirTrain JFK (New York-JFK):

<http://www.panynj.gov/airtrain>

AirTrain Newark (New York-Newark):

<http://www.airtrainnewark.com/airtrainnewark>

Intramural Transit Systems (Jon Bell):

<http://web.presby.edu/~jtbell/transit/types/intramural.html>

San Francisco Airport AirTrain:

<http://www.sanfranciscointernationalairport.org/sfo-airtrain-san-francisco-airport.htm>

Line, station and stop names are those current at August 2005.

Except as noted, all HRT and LRT lines are standard gauge ( $1,435\text{mm} = 4' 8\frac{1}{2}$ ).

Opening dates are the first day of commercial service. In some cases, service was offered without charge for a day or two prior to the formal start of commercial service (typically on the preceding Saturday and Sunday).

# I.) U.S. Urban Rail, Peoplemover and Monorail Segments Opened From 1980

## Atlanta (HRT 1979)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1980 System Length				(19.0 km) 11.8 mi
1981	+(0.8) 0.5	South Line	Garnett – Five Points	(19.8) 12.3
1981	+(2.3) 1.4	North Line	Five Points – North Avenue	(22.1) 13.7
1982	+(1.8) 1.1	“	North Avenue – Arts Center	(23.9) 14.8
“	+(2.3) 1.4	South Line	West End – Garnett	(26.1) 16.2
1984	+(4.4) 2.7	North Line	Arts Center – Lindbergh Center	(30.5) 18.9
“	+(5.5) 3.4	Northeast Line	Lindbergh Center – Brookhaven / Oglethorpe University	(36.0) 22.3
“	+(4.2) 2.6	South Line	Lakewood / Fort McPherson – West End	(40.2) 24.9
1986	+(3.1) 1.9	“	East Point – Lakewood / Fort McPherson	(42.7) 26.5
1987	+(4.4) 2.7	Northeast Line	Brookhaven / Oglethorpe University – Chamblee	(47.1) 29.2
1988	+(4.2) 2.6	South Line	Airport – East Point	(51.3) 31.8
1992	+(3.2) 2.0	Northeast Line	Chamblee – Doraville	(54.5) 33.8
“	+(2.4) 1.5	Proctor Creek Branch	Ashby – Bankhead	(56.9) 35.3
1993	+(5.5) 3.4	East Line	Avondale – Indian Creek	(62.4) 38.7
1996	+(12.7) 7.9	North Line	Lindbergh Center – Dunwoody	(75.2) 46.6
2000	+(3.2) 2.0	“	Dunwoody – North Springs	(78.4) 48.6

**Note:** Five Points station opened 1981.

## Baltimore (HRT 1983, LRT 1992)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
<b>HRT</b>				
1983	+(12.8) 8.0	Baltimore Metro Section A	Charles Center – Reisterstown Plaza	(12.8) 8.0
1987	+(9.6) 6.0	“ Section B	Reisterstown Plaza – Owings Mills	(22.6) 14.0
1994	+(2.4) 1.5	“ Section C	Charles Center – Johns Hopkins	(24.8) 15.5
<b>LRT</b>				
1992	+(36.3) 22.5	Central Light Rail Line	Cromwell Station / Glen Burnie – Timonium	(36.3) 22.5
1997	+(7.3) 4.5	Hunt Valley Light Rail Extension	Timonium – Hunt Valley	(43.5) 27.0
1997	+(0.5) 0.3	Pennsylvania Station Light Rail Extension	University of Baltimore / Mt. Royal – Penn Station	(44.0) 27.3
1997	+(4.4) 2.7	BWI Light Rail Extension	Linthicum – BWI Airport	(48.4) 30.0
<b>Total HRT and LRT</b>				(73.4 km) 45.5 mi

## Boston (LRT 1897, HRT 1901)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
<b>HRT</b>				
1980 Route Length			34.6 mi (55.8 km)	
1984	+(2.6) 1.6	Red Line Northwest Extension	Harvard – Davis	(58.4) 36.2
1985	+(1.6) 1.0	“	Davis – Alewife	(60.0) 37.2

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1987	-(7.4) 4.6	Orange Line (Washington Street Elevated)	Chinatown – Forest Hills	
1987	+(7.9) 5.6	Orange Line (Southwest Corridor)	Chinatown – Forest Hills	(61.6) 38.2
<b>LRT</b>				
1980 Route Length			(43.4 km) 26.9 mi	
1985	-(4.0) 2.5 *	E-Arborway	Brigham Circle –Arborway	
1989	+(1.0) 0.6 **	“	Brigham Circle –Heath Street	
1994	***	A-Watertown	Brighton Avenue –Watertown	(43.4) 26.9
<b>Total HRT and LRT</b>			<b>(105.0 km) 65.1 mi</b>	

**Notes:**

\* Operation suspended.

\*\* Operation restored.

\*\*\* Operation suspended 1969; closure made permanent 1994.

Route length adjusted to avoid duplication of parallel Red Line segments (Andrew – JFK/ Umass – south), (3.5 km) 2.1 mi.

1980 route length includes (23.7 km) 14.7 mi of grade-separated alignment, (15.6 km) 9.7 mi of reserved-track alignment and (4.0 km) 2.5 mi of in-street alignment, but excludes (3.2 km) 2.0 mi of in-street alignment operated by bus from 1969 (A-Watertown). 2004 route length includes (3.1 km) 1.9 mi of in-street alignment (E-Arborway); restoration ordered in 2001 by Executive Office of Environmental Affairs, Commonwealth of Massachusetts.

Ashmont-Mattapan LRT segment, (3.5 km / 2.2 mi), marketed as extension of HRT Red Line. Included in LRT totals.

Historic opening dates for in-street and reserved-track segments of LRT lines are presented below (Part 3).

## Buffalo (LRT 1984)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1984	+(1.9) 1.2	Metro Rail	Erie Canal-Harbor –Theater	(1.9) 1.2
1985	+(5.2) 3.2	“	Theater – Amherst Street	(8.7) 5.4
1986	+(1.5) 0.9	“	Amherst Street – University	(10.0) 6.2

**Note:** Route length includes (1.9 km) 1.2 mi of reserved track (surface transit mall) and (8.2 km) 5.1 mi of grade-separated (underground) alignment.

Additional (0.4 km) 0.2 mi of depot access line used for passenger service to “Special Events” station as required.

## Camden - Trenton (Diesel LRT 2004)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2004	(55.6) 34.5	River Line	Waterfront Entertainment Center – Trenton	(55.6) 34.5

**Note:** Not electrified. Line opened 14 March 2004.

## Chicago (HRT 1892)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1980 Route Length				(144.2 km) 89.4 mi
1982	-(1.0) 0.6	Green Line	University – Jackson Park	(142.3) 88.4

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1983	+(8.7) 5.4	Blue Line	Jefferson Park – Rosemont	(151.8) 94.1
1984	+(4.0) 2.5	Blue Line	Rosemont – O’Hare Airport	(155.8) 96.6
1993	+(1.1) 0.7	Red Line	Howard – Dan Ryan connection *	(156.9) 97.3
1993	+(15.0) 9.3	Orange Line	18th St. junction – Midway Airport	(171.9) 106.6
1994	-(0.7) 0.4	Green Line	East 63rd – Cottage Grove–University	(171.3) 106.2

**Notes:** \* 13th St & State St – 18th St & Clark St.

Green Line (Lake – Englewood / Jackson Park) closed for reconstruction 1994-1996. East 63rd - Cottage Grove – Dorchester segment, (1.1 km) 0.7 mi, not reopened, removed 1997.

## Cleveland (LRT 1920, HRT 1955)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
<b>HRT</b>				
1980 Route Length				(31.1 km) 19.3 mi
<b>LRT</b>				
1980 Route Length				(16.9 km) 10.5 mi
1996	+(3.5) 2.2	Waterfront Line	Tower City – South Harbor	(20.5) 12.7
<b>Total HRT and LRT</b>				(51.6 km) 32.0 mi

**Notes:** 1980 LRT route length includes (5.5 km) 3.4 mi of grade-separated alignment and (11.4 km) 7.1 mi of reserved-track alignment.

Rehabilitation of LRT lines completed 1981.

LRT route length excludes (4.2-km) 2.6-mi segment shared by HRT trains, Tower City – E. 55th.

## Dallas (LRT 1996)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1996	+(13.7) 8.5	Red Line	Westmoreland – West End;	(16.6) 10.3
	+(2.9) 1.8	Blue Line	Illinois – 8th & Corinth	
1997	+(4.0) 2.5	Blue Line	Ledbetter – Illinois;	(32.2) 20.0
	+(11.6) 7.2	Red Line	West End – Park Lane	
2001	+(5.5) 3.4	Blue Line	Mockingbird – White Rock	(37.7) 23.4
2002	+(5.6) 3.5	Blue Line	White Rock – LBJ / Skillman	(43.4) 26.9
“	+(15.0) 9.3	Red Line	Park Lane – Galatyn Park	(58.4) 36.2
“	+(6.6) 4.1	Blue Line	LBJ / Skillman – Downtown Garland	
“	+(5.1) 3.2	Red Line	Galatyn Park – Parker Road	(71.0) 44.0

## Denver (LRT 1994)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1994	+(8.5) 5.3	C Line	30th - Downing – I-25 - Broadway	(8.5) 5.3
2000	+(13.4) 8.3	“	I-25 - Broadway – Littleton / Mineral	(21.9) 13.6
2002	+(2.9) 1.8	D Line	10th - Osage – Union Station	(24.8) 15.4

## Detroit (DPM<sub>1987</sub>)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1987	+(4.7) 2.9	Detroit People Mover	Renaissance Center – Cadillac Center – Joe Louis Arena – Renaissance Center	(4.7) 2.9

**Note:** One-way loop; anti (counter)-clockwise.

## Fort Worth (LRT<sub>1963</sub>)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1980 Route Length				(1.9 km) 1.2 mi
2002	-(1.9) 1.2	Tandy Subway	Tandy Center Complex – Station 3	0.0

## Houston (LRT<sub>2004</sub>)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2004	+(12.1) 7.5	METRORail	UH-Downtown – Fannin South	(12.1) 7.5

**Note:** Line opened 1 January 2004 (fare-free until 5 January 2004).

## Jacksonville (DPM 1989)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1989	+(1.1) 0.7	Automated Skyway Express ("Skyway")	Convention Center – Central	(1.1) 0.7
1996	-(1.1) 0.7	"	Convention Center – Central	0.0
1997	+(1.5) 0.9	"	Convention Center – Hemming Plaza	(1.5) 0.9
1998	+(0.5) 0.3	"	Hemming Plaza – FCCJ	(1.9) 1.2
1998	+(1.5) 0.9	"	Central – San Marco	(3.4) 2.1
2000	+(0.6) 0.4	"	San Marco – Kings Avenue	(4.0) 2.5

**Notes:** Original line used steel-wheel, linear-motor stock built by MATRA. Replaced by mono-rail line built by Bombardier.

Operates Monday – Saturday. Sunday service operates for special events.

## Jersey City (LRT 2000)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2000	+(10.0) 6.2 +(2.3) 1.4	Hudson-Bergen Light Rail	Exchange Place – East 34th St; Liberty State Park – West Side Avenue	(12.3) 7.6
"	+(1.6) 1.0	"	Exchange Place – Pavonia-Newport	(13.9) 8.6
2002	+(1.9) 1.2	"	Pavonia-Newport – Hoboken Terminal	(15.8) 9.8
2003	+(1.5) 0.9	"	East 34th Street – East 22nd Street	(17.3) 10.7
2004	+(3.5) 2.2	"	Hoboken Terminal – Lincoln Harbor	(20.8) 12.9
2005	+(4.7) 2.9	"	Lincoln Harbor – Tonnelle Avenue Park and Ride	(26.8) 16.6

**Note:** Hoboken Terminal – Lincoln Harbor extension opened 7 September 2004.

## Las Vegas (Monorail 2004)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2004	+(6.3) 3.9	Las Vegas Monorail	Sahara – MGM Grand	(6.3) 3.9

**Note:** Line opened 15 July 2004.

## Los Angeles (LRT 1990, HRT 1993)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
<b>LRT</b>				
1990	+(31.5) 19.5	Blue Line	Pico – Anaheim	(31.5) 19.5
“	+(1.9) 1.2	“	Anaheim – Transit Mall	(33.4) 20.7
1991	+(1.3) 0.8	“	7th Street / Metro Center / Julian Dixon – Pico	(34.7) 21.5
1995	+(31.6) 19.6	Green Line	Redondo Beach – Norwalk	(66.3) 41.1
2003	+(21.9) 13.7	Gold Line	Union Station – Sierra Madre Villa	(88.2) 54.7
<b>HRT</b>				
1993	+(4.8) 3.0	Red Line	Union Station – Westlake / MacArthur Park	(4.8) 3.0
1996	+(3.2) 2.0	“	Westlake / MacArthur Park – Wilshire / Western	(8.1) 5.0
1999	+(7.7) 4.8	“	Wilshire / Vermont – Hollywood / Vine	(15.8) 9.8
2000	+(10.2) 6.3	“	Hollywood / Vine – North Hollywood	(26.0) 16.1
<b>Total HRT and LRT</b>			(114.2 km) 70.8 mi	

## Memphis (LRT 1993)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1993	+(4.0) 2.5	Main Street	Auction Avenue – Calhoun Avenue	(4.0) 2.5
1997	+(3.2) 2.0	Riverfront	Auction Avenue – Calhoun Avenue	(7.3) 4.5
2004	+(4.0) 2.5	Medical Center	Main Street – Cleveland Avenue	(11.3) 7.0

**Notes:** Main Street line includes (1.3 km) 0.8 mi of reserved-track alignment (transit mall) and (2.7 km) 1.7 mi of in-street alignment.

Riverfront line, single-track, operates in southward direction. Cars return northward on Main Street Line. Includes (2.7 km) 1.7 mi of reserved-track alignment and (0.5 km) 0.3 mi of in-street alignment.

Medical Center extension opened 15 March 2004.

## Miami (HRT 1984, DPM 1986)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
<b>HRT</b>				
1984	+(15.3) 9.5	Metrorail	Dadeland South – Overtown / Arena	(15.3) 9.5
1984	+(6.3) 3.9	“	Overtown / Arena – Earlington Heights	(21.6) 13.4
1985	+(11.5) 7.1	“	Earlington Heights – Okeechobee	(33.1) 20.5
2002	+(2.3) 1.4	“	Okeechobee – Palmetto	(35.3) 21.9
<b>DPM</b>				
1986	+(3.1) 1.9	Metromover Downtown Loop	Government Center – Bayfront Park – Government Center	(3.1) 1.9

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1994	+(1.5) 0.9	" Omni Loop	Downtown Loop – School Board;	(7.1) 4.4
	+ (2.6) 1.6	" Brickell Loop	Downtown Loop – Financial District	

## Minneapolis-St. Paul (LRT 2004)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2004	+(12.6) 7.8	Hiawatha Line	Warehouse District / Hennepin Avenue – Fort Snelling	(12.6) 7.8
"	+(6.8) 4.2	"	Fort Snelling – Mall of America	(19.4) 12.0

**Note:** Warehouse District / Hennepin Avenue – Fort Snelling (Phase I) opened 26 June 2004.  
Fort Snelling – Mall of America (Phase II) opened 4 December 2004.

## Newark (LRT 1935)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1980 Route Length				(6.9 km) 4.3 mi
2002	+(1.3) 0.8	7-City Subway	Branch Brook Park – Grove Street	(8.2) 5.1

## New Orleans (LRT 1835)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1980 Route Length		12-St. Charles Streetcar Line	Carondelet-Canal – Carrollton-Clairborne	(10.5) 6.5
1988	+(2.4) 1.5	2-Riverfront Streetcar Line	Esplanade – Julia	(12.9) 8.0
1990	+(0.8) 0.5	“	Julia – Thalia	(13.7) 8.5
1999	+(0.6) 0.4	Canal Streetcar Line	Riverfront – Baronne / Dauphine	(14.4) 8.9
2004	+(5.0) 3.1	Canal Streetcar Line	St. Charles – Cemeteries Terminal	(20.8) 12.9
	+(1.5) 0.9	City Park Branch	Canal – Beauregard Circle	

**Notes:** St. Charles tramway (“streetcar”) line opened 1835, electrified 1893, regauged from standard (1,435mm = 4’ 8½”) to (1,588 mm) 5’-2½” 1929. Route length includes (9.0 km) 5.6 mi of reserved-track alignment in street medians (“neutral ground”) and (1.5 km) 0.9 mi of in-street alignment.

Riverfront streetcar line built as standard gauge, regauged to (1,588 mm) 5’-2½” 1997. Reserved-track alignment.

Previous Canal Street line built 1861, electrified 1894, replaced by motorbus 1964.

Demonstration service on Canal Street between Riverfront and Dauphine Street from 1999.

Canal streetcar line and City Park branch (lines 42-Canal/Cemeteries and 45-Canal/City Park) opened 18 April 2004. Reserved-track alignment in street medians (“neutral ground”).

## New York (HRT 1871; includes NYCT, PATH, SIRy)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1980 Route Length				(416.1 km) 258.0 mi

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1985	-(0.6) 0.4	BMT Jamaica Line (Jamaica Av El)	Archer Avenue Subway junction – Queens Blvd	(415.5) 257.6
1988	+(2.4) 1.5 +(0.8) 0.5	Archer Avenue Subway	Van Wyck Blvd – Parsons Blvd; Connection to BMT Jamaica Line	(418.7) 259.6
1989	+(3.5) 2.2 +(0.6) 0.4	63rd Street Tunnel	57 St – Queensbridge-21 St Connection to BMT Broadway Line	(422.9) 262.2
2001	+(1.0) 0.6	63rd Street Connector	Queensbridge-21 St – 36 St	(423.9) 262.8

**Notes:** Operation suspended 1985-1988 over portion of BMT Jamaica Line between 121 St and junction with new Archer Avenue Subway, (0.6 km) 0.4 mi.

Segment of Archer Avenue Subway shared by BMT Jamaica and IND Queens Boulevard lines has two levels; upper level is used by IND Queens Boulevard trains, and lower level by BMT Jamaica Line trains.

63rd Street Tunnel Line connection to BMT Broadway Line (59th St & 7th Av) had not been used for scheduled service (to August 2005).

2004 route length includes segments with operation suspended temporarily for rehabilitation, and from 11 September 2001 because of damage caused by terrorist attack.

## Philadelphia (LRT 1905, HRT 1907; includes SEPTA, PATCO)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
<b>HRT</b>				
1980 Route Length				(62.1 km) 38.5 mi
<b>LRT</b>				
1970 Route Length				(160.8 km) 99.7 mi

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1975	-(1.6) 1.0	Route 36	Eastwick-80th – Eastwick-88th	(159.2) 98.7
1977	-(8.5) 5.3	Route 60	Allegheny-35th – Richmond-Westmoreland	(150.6) 93.4
1980	-(18.7) 11.6	Route 50	6th-Oregon – Rising Sun-Knorr	(131.9) 81.8
1986	-(4.8) 3.0	Route 6	Broad-Olney – City Line Loop	(127.1) 78.8
“	-(7.3) 4.5	Route 53	10th-Luzerne – Wayne-Carpenter	(119.8) 74.3
199?	-(0.2) 0.1	Norristown Line	Norristown – Norristown Transportation Center (new station)	(119.7) 74.2
1992	-(20.8) 12.9	Route 23	12th-Bigler – Bethlehem Pike	(98.9) 61.3
“	-(12.3) 7.6	Route 56	23rd-Venango – Torresdale-Cottman	(86.6) 53.7
“	-(13.7) 8.5	Route 15	63rd-Girard – Richmond-Westmoreland	(72.9) 45.2
2005	+(13.7) 8.5	“	“	(86.6) 53.7
<b>Total HRT and LRT</b>				<b>(148.7 km) 92.2 mi</b>

**Notes: HRT Track Gauges:**

Market-Frankford Subway-Elevated (SEPTA): (1,581 mm) 5'-2¼".

Broad Street Subway (SEPTA): standard (1,435 mm = 4' 8½").

Port Authority Transit Corporation (PATCO): standard.

**LRT Route Length Totals:**1980 LRT route length includes the following:

City Transit Division subway-surface tramway (“trolley”) lines (10, 11, 13, 34 and 36), (35.5 km) 20.8 mi. Track gauge (1,581 mm) 5'-2¼". Includes (4.0 km) 2.5 mi of grade-separated alignment, (1.6 km) 1.0 mi of reserved-track alignment, and (27.9 km) 17.3 mi of in-street alignment.

City Transit Division surface tramway (“trolley”) lines (6, 15, 23, 50, 53, 56 and 60), (86.1 km) 53.4 mi. Track gauge (1,581 mm) 5'-2¼". In-street alignment.

Suburban Transit Division Norristown Line, (21.9 km) 13.6 mi. Reserved-track alignment. Standard gauge.

Suburban Transit Division Media and Sharon Hill lines, (19.2 km) 11.9 mi. Track gauge (1,581 mm) 5'-2¼". Includes (16.6 km) 10.3 mi of reserved-track alignment, and (2.6 km) 1.6 mi of in-street alignment.

2004 LRT route length, (86.6 km) 53.7 mi includes:

- Subway-surface lines, (31.9 km) 19.8 mi.
- Route 15-Girard, (13.7 km) 8.5 mi; reopening pending.
- Norristown Line, (21.8 km) 13.5 mi.
- Media and Sharon Hill lines, (19.2 km) 11.9 mi.

**Note regarding National Transit Database (NTD) Statistics:**

NTD statistics reported by SEPTA combine:

--City Transit Division subway-surface tramway ("trolley") lines, surface tramway ("trolley") lines and Suburban Transit Division Media and Sharon Hill lines as "LRT." (No surface tramway lines were in operation at 2005 August.)

--City Transit Division HRT lines (Market-Frankford Subway-Elevated and Broad Street Subway) and Red Arrow Division Norristown Line as "HRT."

Historic opening dates for in-street and reserved-track segments of "LRT" lines are presented below (Part 3).

**Pittsburgh (LRT 1904; first stage reconstruction completed 1985)**

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1984	** +(3.4) 2.1 +(0.8) 0.5	South Hills Village line	Castle Shannon – Washington Junction – Dorchester  Dorchester – South Hills Village	

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1985	+(0.8) 0.5	Subway	Gateway Center – Steel Plaza	(36.0) 22.3
	+(1.5) 0.9	Panhandle Tunnel and Bridge	Station Square – Steel Plaza	
1986	* -(4.0) 2.5	52-Allentown	Panhandle Bridge –South Hills Junction	(31.9) 19.8
1987	** +(8.7) 5.4	Dormont line	South Hills Junction –Castle Shannon	(27.9) 17.3
1988	+(0.6) 0.4	Penn Station branch	Steel Plaza – Penn Station	(40.6) 22.7
1993	** +(4.0) 2.5	52-Allentown	Panhandle Bridge – South Hills Junction	(36.6) 25.2
“	* -(8.9) 5.5	Overbrook line	South Hills Junction – Overbrook – Castle Shannon	(31.8) 19.7
1999	* -(1.9) 1.2	Drake branch	Dorchester – Drake	(29.8) 18.5
2004	** +(8.9) 5.5	Overbrook line	South Hills Junction – Overbrook – Castle Shannon	(38.7) 24.0

**Notes:** \*operation suspended. \*\* operation restored following reconstruction.

Overbrook line reconstruction started 2000, line reopened 2 June 2004.

Stage I modernization includes (16.9 km) 10.5 mi: Gateway Center – Mount Lebanon – Castle Shannon – South Hills Village, and Steel Plaza – Penn Station, together with route 52-Allentown.

Most of the Pittsburgh LRT system was upgraded from segments opened prior to formal inauguration of “LRT” service on 3 July 1985. Details are presented below (Part 3).

## Portland (LRT 1986)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1986	+(24.4) 15.1	Eastside MAX (Blue Line)	11th Ave – Cleveland Ave	(24.4) 15.1
1997	+(0.8) 0.5	Westside MAX (Blue Line)	11th Ave – Goose Hollow / SW Jefferson	(25.2) 15.6
1998	+(27.2) 16.9	“	Goose Hollow / SW Jefferson – Hatfield Government Center	(52.3) 32.5
2001	+(8.9) 5.5	Airport MAX (Red Line)	Gateway/NE 99th Ave TC – Portland International Airport	(61.3) 38.0
“	+(3.8) 2.5	Portland Streetcar	Good Samaritan Hospital – Portland State	(65.3) 40.5
2004	+(9.4) 5.8	Interstate MAX (Yellow Line)	Interstate / Rose Quarter – Expo Center	(74.7) 46.3
2005	+(1.0) 0.6	Portland Streetcar	Portland State – RiverPlace	(75.6) 46.9

**Notes:** Interstate MAX (Yellow Line) opened 1 May 2004.

Portland Streetcar extension from Portland State to RiverPlace opened 11 March 2005.

## Sacramento (LRT 1987)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1987	+(15.3) 9.5	Northeast Line	Watt/I-80 – 13th Street	(15.3) 9.5
1987	+(14.2) 8.8	East Line	13th Street – Butterfield	(29.5) 18.3
1998	+(3.7) 2.3	“	Butterfield – Mather Field / Mills	(33.2) 20.6
2003	+(10.2) 6.3	South Line	16th Street – Meadowview	(43.4) 26.9
2004	+(4.5) 2.8	Folsom Line	Mather Field / Mills – Sunrise	(47.9) 29.7

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2005	+(11.9) 7.4	Folsom Line	Sunrise – Historic Folsom	
2006	+(1.1) 0.7	Amtrak / Folsom Corridor	St. Rose of Lima Park – Sacramento Valley Station	

**Notes:** Folsom Line initial stage (Mather Field/ Mills – Sunrise) opened 11 June 2004.

Second stage (Sunrise – Historic Folsom) opening planned for 15 October 2005. Amtrak / Folsom Corridor opening planned for September 2006.

## St. Louis (LRT 1994)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1993	+(25.0) 15.5	MetroLink	5th & Missouri –North Hanley	(25.0) 15.5
1994	+(2.4) 1.5	“	North Hanley –Lambert Airport	(27.4) 17.0
2001	+(28.1) 17.4	“	5th & Missouri –College	(55.5) 34.4
2003	+(5.6) 3.5	“ St. Clair Extension	College –Shiloh/Scott	(61.2) 37.9

## Salt Lake City (LRT 1999)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2003	+(2.4) 1.5	“	Stadium – University Medical Center	(30.6) 19.0

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2003	+(2.4) 1.5	"	Stadium – University Medical Center	(30.6) 19.0

## San Diego (LRT 1981)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1981	+(25.6) 15.9	South Line	Santa Fe Depot – San Ysidro	(25.6) 15.9
1986	+(7.1) 4.5	East Line	12th & Imperial Transfer Station – Euclid Avenue	(32.7) 20.3
1989	+(17.9) 11.1	"	Euclid Avenue – El Cajon Transit Center	(50.6) 31.4
1990	+(2.6) 1.6	Bayside Line	Santa Fe Depot – 12th & Imperial Transfer Station	(53.2) 33.0
1995	+(5.6) 3.5	"	El Cajon Transit Center – Santee Town Center	(58.9) 36.5
1996	+(5.3) 3.3	North Line	Santa Fe Depot – Old Town Transit Center	(64.2) 39.8
1997	+(9.8) 6.1	Mission Valley West Line	Old Town Transit Center – Mission San Diego	(74.0) 45.9
2005	+(9.4) 5.8	Mission Valley East Line	Mission San Diego – Grossmont Center	(83.4) 51.7

**Note:** Mission Valley East Line opened 10 July 2005.

## San Francisco (LRT 1917, HRT 1972)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
<b>HRT</b>				
1980 Route Length			(114.5 km) 71.0 mi	
1995	+(3.5) 2.5	Pittsburg / Bay Point Extension	Concord – North Concord/ Martinez	(118.5) 73.5
1996	+(2.6) 1.6	Colma Extension	Daly City – Colma	(121.1) 75.1
1996	+(7.7) 5.3	Pittsburg / Bay Point Extension	North Concord / Martinez – Pittsburg / Bay Point	(129.7) 80.4
1997	+(23.7) 14.7	Dublin / Pleasanton Extension	Bay Fair – Dublin / Pleasanton	(153.4) 95.1
2003	+(14.0) 8.7	SFO Airport Extension	Colma – San Francisco International Airport – Millbrae	(167.3) 103.7
<b>LRT</b>				
1980 Route Length			(39.0 km) 24.2 mi	
1980	+(1.5) 0.9	M Ocean View	Broad & Plymouth – Balboa Park	(40.5) 25.1
1991	+(3.7) 2.3	J Church	Church & 30th – Balboa Park	(44.2) 27.4
1995	* +(5.0) 3.1	F Market	17th & Castro – Transbay Transit Terminal	“
1998	+(3.4) 2.1	N Judah	Embarcadero – 4th & King	(47.6) 29.5
2000	+(4.0) 2.5	F Market	First & Battery (Market St.) – Fisherman’s Wharf (Jones St.)	(51.1) 31.7
	-(0.5) 0.3		Loop line to Transbay Transit Terminal	
2006 June	+(8.7) 5.4	Third Street Light Rail	4th & King – CalTrain Bayshore Station	
<b>Total HRT and LRT</b>			<b>(218.4 km) 135.4 mi</b>	

**Notes:** \* Full-time service restored.

**HRT Track Gauge:** San Francisco Bay Area Rapid Transit District: (1,676mm) 5’6”.

## LRT Route Length Totals:

1980 LRT route length includes (8.9-km) 5.5-mi subway from Embarcadero portal to West Portal station (incorporates (3.5-km) 2.2-mi Twin Peaks Tunnel, opened 1917), and (1.3-km) 0.8-mi Sunset Tunnel. Remainder includes (3.1 km) 1.9 mi of reserved-track alignment and (25.8 km) 16.0 mi of in-street alignment.

1980 LRT route length includes Market Street surface tracks. Not in use on weekdays from 1980 because of opening of Market Street subway and beginning of weekday Muni Metro service. Weekend Muni Metro service began 1982, Market Street surface tracks out of use thereafter. Summer-only Trolley Festival operation 1983-1987. Full-time service restored 1995.

2004 LRT route length includes 6.8 mi of grade-separated alignment, (11.0 km) 6.8 mi of reserved-track alignment and (29.2 km) 18.1 mi of in-street alignment.

Historic opening dates for in-street and reserved-track segments of LRT lines are presented below (Part 3).

## San Jose (LRT 1987)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1987	+(3.5) 2.2	Tasman West Light Rail	Old Ironsides – Tasman	(10.6) 6.6
	+(7.1) 4.4	Guadalupe Light Rail	Tasman – Younger Street *	
1988	+(3.4) 2.1	“	Civic Center – Convention Center	(14.0) 8.7
1990	+(2.6) 1.6	“	Convention Center – Tamien	(16.6) 10.3
1991	+(13.9) 8.6	“	Tamien – Santa Teresa;	(32.4) 20.1
	+(2.0) 1.2	Almaden Light Rail	Ohlone/Chynoweth – Almaden	
1999	+(0.5) 0.3	Tasman West Light Rail	Baypointe – Tasman;	(45.2) 28.0
	+(12.3) 7.6		Old Ironsides –Mountain View	
2001	+(3.1) 1.9	Tasman East Light Rail	Baypointe – I-880 / Milpitas	(48.2) 29.9
2004	+(4.7) 2.9	“	I-880 / Milpitas – Hostetter	(58.5) 36.3
	+(5.6) 3.5	Capitol Light Rail	Hostetter – Alum Rock	

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2005	+(1.6) 1.0	Vasona Light Rail	Children's Discovery Museum – San Jose Diridon	(60.2) 37.3
“	+(6.9) 4.3	“	San Jose Diridon – Winchester	(67.1) 41.6

**Notes:** \* Temporary terminal.

I-880 / Milpitas – Hostetter – Alum Rock segment opened 23 June 2004.

Children's Discovery Museum – San Jose Diridon opened 1 August 2005. Opening of San Jose Diridon – Winchester segment planned for 2005 October 1.

## San Juan (Puerto Rico; HRT 2005)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2005	+(17.2) 10.7	Tren Urbano	Sagrado Corazón – Bayamón	(17.2) 10.7

**Note:** Opened 19 December 2004 for trial service, fare-free operation, Saturday and Sunday only. Weekday fare-free service added from 19 April 2005. Commercial service started on 6 June 2005.

## Tacoma (LRT 2003)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2003	+(2.6) 1.6	Tacoma Link	Theater District / S 9th – Tacoma Dome	(2.6) 1.6

## Washington (HRT 1976)

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
1980 Route Length			(60.0 km) 37.2 mi	
1983	+(5.3) 3.3	Yellow Line	Gallery Pl-Chinatown – Pentagon	(65.3) 40.5
“	+(8.4) 5.2	“	Reagan Washington National Airport – Huntington	(73.7) 45.7
1984	+(11.0) 6.8	Red Line	Van Ness-UDC – Grosvenor-Strathmore	(84.7) 52.5
“	+(11.1) 6.9	“	Grosvenor-Strathmore – Shady Grove	(95.8) 59.4
1986	+(14.7) 9.1	Orange Line	Ballston – Vienna / Fairfax-GMU	(110.5) 68.5
1990	+(5.2) 3.2	Red Line	Silver Spring – Wheaton	(115.6) 71.7
1991	+(2.7) 1.7	Green Line	Gallery Pl-Chinatown – U Street / African-Amer Civil War Memorial / Cardozo	(118.4) 73.4
“	+(6.1) 3.8	Blue Line	King Street – Van Dorn Street	(124.5) 77.2
“	+(4.7) 2.9	Green Line	L'Enfant Plaza – Anacostia	(129.2) 80.1
1993	+(12.8) 7.9	“	Fort Totten – Greenbelt	(141.9) 88.0
1997	+(5.3) 3.3	Blue Line	Van Dorn Street – Franconia-Springfield	(147.3) 91.3
1998	+(2.3) 1.4	Red Line	Wheaton – Glenmont	(151.1) 93.7
1999	+(4.7) 2.9	Green Line	U Street / African-Amer Civil War Memorial / Cardozo – Fort Totten	(155.8) 96.6
2001	+(10.5) 6.5	“	Anacostia – Branch Avenue	(166.3) 103.1
2004	+(5.0) 3.1	Blue Line	Addison Road- Seat Pleasant – Largo Town Center	(171.6) 106.4

**Note:** Addison Road – Seat Pleasant – Largo Town Center opened 18 December 2004.

## 2.) U.S. Urban Rail Transit Lines Under Construction For Opening After 2005

“Cumulative system length” statistics include all HRT and LRT lines serving each city.

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
<b>Charlotte (LRT)</b>				
2006 Oct	+(15.5) 9.6	South Corridor Light Rail	7th Street – I-485 (Pineville)	(15.5) 9.6
<b>Denver (LRT)</b>				
2006 fall	+(31.1) 19.3	T-Rex (Southwest Corridor) Project	I-25 – Broadway –Lincoln; Bellevue – Nine Mile	(56.0) 34.7
<b>Jersey City (LRT)</b>				
by 2010	+(5.5) 3.4	Hudson-Bergen Light Rail	Tonnelle Avenue Park and Ride – Vince Lombardi Park and Ride	(32.3) 20.0
“	+(2.1) 1.3	“	East 22nd Street – East 5th Street	(34.4) 21.3
<b>Los Angeles (LRT)</b>				
2009	+(9.5) 5.9	Eastside Metro Gold Line	Union Station – Beverly / Atlantic	(123.7) 76.7
2010	+(15.5) 9.6	Metro Expo Line	Grand – Venice / Washington	(139.2) 86.3
<b>Newark (LRT)</b>				
2006	+(1.6) 1.0	Newark Rail Link	Newark Penn Station – Broad Street Station	(9.8) 6.1
<b>Oceanside – Escondido (Diesel LRT)</b>				
2007	+(35) 22	Sprinter	Oceanside – Escondido	(35) 22
<b>Phoenix (LRT)</b>				
2008	+(32.0) 19.8	Central Phoenix – East Valley Light Rail	Montebello / 19th Ave (Phoenix) – Apache Blvd / Main St (Mesa)	(32.0) 19.8
<b>Portland (streetcar)</b>				
2006	+(1.0) 0.6	Portland Streetcar	River Place – SW Moody / Gibbs	(76.6) 47.5
<b>Raleigh – Durham (Diesel Multiple Unit)</b>				

Year	Route Length (km / mi)	Line	Section	Cumulative System Length (km / mi)
2008	+(45) 28	Regional Rail	Ninth Street (Durham) – Government Center (Raleigh)	(45) 28
2010	+(1.1) 0.7 +(10) 6	“	Duke Medical Center – Ninth Street (Durham) Government Center – Spring Forest (Raleigh)	(56) 35
<b>St. Louis (LRT)</b>				
2006	+(13) 8	Cross County MetroLink	Forest Park – Shrewsbury-Lansdowne I-44	(74) 46
<b>Seattle (LRT)</b>				
2009 July	+(22.4) 13.9	Central Link	Westlake – South 154th	(22.4) 13.9
<b>Washington (LRT)</b>				
2009 July	+(4.4) 2.7	Anacostia Corridor Demonstration Project	Pennsylvania Avenue SE – Bolling Air Force Base	(HRT and LRT) (176.0) 109.1

### 3.) Historic Opening Years

The following information for Boston, Cleveland, Philadelphia, Pittsburgh and San Francisco surface tramway (“streetcar” or “trolley”) lines presented to complement similar data for grade-separated HRT and LRT lines presented by Pushkarev et al. (1982).

#### Boston

**Ashmont-Mattapan** (Red Line; also known as “Mattapan High Speed Trolley Line”), (3.5 km) 2.2 mi: opened 1929.

**Green Line branches** (Clarke and Cummings 1997).

**A-Watertown** (now closed): Commonwealth Avenue & Brighton Avenue – Union Square, Allston, opened 1896.

Union Square, Allston – Oak Square, Brighton opened 1858; horse traction. Electrified 1889.

Oak Square, Brighton – Newton Corner opened 1896. Newton Corner – Watertown Square opened 1900. Routed into subway by 1912. Operation suspended 1969; closure made permanent 1994.

**B-Boston College:** Segment to Chestnut Hill Avenue opened 1900. Chestnut Hill Avenue – Lake Street (Boston College) opened 1896.

**C-Cleveland Circle:** Segment to Coolidge Corner (Harvard Street) opened 1888, horse traction. Extended to Cleveland Circle 1889. Electrified 1889. Routed into subway from 1897.

**D-Riverside:** Boston – Newton Highlands railway line built and passenger service opened prior to 1883. Sold by New York & New England Railroad Company to Boston & Albany Railroad Company in 1883. Extended to Riverside 1886. Known as “Highland Circuit,” and later as “Highland Branch,” of the B&A RR Co (New York Central System). Closed 1958. Rebuilt; re-opened as LRT from 1959.

**E-Arborway:** Segment to Huntington Avenue & Tremont Street opened ca. 1883; horse traction. Electrified 1894.

Huntington Avenue, Tremont Street – South Huntington Avenue, opened 1859; horse traction. Electrified 1894. South Huntington Avenue, Huntington Avenue – Centre Street, opened 1906.

Centre and South Streets, Huntington Avenue – McBride Street (Jamaica Plain Carhouse), opened 1857; horse traction. Electrified 1891. Jamaica Plain Carhouse – Forest Hills opened 1902. Routed into subway from 1903.

Operation suspended, Brigham Circle – Arborway, 1985. Restored, Brigham Circle – Heath Street, 1989. Restoration of Heath Street – Arborway ordered in 2001 by Executive Office of Environmental Affairs, Commonwealth of Massachusetts.

## Cleveland

**Blue and Green lines** (Toman 1990):

Tower City – East 34th -Campus, (2.4 km) 1.5 mi, opened 1930.

East 34th-Campus – Shaker Square, (7.3 km) 4.5 mi, opened 1920.

### **Green Line:**

Shaker Square – Coventry, (0.5 km) 0.3 mi, opened 1920.

Coventry – Fontenay Road, (2.6 km) 1.6 mi, opened 1913.

Fontenay Road – Courtland, (0.8 km) 0.5 mi, opened 1920.

Courtland – Warrensville, (0.6 km) 0.4 mi, opened 1928.

Warrensville – Green, (1.6 km) 1.0 mi, opened 1936.

### **Blue Line:**

Shaker Square – Lynnfield, (4.4 km) 2.7 mi, opened 1920.

Lynnefield – Warrensville, (1.0 km) 0.6 mi, opened 1930.

## **Philadelphia**

**Surface Tramway (“Trolley”) Lines** (Cox 1982): *All surface tramway lines operated currently by bus, except for excursions and special services (see below):*

**6-Ogontz Avenue.** Opened 1905. Closed 1986, together with (2.9 km) 1.8 mi of depot access track in Old York Road.

**15-Girard Avenue.** Girard Avenue, 2nd Street – 31st Street, opened 1859, horse traction. Palmer Street – 2nd Street opened 1866. Norris Street – Palmer Street opened 1875. Electrified; \31st Street – 60th Street opened 1900. 60th Street – 63rd Street and Allegheny Avenue – Norris Street opened 1903.

Operation suspended 1992. Reopening scheduled for 13 June 2004; postponed “indefinitely” because of a political dispute (over on-street parking for private autos at the west end of the line). The operator announced at June 2005 that reopening would take place by September 2005. A subsequent announcement, at 2005 August, stated that the reopening would take place on 4 September 2005. Route length (above) includes (0.2 km) 0.1 mi shared with subway-surface route 10.

**23-Gemantown Avenue – 11th & 12th Streets.** 11th Street, Wharton Street – Colona Street (one block north of Susquehanna Avenue), and Germantown Avenue, 11th Street – Church

Lane (two blocks east of Cheltenham Avenue), opened 1858, horse traction. Electrified, Church Lane – Bethlehem Pike (Chestnut Hill) opened 1894. 12th Street segment opened 1897.

Suspended 1992. Weekend-only service over north extremity of line (Germantown Depot – Bethlehem Pike) to 1996. New (0.2-km) 0.1-mi track segment in Noble Street built 1994 for “Welcome Line” loop service in the Philadelphia business center (“Center City”). Regular “Welcome Line” service operated during summer 1995, holiday service thereafter.

**50 Lawndale – 4th & 5th Streets.** 5th and 6th streets, Berks Street – Jackson Street, opened 1858, horse traction. Electrified 1894. Remainder opened 1896.

Operation suspended 1980, closure made permanent 1985. Route length (above) includes peak-period northern extension from Olney loop to Knorr loop, (3.1 km) 1.9 mi and alternate peak-period south terminal at 4th Street and Ritner Street, (0.5 km) 0.3 mi.

**53-Wayne Avenue-Erie Avenue.** Wayne Avenue, Pulaski Street – Mannheim Street, horse traction, 1859 - 1860 or 1861. Steam traction, 1862; service ended by 1863. 13th Street & Erie Avenue – Wayne Avenue & Washington Lane opened 1894. Wayne Avenue, Washington Lane – Carpenter Lane, opened 1904.

Operation suspended 1986, closure made permanent 1989. Route length (above) includes (0.8 km) 0.5 mi shared by Route 15.

**56-Erie Avenue – Torresdale Avenue.** Torresdale Avenue, Margaret Street – Cottman Avenue, opened 1903. Erie Avenue opened 1905. Connected 1928. Operation suspended 1992; some segments of track paved over subsequently. A report current at 2004 October stated that all track was paved over and overhead wires removed, but closure had not been made permanent.

**60-Allegheny Avenue.** Opened 1906; Allegheny Avenue, 17th Street – 23rd Street, opened 1923.

Operation suspended 1977, closure made permanent 1983. Route length (above) includes (0.2 km) 0.1 mi shared with route 15.

**Subway-Surface Tramway (“Trolley”) Lines:** Route Lengths, and Historic Opening Years (from Cox 1985):

**10-Overbrook-Center City** (Lancaster Avenue – Subway): (9.5 km) 5.9 mi.

Lancaster Avenue, Haverford Avenue – 52nd Street, opened 1859, horse traction. Electrified 1894. Subway-surface line from 1908. Lancaster Avenue & 52nd Street – 63rd Street & Malvern Avenue opened 1926.

**11-Darby – Center City** (Woodland Avenue – Subway): (10.8 km) 6.7 mi.

Opened 1859, horse traction. Electrified 1894. Subway-surface line from 1906.

**13-Yeadon and Darby – Center City** (Chester Avenue – Subway):

(11.3 km) 7.0 mi. Includes peak-period extension, Yeadon Loop – Darby Loop, (1.5 km) 0.9 mi.

Chester Avenue, Woodland Avenue – 49th Street, opened 1895. Woodland Avenue & 49th Street – Kingsessing Avenue & 65th Street opened 1905. Kingsessing Avenue & 65th Street – Darby opened 1913. Subway-surface line from 1956.

**34-Angora – Center City** (Baltimore Avenue – Subway): (7.9 km) 4.9 mi. Opened 1908 as subway-surface line.

**36-Eastwick – Center City** (Elmwood Avenue – Subway): (11.8 km) 7.3 mi. Opened 1900. Subway-surface line from 1908.

**Subway-Surface Division Route Lengths, Less Duplications:**

(4.0 km) 2.5-mile of grade-separated alignment (Subway, Juniper Street – 40th & Woodland Avenue Portal), route 10 uses (3.2 km) 2.0 mi to 36th & Market Street portal.

(1.6 km) 1.0 mi of reserved-track alignment (Route 36, Elmwood Avenue Loop – 80th & Eastwick Avenue Loop).

(27.9 km) 16.3 mi of in-street alignment. Subway-surface division also has (2.4 km) 1.5 mi of track used during Monday early am (“owl service”) hours when the subway is closed.

**Suburban Tramway (“Trolley”) Lines** (DeGraw 1985):

**Sharon Hill Line:**

69th St Terminal – Baltimore Pike (Clifton), (5.3 km) 3.3 mi, opened 1906.

Baltimore Pike (Clifton) – Clifton-Aldan, (0.8 km) 0.5 mi, opened 1907.

Clifton-Aldan – Providence Road, (0.3 km) 0.2 mi, opened 1907.

Providence Road – Collingdale, (1.6 km) 1.0 mi, opened 1907.

Collingdale – Sharon Hill, (0.5 km) 0.3 mi, opened 1917.

### **Media Line:**

Drexel Hill Junction (Shadeland Ave) – Orange Street, (10.5 km) 6.5 mi, opened 1913.

## **Pittsburgh**

The Pittsburgh LRT system incorporates many segments opened prior to the inauguration of “LRT” service on 3 July 1985. Summary:

### **Pittsburgh Business Center:**

The segment between Penn Station, Steel Plaza and Station Square incorporates former railway formations, including the Panhandle Tunnel. The underground segment between Gateway and Steel Plaza was built new. Details:

--Pittsburgh horse tramway (“horsecar”) service opened 1859; first electric tramway (“trolley”) line opened 1888. Last in-street alignments (primarily in Wood Street, Smithfield Street, Grant Street and Liberty Avenue) used by tramway services closed 1985.

--Panhandle Tunnel opened 1863. Built by Pittsburgh & Steubenville Extension Railroad Co., later absorbed by Pennsylvania Railroad Company (PRR). Freight service withdrawn by Consolidated Rail Corporation (CONRAIL) in 1980. Rebuilt 1983-1985 for LRT use. LRT service opened 1985.

Original length (0.3 km) 0.2 mi; length following extensions and reconstruction, (0.4 km) 0.3 mi.

### **Monongahela River Crossing:**

Smithfield Street Bridge used by tramway services until 1985; LRT services use a former railway bridge (Panhandle Bridge, below). Details:

--Smithfield Street Bridge, (0.4 km) 0.2 mi opened 1883 with rails for horse trams in deck. Enlarged 1889 (east or “upstream” side); upstream side widened to provide reserved-track alignment for streetcars in 1911. Closed to tramcars 1985; tracks removed. Former tramcar reservation opened as a single lane for road traffic following 1994-1995 rehabilitation.

--Panhandle Bridge, (0.4 km) 0.2 mi 1903. Built by Pittsburgh & Steubenville Railroad Co., later absorbed by PRR. Freight service withdrawn by CONRAIL in 1980. LRT use from 1985.

### **Under, and Over, Mt. Washington:**

--Mt. Washington Transit Tunnel, (*1.1 km*) 0.7 mi opened 1904. Opened to joint operation by buses and tramcars following 1974-1975 reconstruction. Renovated 1993. (The tunnel has a gradient of 1 in 17, or 6 percent, ascending from the Monongahela River valley.)

--Route 49 Arlington-Warrington, (*4.0 km*) 2.5 mi, created in 1971 from portions of former 47 Knoxville (48 Arlington) and 49 Beltzhoover tramway lines. Renamed 52-Allentown in 1984. Used as bypass route during reconstruction of Mt. Washington tunnel in 1974-1975. Operation suspended 1986. Rebuilt with double track throughout, except at the ramp to the Panhandle LRT bridge; CONRAIL refused to permit construction of a ramp sufficiently wide to carry two tracks over its railway line. Restored 1993; again used as bypass during renovation of Mt. Washington tunnel (1993); operation of 52-Allentown service suspended during tunnel renovation.

### **South Hills Junction to Castle Shannon via Dormont:**

--South Hills Junction – Dormont, (*5.5 km*) 3.4 mi, opened 1904; eventually became route 42-Dormont.

--Dormont – Mount Lebanon, (*1.0 km*) 0.6 mi, and Mount Lebanon – Castle Shannon, (*2.3 km*) 1.4 mi opened 1903. Dormont – Mount Lebanon eventually became route 38-Mount Lebanon, and Mount Lebanon – Castle Shannon eventually became route 38A Mount Lebanon Extension. Route 42/38 established 1963, owing to closure of route 38-Mount Lebanon between South Hills Junction and Dormont.

Operation suspended for reconstruction 1984-1987.

--Mount Lebanon Transit Tunnels, Dormont Junction – Shady Drive, (*1.0 km*) 0.6 mi, opened 1985.

### **South Hills Junction to Castle Shannon via Overbrook:**

--Narrow-gauge mining railway built southward from vicinity of today's South Hills Junction from early 1860s. South Hills Junction – Overbrook – Castle Shannon opened 1871 by Pittsburgh & Castle Shannon Railroad Co. Passenger service opened 1874. Line leased to Pittsburgh Railways Co. in 1905. Electrified, third running rail installed 1908 to permit operation of (*1,588 mm*) 5'-2½" gauge interurban cars. Beginning of service to Pittsburgh business center delayed to 1909 owing to dispute between company and the municipal authority. Narrow-gauge freight operation ended 1912. Operation suspended 1993 owing to landslides and poor condition of bridges; restored 2004 following reconstruction.

### **Library Branch:**

Castle Shannon – Library, (8.9 km) 5.5 mi, opened 1903. Operation suspended 1982-1984 owing to reconstruction of Castle Shannon – Washington Junction – Dorchester segment. Operation suspended for two months in 1988 for rehabilitation to permit light rail vehicles to serve Library.

### **Drake and South Hills Village Branches:**

--Washington Junction – Dorchester – Drake line, (5.3 km) 3.3 mi opened 1909. Operation suspended 1982-1984 for reconstruction of Washington Junction – Dorchester segment, (2.3 km) 1.4 mi.

--Dorchester – Drake suspended 1999. Reconstruction and reopening pending availability of funds.

--Dorchester – South Hills Village branch opened 1984.

## **San Francisco**

(Hilton 1971 and Perles et al. 1981)

Market Street, Third Street – Valencia Street, opened 1860, steam traction. Extended to waterfront 1863. Horse traction from 1868. Cable traction, Ferry Building – Valencia Street, 1883. Valencia Street – Castro Street opened 1886. Operation with cable traction ended 18 April 1906 because of earthquake damage; line electrified subsequently.

**J-Church** line opened 1917.

**K-Ingleside** line opened 1918 via Twin Peaks Tunnel to St. Francis Circle. Completed 1919; incorporated existing line opened 1895-1896.

**L-Taraval** line opened 1919; incorporated existing line (opened ca. 1907), 20th Avenue – 33rd Avenue. Extended to Taraval Street & 48th Avenue 1923. Extended to Zoo 1937.

**M-Ocean View** line opened 1925. Replaced by bus 1939, rail service restored 1944.

**N-Judah** line opened 1928.

#### 4.) U.S. Urban Rail Passenger Traffic Statistics, 2002-2004

	System Length (km / mi)	Annual Boardings	Average Weekday Boardings	Average Travel Distance (km / mi)
<b>Light Rail</b>				
Baltimore	(48.4) 30.0	8,794,627	29,000	(10.3) 6.4
2003	“	7,238,036	19,000	(10.8) 6.7
2004	“		19,000	
Boston	(45.2) 28.0	73,762,927	226,000	(3.7) 2.3
2003	“	72,599,034	222,000	(3.9) 2.4
Buffalo	(10.0) 6.2	5,797,407	20,000	(3.9) 2.4
2003	“	5,857,687	19,000	(4.0) 2.5
2004	“		19,000	
Cleveland	(24.8) 15.4	3,057,728	11,000	(9.5) 5.9
2003	“	3,160,523	10,000	“
2004	“		10,000	
Dallas	(37.9) 23.5	13,733,066	48,000	(8.7) 5.4
2003	(71.0) 44.0	16,996,356	53,000	(11.5) 7.1
2004	“		62,000	
Denver	(24.8) 15.4	10,429,572	35,000	(6.9) 4.3
2003	“	10,635,977	34,000	“
2004	“		33,000	
Houston-2004	(12.1) 7.5		31,000	
Jersey City	(15.5) 9.6	3,091,700	12,000	(6.0) 3.7
2003	(17.3) 10.7	4,156,200	15,500	(5.3) 3.3
Los Angeles	(66.1) 41.0	32,605,500	88,000	(11.3) 7.0
2003	“	31,869,211	100,000	(11.4) 7.1

	<b>System Length (km / mi)</b>	<b>Annual Boardings</b>	<b>Average Weekday Boardings</b>	<b>Average Travel Distance (km / mi)</b>
2004	(88.2) 54.7		110,000	
Memphis	(7.3) 4.5	2,149,253	2,000	(1.1) 0.7
2003	"	2,136,456	2,000	"
2004	"		3,000	
M'polis-2004	(12.6) 7.8		16,000	
Newark	(8.2) 5.1	4,664,800	16,000	(3.9) 2.4
2003	"	4,590,300	16,000	(4.3) 2.7
New Orleans	(14.4) 8.9	5,370,200	16,000	(3.7) 2.3
2003	"	6,340,217	14,000	(3.4) 2.1
2004	(20.8) 12.9		24,000	
Pittsburgh	(29.8) 18.5	7,483,000	25,000	(7.1) 4.4
2003	"	7,157,772	24,000	(7.2) 4.5
2004	(38.7) 24.0		25,000	
Portland	(65.3) 40.5	28,253,547	78,000	(9.5) 5.9
2003	"	31,149,038	82,000	(8.8) 5.4
2004	(74.7) 46.3		101,000	
Sacramento	(32.7) 20.3	8,541,100	30,000	(8.9) 5.5
2003	(43.4) 26.9	8,859,032	31,000	(8.6) 5.3
2004	(47.9) 29.7		42,000	
St. Louis	(55.5) 34.4	14,680,200	45,000	(13.9) 8.6
2003	(61.2) 37.9	14,843,969	36,000	(13.6) 8.4
2004	"		39,000	
Salt Lake City	(28.2) 17.5	9,755,100	32,000	(8.9) 5.5

	<b>System Length (km / mi)</b>	<b>Annual Boardings</b>	<b>Average Weekday Boardings</b>	<b>Average Travel Distance (km / mi)</b>
2003	(30.6) 19.0	9,814,098	38,000	(9.1) 5.6
2004	"		39,000	
San Diego	(78.2) 48.5	25,432,952	73,000	(9.5) 5.9
2003	"	25,174,788	70,000	(10.2) 6.3
2004	"		82,000	
San Francisco	(59.7) 37.0	47,898,200	153,000	(4.0) 2.5
2003	"	42,896,269	137,000	(4.1) 2.6
2004	"		133,000	
San Jose	(48.2) 29.9	7,789,600	22,000	(7.1) 4.4
2003		6,052,519	18,000	"
2004	(58.5) 36.3		22,000	
Tacoma-2003	(2.6) 1.6	266,793	3,000	
<b>Heavy Rail</b>				
Atlanta	(79.2) 49.1	82,339,493	244,000	(10.0) 6.2
2003	"	71,859,591	223,000	(10.9) 6.8
2004			226,000	
Baltimore	(23.7) 14.7	14,239,947	48,000	(7.3) 4.5
2003	"	13,196,410	42,000	(6.8) 4.2
2004			43,000	
Boston	(61.1) 37.9	161,282,437	428,000	(5.6) 3.5
2003	"	150,159,482	426,000	(5.8) 3.6
2004			405,000	
Chicago	(166.2) 103.1	180,399,630	504,000	(8.9) 5.5

	<b>System Length (km / mi)</b>	<b>Annual Boardings</b>	<b>Average Weekday Boardings</b>	<b>Average Travel Distance (km / mi)</b>
2003	“	181,135,094	494,000	(9.4) 5.9
2004			480,000	
Cleveland	(31.1) 19.3	7,186,189	17,000	(12.1) 7.5
2003	“	7,372,472	16,000	(11.0) 6.8
2004			18,000	
Los Angeles	(26.0) 16.1	34,551,200	124,000	(7.6) 4.7
2003	“	31,695,014	96,000	(7.7) 4.8
2004			107,000	
Miami	(35.3) 21.9	13,753,600	47,000	(12.6) 7.8
2003	“	14,306,084	49,000	(12.3) 7.6
2004			57,000	
New York-NYCT	(378.4) 234.6	1,694,026,000	5,830,000	(7.4) 4.6
2003	“	1,701,453,276	5,851,000	“
2004			6,058,000	
New York-PATH	(19.4) 12.5	62,639,200	174,000	(6.3) 3.9
2003	“	61,030,659	167,000	(6.7) 4.2
2004			197,000	
New York-SIRT	(23.1) 14.3	3,618,400	13,000	(10.3) 6.4
2003	“	3,383,391	13,000	“
2004			13,000	
Phil'a-PATCO	(25.5) 15.8	9,288,400	33,000	(13.9) 8.6
2003	“	8,863,911	32,000	“
2004			32,000	

	<b>System Length (km / mi)</b>	<b>Annual Boardings</b>	<b>Average Weekday Boardings</b>	<b>Average Travel Distance (km / mi)</b>
S.F.-BART	(153.4) 95.1	97,146,100	316,000	(19.5) 12.1
2003	(167.3) 103.7	93,591,365	322,000	(19.8) 12.3
2004			323,000	
Washington, DC	(166.3) 103.1	242,794,100	849,000	(9.5) 5.9
2003	"	243,188,066	845,000	(9.6) 6.0
2004			853,000	
<b>Downtown Peplemovers</b>				
Detroit	(4.7) 2.9	2,186,600	6,000	(2.3) 1.4
2003	"	1,267,927	3,000	"
2004			3,000	
Jacksonville	(4.0) 2.5	732,000	3,000	(0.5) 0.3
2003	"	723,008	2,000	"
2004			2,000	
Miami	(7.1) 4.4	4,768,400	16,000	(1.6) 1.0
2003	"	6,229,321	23,000	"
2004			34,000	

**Notes:** Portland data include Portland Streetcar.

Philadelphia-SEPTA data excluded. FTA "Heavy Rail" statistics combine Market-Frankford Subway-Elevated and Broad Street Subway together with Norristown Line, which has dissimilar characteristics. FTA "Light Rail" statistics combine five urban streetcar lines with two suburban light rail lines having dissimilar characteristics.

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