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A National Survey of Commuter Rail Policy

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DISCLAIMER

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TECHNICAL SUMMARY

Title

A National Survey of Commuter Rail Policy

Introduction

Alternative modes of transportation are becoming more important in sprawling urban areas with increasingly congested roadways. Many cities are turning to commuter rail as a viable mode of public transportation. City planners view commuter rail as a means of managing urban sprawl, stimulating economic development and reducing the environmental impacts of transportation.

Commuter rail systems, which move passengers between the suburbs and the downtown on shared corridors, are having a larger impact on the way people and freight move through US cities. Commuter rail and its subsequent transit oriented development (TOD) provide opportunities for cities to re-shape their urban form and stimulate economic development. By creating dense, mixed use TOD zones along commuter rail stations, urban transportation planners hope to foster the establishment of livable, economically prosperous and environmentally sustainable communities. Urban planning literature suggests that metropolitan areas with successful public rail transit become more competitive in their attempts to attract globally mobile investment [1, 2]. Cities across the country have implemented commuter rail systems, with varying success, in an effort to reap these benefits.

Currently, there at 26 operational commuter rail systems located in 29 major U.S. metropolitan areas. Long term trends indicate that commuter rail service will continue to grow nationally, as forecasted by the 28 percent increase in national ridership between 1997 and 2007. During this period, commuter rail added 100 million additional riders [3].

Approach and Methodology

This research situates commuter rail systems in the context of rail systems at-large, compiles a complete and definitive list of U.S. commuter rail systems, profiles each system and establishes a ‘new start’ and ‘legacy’ classification system for commuter rail. Examining new start commuter rail, specifically the acquisition of right-of-way on shared-corridors and the relationship between system design and urban form, provides a means of tracing the policy mobility and system development of contemporary commuter rail.

The authors highlight the current state of commuter rail, the historical acquisition of legacy commuter rail systems by public transit agencies and the establishment of contemporary new start commuter rail projects. This overview includes profiles of all 26 operational US commuter rail systems. These profiles examine the vital statistics and demographics of each system.

Findings

This research has identified 26 systems as a comprehensive and definitive list of U.S. commuter rails systems. Drawing from Polzin and Page's typology of light rail systems, all 26 commuter rail systems have been classified using a 'legacy' and 'new start' dichotomy. Currently, there are 9 legacy rail systems and 17 new start systems operating in the US. Legacy systems are routes that previously operated as private commuter rail services but were purchased by public transit agencies after World War II. New start systems are recent commuter rail services that were originally established by public transit agencies after 1980.

Conclusions

Commuter rail systems are becoming more prevalent in the urban transportation landscape, a trend that is likely to continue for decades to come. As more new start commuter rail systems are established and locally modified to fit the unique urban forms found across US cities, the variation among commuter rails will increase. This research has established a definitive list of commuter rails systems and a base typology of commuter rail that will allow for more detailed analysis in future research. By situating commuter rail in relation to freight rail, passenger rail and urban rail transit, the unique issues surrounding commuter systems are better examined. The broad categorization of commuter rail into legacy systems and new start systems allows the historical differences in right-of-way acquisition to become apparent. This survey of U.S. commuter rail provides an initial step toward establishing a comparative analytic by which to examine best practices for future new start systems.

Publications

Appendix A: AN OVERVIEW OF U.S. COMMUTER RAIL (Brock and Souleyrette report published by the Kentucky Transportation Center.)

Appendix B: Urban Transit Policy Mobility: The Historical Development of U.S. Commuter Rail Policy and Financing. Paper presented at the Annual Meeting of the Association of American Geographers, Cities, Transportation and Sustainability Session, Los Angeles, CA, 2013.

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AN OVERVIEW OF U.S. COMMUTER RAIL

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AN OVERVIEW OF U.S. COMMUTER RAIL

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16. Abstract

Planners view commuter rail as a means of managing urban sprawl, stimulating economic development and reducing the environmental impacts of transportation. Commuter rail systems, which use shared rights-of-way to connect suburban hubs with downtown urban centers, are beginning to have a large impact on the way people and freight move through US cities. Currently, there are 26 commuter rail systems operating in 29 major U.S. metropolitan areas. However, there is confusion among the general public and disagreement among transportation organizations as to what constitutes a commuter rail system and how to classify some rail systems. This research establishes a complete and definitive list of U.S. commuter rail systems, situates commuter rail in the context of U.S. rail systems at-large and establishes a 'new start' and 'legacy' classification for commuter rail. Included in this report are profiles of all U.S. commuter rail systems, highlighting governance, financing, ridership and service area demographics. This research also traces the historical development of commuter rail and the best practices employed by 'new start' commuter rail systems. This includes highlighting shared-corridor acquisition practices and highlighting policy mobility practices.

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Abstract

Planners view commuter rail as a means of managing urban sprawl, stimulating economic development and reducing the environmental impacts of transportation. Commuter rail systems, which use shared rights-of-way to connect suburban hubs with downtown urban centers, are beginning to have a large impact on the way people and freight move through US cities. Currently, there are 26 commuter rail systems operating in 29 major U.S. metropolitan areas. However, there is confusion among the general public and disagreement among transportation organizations as to what constitutes a commuter rail system and how to classify some rail systems. This research establishes a complete and definitive list of U.S. commuter rail systems, situates commuter rail in the context of U.S. rail systems at-large and establishes a 'new start' and 'legacy' classification for commuter rail. Included in this report are profiles of all U.S. commuter rail systems, highlighting governance, financing, ridership and service area demographics. This research also traces the historical development of commuter rail and the best practices employed by 'new start' commuter rail systems. This includes highlighting shared-corridor acquisition practices and highlighting policy mobility practices.

Section 1

INTRODUCTION

Alternative modes of transportation are becoming more important in sprawling urban areas with increasingly congested roadways. Many cities are turning to commuter rail as a viable mode of public transportation. City planners view commuter rail as a means of managing urban sprawl, stimulating economic development and reducing the environmental impacts of transportation.

Commuter rail systems, which move passengers between the suburbs and the downtown on shared corridors, are having a larger impact on the way people and freight move through US cities. Commuter rail and its subsequent transit oriented development (TOD) provide opportunities for cities to re-shape their urban form and stimulate economic development. By creating dense, mixed use TOD zones along commuter rail stations, urban transportation planners hope to foster the establishment of livable, economically prosperous and environmentally sustainable communities. Urban planning literature suggests that metropolitan areas with successful public rail transit become more competitive in their attempts to attract globally mobile investment [1, 2]. Cities across the country have implemented commuter rail systems, with varying success, in an effort to reap these benefits.

Currently, there at 26 operational commuter rail systems located in 29 major U.S. metropolitan areas. Long term trends indicate that commuter rail service will continue to grow nationally, as forecasted by the 28 percent increase in national ridership between 1997 and 2007. During this period, commuter rail added 100 million additional riders [3].

1.1 Project Goals

This research situates commuter rail systems in the context of rail systems at-large, compiles a complete and definitive list of U.S. commuter rail systems, profiles each system and establishes a 'new start' and 'legacy' classification system for commuter rail. Examining new start commuter rail, specifically the acquisition of right-of-way on shared-corridors and the relationship between system design and urban form, provides a means of tracing the policy mobility and system development of contemporary commuter rail.

The authors highlight the current state of commuter rail, the historical acquisition of legacy commuter rail systems by public transit agencies and the establishment of contemporary new start commuter rail projects. This overview includes profiles of all 26 operational US commuter rail systems. These profiles will examine the vital statistics and demographics of each system.

1.2 Typology of American Rail

American rail systems can be organized into four broad categories: freight rail, passenger rail, urban rail transit and commuter rail (see Table 1). The Federal Railroad Administration (FRA) is charged with assisting and regulating passenger rail and freight rail. These two industries often share track infrastructure and right-of-way corridors, making one of the FRA's primary concerns the safe and efficient integration of both services on shared corridors [3]. In this context, the term 'passenger rail' refers to longer distance intercity rail transportation, such as Amtrak.

Table 1: Typology of U.S. Rail Systems

	Internal Typology	Regulatory Agency	Geographic Scale
Freight Rail	Class I Regional Rail Shortline	FRA	National/Regional Network
Passenger Rail	Amtrak Alaska Railroad High Speed Rail	FRA	National Intercity Connectivity
Commuter Rail	Legacy New Start	FTA, FRA	Greater Metropolitan Commuter Shed
Urban Rail Transit	Light Rail (Street Cars) Heavy Rail (Subway or Metro)	FTA	Intra-Urban /Downtown

Urban rail transit, electric powered fixed guideway transporting passengers within the city center, is regulated by the Federal Transit Administration (FTA). Urban rail transit is divided into two categories - heavy rail and light rail. Heavy rail, sometimes called subways or rapid rail transit, operates on a separated right-of-way and moves large numbers of passengers at once. Light rail, sometimes called streetcars, operate on separated right-of-way, reserved corridors along highway medians or at-grade with street traffic. In common parlance, 'light rail' usually refers to a separated right-of-way, while 'streetcar' usually refers to at-grade vehicles that mix with traffic [4, 5].

1.3 Defining Commuter Rail

Commuter rail, sometimes called regional rail or suburban rail, is uniquely situated between standard passenger rail and urban rail transit. Commuter rail refers to a rail route that connects the downtown of a major city to the surrounding suburban communities. Commuter rail systems operate frequent and regular services that are scheduled around traditional peak commuting hours. These services are designed to move commuters within the greater metropolitan area, establishing a connection between suburban communities and the city center [4, 5]. Commuter rail systems operate on shared corridors with freight rail carriers and Amtrak passenger rail. These shared commuter corridors usually range between 30 and 200 miles of track, although the very largest systems in the country have up to several hundred miles of track (see table 2).

Table 2: Commuter Rail Criteria

Greater Metropolitan Commuter Shed	The system operates within the greater metropolitan commuter shed and connects downtown centers with suburban hubs*
Frequent Service	Headways of 15 minute, 30 minute or 60 minute increments with more frequent service in the peak of commuting hours
Regular Service	Services are based on a regular weekday schedule that focus on peak commuting hours.
Shared Corridor	Rail infrastructure and corridor right-of-ways are shared with freight and passenger rail carriers^
Track Miles	Most systems have between 30 and 200 miles of track
Speed	Commuter train speeds do not exceed 79 mph^

* Some commuter express services connect two metro areas in close proximity (see table 3)

^ The Keystone system is part of a new high speed passenger corridor as a result of recent Amtrak infrastructure modifications (sealed corridor with no freight carrier and increased speeds)

Despite the recent increase in commuter rail systems, there is often confusion among the general public in differentiating commuter rail from light rail and heavy rail. Even professional transportation and planning organizations differ as to which systems are classified as commuter rails, due in part to the lack of definitive research on the variations of commuter rail systems in the United States.

During the course of this research, criteria had to be constructed to definitively establish a complete and composite list of commuter rail systems. The selected criteria reflect the core elements of commuter rail as set forth by the Federal Transit Administration (FTA) and American Public Transportation Association (APTA) classification system. Even between these two organizations, there are discrepancies in the operational and design elements that constitute commuter rail.

This research considered four systems that are associated with multiple classifications. Three of these systems failed to meet the criteria for commuter rail classification, as set forth by this study. While the Alaska Railroad system and the Capital Corridor in northern California are designated as commuter rail by the APTA, they are not designated as commuter rail systems by FTA. As a general guideline, this research considers a system's standing with the FTA and its eligibility for federal transit funding to be a factor in its inclusion as a commuter rail. The Capital Corridor system and the Alaska Railroad function as interurban passenger rail systems and are entirely within the purview of the Federal Railroad Administration (FRA). The third system is the PATCO Line, a subsidiary of the Delaware River Port Authority of Pennsylvania and Camden, New Jersey. This line operates between Philadelphia and New Jersey and is often described as a commuter rail system by state and local transit agencies in the region, despite PATCO being classified as heavy rail by both the FTA and APTA. As these three systems failed to meet the researchers' criteria, they have been excluded from the research.

The Keystone Line, which connects Philadelphia to Harrisburg, PA, is considered a commuter rail system in this research. Despite having very similar characteristics to intercity passenger

rail, the system meets most of the criteria for commuter rail. The commuter rail operates at slightly higher speeds on a sealeded corridor that doesn't share track infrastructure with freight rail, rather than the traditional shared corridor. These passenger rail characteristics stem from 2006 track improvements that allow the Keystone Line to reach speeds of 110 mph, well above the typical commuter rail top speed of 79 mph. This speed, which is second only to the Amtrak Acela passenger rail line in northeast corridor, qualifies the Keystone Line as an FRA high speed corridor. Many of these improvements, however, were funded by FTA transit funds. These improvements allowed a standard Amtrak line to begin operating frequent and regular commuter rail service. The Keystone Line has trains departing hourly during peak commuter hours, has 12 stations over the system's104 mile corridor and is designated a commuter rail system by the FTA. Given these characteristics and the commuter rail function of the line, the researchers determined that the Keystone Line meets the key criteria for commuter rail as established by this study.

This research has identified 26 systems as a comprehensive and definitive list of U.S. commuter rails systems (see Table 3).

Table 3: US Commuter Rail Systems

System Name	Location	Track Miles	Stations	Daily Ridership
Rail Runner Express	Albuquerque, NM Santa Fe, NM	97	11	4,000
Capital MetroRail	Austin, TX	32	9	1,600
MARC	Baltimore, MD Washington DC	200	42	33,700
MBTA	Boston, MA	368	123	130,700
Metra	Chicago, IL	488	239	304,300
NICTD South Shore Line	Chicago, IL South Bend, IN	90	19	12,100
Trinity Railway Express	Dallas, TX Ft. Worth, TX	34	10	8,400
A-Train	Denton/Dallas, TX	21	6	1,400
MetroLink	Los Angeles, CA	512	55	43,100
Tri-Rail	Miami, FL	72	18	14,000
NorthStar	Minneapolis, MN St. Paul, MN	40	6	2,100
Music City Star	Nashville, TN	32	6	1,100
Shore Line East	New Haven, CT	59	11	2,100
MTA - Long Island	New York, NY	700	124	324,300
MTA - Metro North	New York, NY	384	120	281,200
NJ Transit	Newark, NJ	498	165	NA
SEPTA	Philadelphia, PA	289	153	123,500
Keystone Line	Philadelphia, PA Harrisburg, PA	104	12	1,800
Downeaster	Portland, ME	116	12	1,400
Westside Express Service	Portland, OR	15	5	1,600
FrontRunner	Salt Lake City, UT	44	8	5,600
Coaster	San Diego, CA	42	8	5,300
Caltrain	San Francisco, CA	75	32	42,400
Altamont Commuter Express	San Jose, CA	86	10	3,100
Sounder	Seattle, WA	82	10	9,900
Virginia Railway Express	Washington, DC Alexandria, VA	90	18	19,200

Daily ridership data from the APTA Transit Ridership Report for the first quarter of 2012

Section 2

HISTORY OF PASSENGER RAIL AND COMMUTER RAIL

After World War II, personal automobile ownership became more commonplace and the use of urban public transit and intercity passenger rail declined. Private urban transit ventures began to become less profitable. Many early commuter rail services were owned and operated by private interurban passenger railroad companies. As their business model became less viable, these companies began to discontinue rail service, including local commuter rail. In an effort to salvage private investment and retain transit services, public transit authorities were created to buy failing private transit companies. Quasi-public transit operations had become ubiquitous by the 1970s, as transportation policy highlighted government operated transit authorities as the best practices for providing public transit in American cities [6].

To better understand how commuter rail is uniquely situated between passenger rail and urban rail transit, a brief history of passenger rail and urban rail transit policies, governance and funding will be highlighted.

2.1 The Decline of Private Passenger Rail Services

The 1920's were the golden age of rail, as the number of US passenger miles hit its peak. By 1970, passenger miles dropped to a mere twenty percent of the miles traveled in 1920 [4]. While passenger miles peaked in the late 1920's, ridership increased until the 1940s. Rail ridership peaked between 1944-1945, due in part to war related gasoline and rubber rationing and the suspension of automobile production [7]. Since 1945, rail ridership has been in state of decline, as privately held commuter and passenger rail companies became financially unviable [6, 8]. By 1967, so many US passenger rail services had been discontinued that the US Postal Service stopped using passenger rail as a means for sending its first class mail [9].

Two reasons that passenger rail services began diminishing in the post-war era were the lack of public subsidies for rail and the increased desire for more personal mobility.

Unlike the highway and aviation industries, which did not own their modal infrastructure, the rail industry owned both the infrastructure (tracks and right-of-ways) and their rolling stock (locomotives and train cars) [9]. Other modes of transportation had public investment in infrastructure, most notably federally funded highway projects, such as the Eisenhower Interstate System [3]. This business model exposed passenger rail to more risk than the highway and aviation industries, since the rail industry had a vertically integrated operation with privately owned infrastructure. The initial government subsidies provided to railroads in the late 1800s and early 1900s had been paid back by rail roads in the form of heavily discounted movement of US military personal and equipment during both World Wars [9].

The freight and passenger rail industries became more distinctly separate after World War II. Passenger rail was the first to fall into decline; a victim of the new demand that personal mobility be fast and flexible [10]. When the decline began in the freight rail industry, freight carriers learned from the hardships of passenger rail. Freight rail industry appealed to public policymakers and distinguished themselves from the passenger rail industry [10]. As a result of

this separation, the two industries now have very different business models, employ different financial policies and advocate for distinct public policies.

With little public investment in rail infrastructure and rapidly increasing post-war demand for personal transportation, operating private passenger rail services became less and less profitable. Many privately held regional rail companies began discontinuing passenger rail routes and stopping regional commuter rail services [10, 11]. The discontinuance of these failing rail services had traditionally been regulated by state government, allowing each state to set their own wide ranging and inconsistent conditions by which companies could withdraw passenger rail services. In an attempt to more uniformly regulate and manage rail service, the Interstate Commerce Commission (ICC) was charged with approving service discontinuances in 1958 [11]. While this federal intervention provided more consistent terms of discontinuation, it did not slow the rapid rate at which local and regional rail lines were closing.

2.2 Post-War Urban Rail Transit

In 1962, President Kennedy delivered a special message to Congress in which he called for new planning efforts and capital assistance for US urban mass transit. This lead to the establishment of the Urban Mass Transit Administration (UMTA), precursor to the Federal Transit Administration, in 1964. UMTA began providing capital grants for metropolitan areas with a comprehensive transit plan. The first focus of the grants was to address the problem of deteriorating commuter rail services [6]. The timing of this federal transit funding coincided with urban environmental movements and anti-freeway movements, both of which called for better public transit systems. The availability of federal transit funds and the increasing public support for urban rail immediately made an impact on urban transit projects, specifically the establishment of urban rail projects to replace proposed highway projects. The two largest, most notable transportation projects that embraced this rail renaissance were San Francisco and Washington, DC. San Francisco was planning an elevated superhighway project which was rejected in favor of building what would become the BART heavy rail system. Washington DC opted for the construction of the DC Metro subway over a proposed 8 lane highway that would have cut across the city [6]. In an effort to improve funding for urban transit, the 1974 National Mass Transportation Assistance Act allowed some funds from the Highway Trust Fund, which is funded by fuel taxes, to be diverted to rapid transit projects [6].

2.3 Establishing Quasi-Public Passenger Rail

Wanting to establish a coherent national policy on public rail transit, the Kennedy Administration also asked Congress to conduct a comprehensive study of US intercity transit policy and passenger rail right-of-ways, as a means to facilitate the creation of a national multimodal transit system. This emphasis on multi-modal transport was a departure from the planning convention of the time, which sought to improve the US transportation network by updating and expanding the US interstate system [12]. The Kennedy administration's emphasis on an increased network of passenger rail connectivity was not enough to curb the high rate of rail discontinuances across the country.

In response to the rapid decline of passenger train routes, the US government consolidated the declining private network of intercity passenger rail carries into a federally subsidized national rail system. The Nixon administration passed the *Rail Passenger Service Act of 1970*,

establishing the National Railroad Passenger Corporation. Beginning service in 1971 under the title of Amtrak, the new national rail system was established as a for-profit enterprise formed by three incorporators picked by the Nixon administration. The board was to be composed of 15 directors: 8 presidential appointments that required Senate confirmation, 3 elected by the common stockholders, and four elected by preferred stockholders. Existing railroads were the only companies allowed to participate as common stockholders and invested in the new company by providing Amtrak with rolling stock. Existing rail lines were allowed to opt out of the Amtrak common share program, however the bill required all non-participating railroads to maintain their current service routes for at least four years [11]. While freight rail services still operated as private, for-profit entities, the Rail Passenger Service Act of 1970 allowed the federal government to relieve freight rail lines of their common carriage responsibilities to transport passengers [3, 11].

It quickly became apparent that Amtrak was losing money and would require fiscal support from the federal government. The years that followed were peppered with additional funding bills, policies to regulate fares and various other interventions, creating a strong partnership between the federal government and Amtrak. Despite the need for public funding, Amtrak was successful in increasing the number of passenger miles traveled. By 1991, the number of intercity passenger miles in the US had doubled the 1972 levels [7]. This success was due, in part, to increased destination side connectivity, which resulted from the resurgence of urban commuter rail systems and new light rail systems.

2.4 Quasi-Public Commuter Rail

Many of the discontinued private regional passenger carriers had operated both intercity passenger rail and express commuter rail services. When these carriers relinquished their common carrier responsibilities to Amtrak, the commuter rail services they operated were often discontinued with no replacement service. In many traditional US cities, commuter rail was a vital part of the urban transit system. In an effort to capitalize on the need for local commuter rail, the Consolidated Rail Corporation (Conrail) acquired five legacy commuter rail systems in the Northeastern United States. They were MARC, MBTA, Metro North, NJ Transit and SEPTA. Recognizing the need for commuter rail services, the additional 4 legacy commuter rail were acquired by public transit authorities as a means of retaining the commuter train services that were being lost due to the decline of private rail carries.

By 1980, Conrail was on the verge of bankruptcy and trying to terminate its commuter rail operations. As a response to the company's congressional request to discontinue commuter service, the Northeast Rail Service Act of 1981 (NERSA) relieved Conrail from its commuter service obligations. In 1983 and 1984, Conrail sold its five commuter rail systems to regional and municipal transit agencies [14, 15]. This move established the benchmark practice of commuter rails systems being under the governance of municipal and regional transit authorities.

Section 3

ESTABLISHING A TYPOLOGY OF COMMUTER RAIL

Drawing from Polzin and Page's [13] typology of light rail systems, all 26 commuter rail systems have been classified using a 'legacy' and 'new start' dichotomy. Currently, there are 9 legacy rail systems and 17 new start systems operating in the US. Legacy systems are routes that previously operated as private commuter rail services but were purchased by public transit agencies after World War II. New start systems are recent commuter rail services that were originally established by public transit agencies after 1980.

3.1 Legacy Commuter Rail Systems

Legacy rails are systems that were in operation as privately owned transit or passenger rail services, prior to 1950. With the decline of rail ridership after World War II, many private rail companies discontinued regional rail services. Some of these systems were then acquired by local public transit agencies as a means of maintaining a vital part of the urban transportation network of large traditional American cities. Most of these systems began current operations under the auspices of a public transit agency in the 1970s and 1980s, although their private precursors often date back to the mid-1800s. Municipal transit authorities often acquired these systems as a turn-key operation, complete with right-of-way and rolling stock.

Many legacy systems were purchased from Conrail by public transit authorities in 1983 and 1984, as a part of the Northeast Rail Service Act of 1981 (NERSA). NERSA relieved Conrail from its commuter service obligations, allowing the nearly bankrupt company to sell its commuter rail systems to state and municipal transit agencies [14, 15]. The systems purchased from Conrail as a result of NERSA are: MARC, MBTA, Metro North, NJ Transit and SEPTA.

Table 4: Legacy Commuter Rail System with Date

System Name	Location	Date of Current Operation	Legacy Date
MARC	Baltimore, MD Washington, DC	1984	1827
MBTA	Boston, MA	1973	1830
Metra	Chicago, IL	1984	1856
NICTD South Shore Line	Chicago, IL South Bend, IN	1989	1903
MTA - Long Island	New York, NY	1966	1834
MTA - Metro North	New York, NY	1983	1832
NJ Transit	Newark, NJ	1983	1830's
SEPTA	Philadelphia, PA	1983	1915
Caltrain	San Francisco, CA	1987	1863

Date of Current Operation refers to the date the current system started operation as a part of a public transit authority. Legacy Date is the date the original passenger rail line and commuter service was established by a private entity.

3.2 New Start Commuter Rail Systems

New start systems are commuter rail projects originally established by public transit agencies after 1980. Rather than purchasing the right-of-way and rolling stock from an existing private commuter service, new start systems have had to negotiate the terms of establishing a new shared corridor with the freight rail carries that own the track infrastructure. While some new start commuter rail systems subcontract the day-to-day operations to private companies, these systems are still under the governance of local public transit agencies (see section 4 profiles).

Table 5: New Start Commuter Rails System

System Name	Location	Date
Rail Runner Express	Albuquerque, NM Santa Fe, NM	2006
Capital MetroRail	Austin, TX	2011
Trinity Railway Express	Dallas, TX Ft. Worth, TX	1996
A-Train	Denton, TX Dallas, TX	2011
MetroLink	Los Angeles, CA	1992
Tri-Rail	Miami, FL	1987
NorthStar	Minneapolis, MN St. Paul, MN	2009
Music City Star	Nashville, TN	2006
Shore Line East	New Haven, CT	1990
Keystone Line	Philadelphia, PA Harrisburg, PA	2006
Downeaster	Portland, ME	1995
Westside Express Service	Portland, OR	2009
FrontRunner	Salt Lake City, UT	2008
Coaster	San Diego, CA	1995
Altamont Commuter Express	San Jose, CA	1998
Sounder	Seattle, WA	2000
Virginia Railway Express	Washington, DC Alexandria, VA	1992

For the past 30 years, the Federal Transit Administration has offered funding through new start grants for fixed guideway transit systems, including commuter rail systems. These grants are designed to offer financial support for local and state governments to plan, implement and operate urban mass transit system. The agency has been charged with establishing and evaluating the grant criteria for each phase of new start commuter rail – alternatives analysis, preliminary engineering and final design [16].

3.2.1 Establishing New Start Systems

An examination of new start systems highlights three common scenarios employed by local transit agencies as they establish new commuter rail systems.

The most common scenario is the establishment of new start commuter rail systems in areas that have recently begun to rapidly urbanize. These systems are designed and built from the ground up, often with no previous history of commuter rail service. For some systems, the initial justification for commuter rail is as a temporary solution to mitigate congestion from a major highway project. The Shore Line East in New Haven, Connecticut had its origins as a temporary congestion mitigation plan, but the success of the system has led to the permanent operation of the commuter service. The initial alternative analysis study for the forthcoming SunRail system in Orlando, Florida was implemented as a means of mitigating a major construction project on US Interstate 4.

The second scenario is the reestablishment of long dormant commuter lines that existed in large urban centers but were not acquired by public transit agencies after their discontinuance. Some new start commuter rails had commuter services operating prior to 1950, but those services were abandoned for several decades prior to the implementation of new commuter rails. The primary example of this is the Virginia Railway Express, which services Washington, DC and Alexandria, Virginia. The contemporary commuter service began operations in 1992, nearly four decades after the last commuter rail system in Northern Virginia was discontinued.

The third scenario is the modification of an existing passenger rail service to provide commuter rail services. These new start systems expand the capacity of existing Amtrak passenger rail services, allowing a set of commuter express trains to run hourly at peak hours. The Downeaster in Portland, Maine and the Keystone Line in Pennsylvania are excellent examples of this approach to establishing commuter rail.

3.2.2 New Start Shared Corridors

One of the most important elements of establishing a new start commuter rail system is acquiring rail corridor access from the freight carriers that own the infrastructure. There are three arrangements for acquiring commuter right-of-way. The first is the outright purchasing of the corridor and track infrastructure. This usually requires the transit agency to allow the freight carrier to lease an exclusive right-of-way for freight movements on the tracks. The second arrangement is to purchase an easement from the freight carrier. The third is leasing time on the corridor. The Sounder in Seattle, Washington combined two scenarios: purchasing a section of track between Tacoma and Lakewood and agreeing to a long term lease to run 30 commuter trains a day from Seattle to Tacoma.

The acquisition of right-of-way requires commuter rail systems to expand the capacity of the corridor to accommodate future commuter and freight needs. This includes actions such as double tracking and sidetracking shared corridor or funding infrastructural improvements for alternate lines to bypass the shared corridor.

Purchasing the corridor requires the commuter rail system to maintain track infrastructure, including the dispatching services. By controlling dispatching services, a commuter system can

give priority to commuter trains. The RailRunner system in Albuquerque/Santa Fe, New Mexico purchased their corridor and operates the dispatch services for the line. Easement and leasing arrangements, such as the Tri-Rail system in Miami, Florida, allow the freight lines to maintain the signaling and dispatching operations on the line, thereby allowing the freight carrier to prioritize freight trains over commuter trains. The Tri-Rail system has historically had problems with their on-time performance record because of their lack of control over system dispatching services. To remedy this, the Tri-Rail system renegotiated track ownership and dispatch control, leading to the 2013 announcement that Tri-Rail was in the process of purchasing the track and assuming dispatching responsibilities for the track infrastructure in the system's commuter corridor (see policy mobility section).

3.2.3 New Generation Commuter Design

Unlike densely populated downtowns that exist in traditional American cities, such as New York and Chicago, the current generation of booming cities is characterized by low-density urban sprawl, stemming from automobile-centric city planning. These multinucleated suburban cities, whose vanguard include cities such as Dallas and Charlotte, are extending the metropolitan commuter sheds, which now serve as *de facto* urban units. Small suburban communities now function similar to urban neighborhoods in the pre-war American city.

These new urban forms are giving rise to a new type of commuter rail line. The most recent new start commuter rail systems are beginning to function more as a hybrid between light rail and traditional regional rail. While legacy and early new start systems have only one or two stations in the downtown proper, more recent systems serve as both a suburban-to-downtown function as well as intra-urban transit system with several stations in the city center. This design element has been incorporated in the Rail Runner Express in Albuquerque/Santa Fe, New Mexico and Capital MetroRail in Austin, Texas. Commuter rail projects currently under construction, such as SunRail in central Florida. are also implementing a multiple-station design in the city center.

Breaking with the traditional suburb to downtown model of commuter rail services, the Westside Express in Portland, Oregon has implemented the first suburb to suburb commuter rail system. This speaks to the growing importance of suburban connectivity in the contemporary urban form. This system connects Wilsonville to the Beaverton transit center, where commuter rail passengers can transfer to the Portland light rail system and travel downtown.

Table 6: A Typology of Urban Form and Commuter Rail Design

Classic Suburb to Downtown
Lines that connect one or two stations in the downtown central business district with surrounding suburban stations.

Examples: MBTA in Boston, MA
MTA in New York, NY

Downtown to Downtown via Suburban Corridor
Systems that connect two large downtown urban centers in close proximity, while still connecting suburban stations with both downtowns.

Examples: MARC in Baltimore/DC
A-Train in Dallas/Denton

Suburb to Suburb
A commuter rail line that connect two suburban centers without going through the downtown of the largest urban center in the metropolitan area. Currently, the Westside Express is the only example of a suburb to suburb design.

Example: Westside Express in the Portland, OR metropolitan area,
with a Wilsonville to Beaverton line.

Suburb to Multiple Downtown Stops
A commuter rail system that has several stations in the downtown central business district but still connects the city center to the suburbs. Multiple downtown stops allow these type of systems to function more like light rail systems in the downtown area.

Example: RailRunner in Albuquerque/Santa Fe and
SunRail in Orlando, FL*

Multiple Suburban Stops to Downtown
Commuter rail system with multiple stations in larger suburban centers. FrontRunner is the only current example of this new system design.

Example: FrontRunner
with multiple stops in Ogden and Provo, UT

* System currently under construction

3.2.4 Policy Mobility

The current iterations of new start commuter rail systems draw from successes and shortcomings of previous commuter rail systems. As commuter rail systems are established, project planners draw upon knowledge from existing rail systems by designating benchmark cities and employing the current set of best practices for project components, such as system design, transit oriented development, corridor acquisition and project financing. Benchmarking and policy transfer are crucial components of building a successful system, as more recent generations of commuter rail learn from the policy decisions of previously established rail. These policies are mobilized nationally and modified locally, in an effort to better establish successful commuter rail systems

As an example of policy mobility, the Tri-Rail system recently restructured their lease agreement to purchase the track infrastructure used by the commuter system [17]. Tri-Rail was able to establish a new agreement similar to the SunRail contract to purchase track infrastructure in Orlando. While the first commuter rail system to establish dispatching rights for the system was RailRunner in New Mexico, the practice became a benchmark. SunRail mobilized this policy and bought the track infrastructure and dispatching rights for the Orlando system. With a policy structure in place for purchasing rail corridors and establishing dispatching centers, the Miami system was able to mobilize the shared corridor policy from Central Florida and renegotiate a similar contract on the South Florida system. Tri-Rail, the first new start commuter rail in the US, illustrates the means by which mobilized policies can come full circle.

Project planners and local policymakers serve as transfer agents collecting and disseminating best practices through networking with colleagues, shared project consultants and information gathering trips. Many cities considering establishing a commuter rail system send a delegation of local planners and policymaker to visit benchmark cities with similar demographics. Systems in the planning phase conduct conferences, asking members of other commuter rail systems to share their institutional knowledge on establishing a commuter rail system. Perhaps the greatest means by which commuter rail practices are transferred is a shared set of consultants or experts. These include specialized private consultants, individual experts or large firms, and the new start commuter rail program managers at the FTA. The FTA highlights the current state of best practices for commuter rail and connects establishing systems with established commuter rail systems as part of the new start grant process.

Section 4

COMMUTER SYSTEM PROFILES

4.1 Profile Overview

This section provides a system profile of all 26 commuter rail systems. These profiles include information on the organizational structure of the system, the ridership numbers, service area demographics, system classification and budget data.

4.2 Commuter Rail System Profiles

Note: See Appendix B for definitions and data sources for each profile category. Much of the data comes from the FTA National Transit Database, APTA Transit Ridership Report and self-reported documentation from each of the commuter rail systems. Also see Appendix C for a complete bibliography of data sources used to create these profiles. The system profiles are listed in alphabetical by the city served by the commuter rail system.

Rail Runner Express

Albuquerque and Santa Fe, NM

Transit Agency:	Rio Metro Regional Transit District
FTA Number:	6111
Agency Purview:	Exclusively Commuter Rail
System Operator:	Herzog Transit Services
Freight Operator:	BNSF
Daily Ridership:	4,000
2011 Ridership:	1,242,100
MSA Population:	887,077
Service Population:	503,797
Established:	2006
Classification:	New Start
Track Miles:	97
Stations:	15

2009 Operational Expenditures:

Total Expenditures	$19,056,806
Per Passenger Mile	$0.43
Per passenger Trip	$17.60

2009 Fare Generated Revenue:	$2,669,729
2012 Fare Rates:	$2-$10

Notes:

The system began operation in Albuquerque in 2006 and expanded services to Santa Fe in 2008. The first phase of the project connected Belen and Bernalillo on existing Burlington North Santa Fe railway (BNSF). The second phase required new tracks to extend the system from Bernalillo to Santa Fe, some of which is on a reserved right-of-way in the median of US Interstate-25.

Utilizing existing right-of-way corridors was important to insure none of the surrounding Native American lands would have to be acquired. Since the commuter rail operates within the envelope of the BNSF and the I-25 corridor, no additional land acquisition was required.

Capital MetroRail

Austin, TX

Transit Agency:	Capital Metropolitan Transportation Authority
FTA Number:	6048
Agency Purview:	Multimodal
System Operator:	Herzog Transit Services
Freight Operator:	Watco Companies
Daily Ridership:	1,600
2011 Ridership:	469,300
MSA Population:	1,716,000
Service Population:	892,102
Established:	2011
Classification:	New Start
Track Miles:	32
Stations:	9

2009 Operational Expenditures:

Total Expenditure	Not Available
Per Passenger Mile	Not Available
Per passenger Trip	Not Available

2009 Fare Generated Revenue:	Not Available
2012 Fare Rates:	$2.25

Notes:

The system was not operational during 2009, which is the most recent complete FTA dataset available.

MARC

Maryland Area Regional Commuter

Baltimore, MD and Washington DC

Transit Agency:	Maryland Transit Authority
FTA Number:	3034
Agency Purview:	Multimodal
System Operator:	Amtrak; CSX Transportation*
Freight Operator:	CSX
Daily Ridership:	33,700
2011 Ridership:	8,286,000
MSA Population:	8,292,659
Service Population:	2,077,667
Established:	1984
Classification:	Legacy
Legacy Date:	1827
Track Miles:	200
Stations:	42

2009 Operational Expenditures:

Total Expenditure	$109,135,596
Per Passenger Mile	$0.43
Per passenger Trip	$13.50

2009 Fare Generated Revenue:	$35,238,992
2012 Fare Rates:	$4-$14

Notes:

*While CSX Transportation is the current system operator for MARC, the class I freight rail company is phasing out its commuter rail operations. Beginning in 2010, MARC started taking bids for a new firm to operate the system. The bid process has since been delayed.

MBTA

Massachusetts Bay Transportation Authority

Boston, MA

Transit Agency:	Massachusetts Bay Transit Authority
FTA Number:	1003
Agency Purview:	Multimodal
System Operator:	Massachusetts Bay Commuter Rail Company (MBCR); Veolia Transportation
Freight Operator:	CSX
Daily Ridership:	130,700
2011 Ridership:	36,429,400
MSA Population:	4,552,402
Service Population:	4,510,400
Established:	1973
Classification:	Legacy
Legacy Date:	1830's
Track Miles:	368
Stations:	123

2009 Operational Expenditures:

Total Expenditure	$277,168,433
Per Passenger Mile	$0.34
Per passenger Trip	$6.83

2009 Fare Generated Revenue:	$137,526,396
2012 Fare Rates:	$2-$11

Notes:

Many rail lines were built in the 1830s that would ultimately become part of the MBTA commuter rail system. Some lines of note include: Boston and Worcester/Boston Albany (1831), Boston and Lowell (1835), Boston and Maine (1835), Boston and Portland (1839). These lines began to discontinue passenger services in the 1960s. The state slowly began to acquire and operate these lines. In 1974, the MBTA began operating the lines as a singular commuter rail system that was managed by a public transit agency.

Metra

Chicago, IL

Transit Agency:	Northeast Illinois Regional Commuter Railroad Corp. (NIRCRC)
FTA Number:	5118
Agency Purview:	Exclusively Commuter Rail
System Operator:	NIRCRC Operations and PAS Operations*
Freight Operator:	BNSF; Union Pacific; Chicago South Shore and South Bend Railroad
Daily Ridership:	304,300
2011 Ridership:	72,166,500
MSA Population:	9,461,105
Service Population:	7,261,176
Established:	1984
Classification:	Legacy
Legacy Date:	1856
Track Miles:	488
Stations:	239

2009 Operational Expenditures:

Total Expenditure	$548,648,030
Per Passenger Mile	$0.33
Per passenger Trip	$7.64

2009 Fare Generated Revenue:	$236,067,676
2012 Fare Rates:	$2.75-$9.25

Notes:

* NIRCRC operates most Metra commuter services along tracks either owned by the transit authority or with trackage rights leasing agreements, however some sections of the system require operational services to be purchases from the freight carrier. Purchase Service Agreements (PSA) are required along four lines. Along these lines Metra commuter services to be operated by Union Pacific and BNSF.

South Shore Line

Chicago, IL and South Bend, IN

Transit Agency:	Northern Indiana Commuter Transit District (NICTD)
FTA Number:	5104
Agency Purview:	Exclusively Commuter Rail
System Operator:	Northern Indiana Commuter Transit District (NICTD)
Freight Operator:	The Chicago Southshore and South Bend Railroad
Daily Ridership:	12,100
2011 Ridership:	3,681,200
MSA Population:	9,780,329
Service Population:	958,644
Established:	1989
Classification:	Legacy
Legacy Date:	1903; Chicago, Lakeshore and South Bend Railway 1925; The South Shore Line
Track Miles:	90
Stations:	19

2009 Operational Expenditures:

Total Expenditure	$39,250,585
Per Passenger Mile	$0.36
Per passenger Trip	$10.10

2009 Fare Generated Revenue:	$17,718,766
2012 Fare Rates:	$3.25-$11.75

Notes:

Unlike the other US commuter rail systems that currently operate diesel engine locomotives, the South Shore line is an electric interurban commuter rail system. This system is one of the last two remaining electric commuter rail in the country (SEPTA is the other electric power system).

This legacy interurban rail line and street car system operated under private ownership and several names from its founding in 1903 until the line applied for discountenance in 1976. Some of these names include: The Chicago & Indiana Air Line Railway (1903); The Chicago, Lake Shore and South Bend Railway (1904); and The Chicago South Shore and South Bend Railroad (1925).

Trinity Railway Express

Dallas and Ft. Worth, TX

Transit Agency:	Dallas Area Rapid Transit (DART) Fort Worth Transportation Authority (The T)
FTA Number:	6056 (DART); 6007 (The T)
Agency Purview:	Multimodal
System Operator:	Herzog Transit Services
Freight Operator:	BNSF; Union Pacific; Dallas, Garland & Northeastern; Fort Worth & Western Railroad
Daily Ridership:	8,400
2011 Ridership:	2,364,900
MSA Population:	6,371,773
Service Population:	3,108,300*
Established:	1996
Classification:	New Start
Track Miles:	34
Stations:	10

2009 Operational Expenditures:

Total Expenditure	$24,278,188*
Per Passenger Mile	$0.76 (DART); $.52 (The T)
Per passenger Trip	$8.99 (DART); $8.69 (The T)

2009 Fare Generated Revenue:	$2,910,279*
2012 Fare Rates:	$3.50-$5.00

Notes:

*The Trinity Railway Expressway is a joint venture between the Dallas Area Rapid Transit (DART) and the Fort Worth Transportation Authority (The T). These profile sections reflect the total combined statistics of both transit agencies. Please refer to the 2009 FTA Annual Report for the totals separated by agency.

A-Train

Denton and Dallas, TX

Transit Agency:	Denton County Transportation Authority (DCTA)
FTA Number:	6101
Agency Purview:	Multimodal
System Operator:	North Texas Rail Group*
Freight Operator:	Union Pacific
Daily Ridership:	1,400
2011 Ridership:	214,900
MSA Population:	6,371,773
Service Population:	234,552
Established:	2011
Classification:	New Start
Track Miles:	21
Stations:	6

2009 Operational Expenditures:

Total Expenditure	Not Available
Per Passenger Mile	Not Available
Per passenger Trip	Not Available

2009 Fare Generated Revenue:	Not Available
2012 Fare Rates:	$3-$5

Notes:

*The North Texas Rail Group is a private consortium composed of the private rail construction and operations firms of Herzog and Archer West.

The system was not operational during 2009, which is the most recent complete FTA dataset available.

MetroLink

Los Angeles, CA

Transit Agency:	Southern California Railroad Association
FTA Number:	9151
Agency Purview:	Exclusively Commuter Rail
System Operator:	Herzog Transit Services
Freight Operator:	Union Pacific
Daily Ridership:	43,100
2011 Ridership:	11,107,600
MSA Population:	12,828,837
Service Population:	8,341,002
Established:	1992
Classification:	New Start
Track Miles:	512
Stations:	55

2009 Operational Expenditures:

Total Expenditure	$158,763,727
Per Passenger Mile	$0.38
Per passenger Trip	$12.97

2009 Fare Generated Revenue:	$73,057,016
2012 Fare Rates:	$5-$25

Tri-Rail

Miami and Ft. Lauderdale, FL

Transit Agency:	South Florida Regional Transit Authority (SFRTA)
FTA Number:	4077
Agency Purview:	Multimodal
System Operator:	Veolia Transportation
Freight Operator:	CSX
Daily Ridership:	14,000
2011 Ridership:	3,947,900
MSA Population:	5,564,635
Service Population:	5,448,962
Established:	1987
Classification:	New Start
Track Miles:	72
Stations:	18

2009 Operational Expenditures:

Total Expenditure	$52,871,662
Per Passenger Mile	$0.43
Per passenger Trip	$12.52

2009 Fare Generated Revenue:	$9,744,718
2012 Fare Rates:	$2.50-$7.00

Notes:

The Tri-Rail system was the first new start commuter rail in the U.S.

Northstar

Minneapolis and St. Paul, MN

Transit Agency:	Metro Transit
FTA Number:	5027
Agency Purview:	Multimodal
System Operator:	Metro Transit
Freight Operator:	BNSF
Daily Ridership:	2,100
2011 Ridership:	703,400
MSA Population:	3,279,833
Service Population:	1,858,545
Established:	2009
Classification:	New Start
Track Miles:	40
Stations:	6

2009 Operational Expenditures:

Total Expenditure	$4,977,709
Per Passenger Mile	$2.55
Per passenger Trip	$63.18

2009 Fare Generated Revenue:	$269,527
2012 Fare Rates:	$3.25-$7.00

Notes:

The NorthStar commuter rail system runs from Big Lake to downtown Minneapolis. This system connects with the light rail system, Hiawatha Line, at the downtown terminus at Target Field.

Although currently operating on 40 miles of the corridor, the NorthStar Corridor Development Authority has secured the right-of-way for an 82 mile corridor. An expansion project to connect the Big Lake terminus with a line to St. Cloud is being proposed.

Music City Star

Nashville, TN

Transit Agency:	Regional Transportation Authority
FTA Number:	4159
Agency Purview:	Multimodal
System Operator:	Transit Solutions Group
Freight Operator:	CSX
Daily Ridership:	1,100
2011 Ridership:	279,300
MSA Population:	1,589,934
Service Population:	1,447,856
Established:	2006
Classification:	New Start
Track Miles:	32
Stations:	6

2009 Operational Expenditures:

Total Expenditure	$4,072,168
Per Passenger Mile	$1.25
Per passenger Trip	$22.45

2009 Fare Generated Revenue:	$748,902
2012 Fare Rates:	$2-$5

Shore Line East

New Haven, CT

Transit Agency:	Connecticut Department of Transportation
FTA Number:	1102
Agency Purview:	Multimodal
System Operator:	Amtrak
Freight Operator:	CSX; Providence and Worchester Railroad
Daily Ridership:	2,100
2011 Ridership:	614,100
MSA Population:	862,477
Service Population:	375,000
Established:	1990
Classification:	New Start
Track Miles:	59
Stations:	11

2009 Operational Expenditures:

Total Expenditure	$20,065,016
Per Passenger Mile	$1.62
Per passenger Trip	$33.80

2009 Fare Generated Revenue:	$9,932,099
2012 Fare Rates:	$2.75-$8.50

Notes:

Like several recent commuter rail resurgences, the 1990 start of the Shore Line East was initially designed to be a congestion mitigation measure during interstate highway construction projects.

MTA: Long Island

New York, NY

Transit Agency:	MTA Long Island Rail Road
FTA Number:	2100
Agency Purview:	Exclusively Commuter Rail
System Operator:	MTA
Freight Operator:	New York and Atlantic Railway
Daily Ridership:	324,300
2011Ridership:	98,902,000
MSA Population:	18,897,109
Service Population:	11,720,000
Established:	1966
Classification:	Legacy
Legacy Date:	1834
Track Miles:	700
Stations:	124

2009 Operational Expenditures:

Total Expenditure	$1,104,479,277
Per Passenger Mile	$0.57
Per passenger Trip	$11.35

2009 Fare Generated Revenue:	$509,332,964
2012 Fare Rates:	$3.00-$25.00

Notes:

The New York and Atlantic Railway, a subsidiary of Anacostia and Pacific, was given a 20 year contact as the freight carrier on the Long Island line. This was an attempt to streamline freight shipments, with the goal of increasing the efficiency of freight without interrupting commuter rail services.

MTA: Metro North

New York, NY

Transit Agency:	Metro North Commuter Railroad Company
FTA Number:	2078
Agency Purview:	Multimodal
System Operator:	MTA
Freight Operator:	Canadian Pacific; CSX; Norfolk Southern; Providence and Worcester; Housatonic Railroad
Daily Ridership:	281,200
2011 Ridership:	81,803,100
MSA Population:	18,897,109
Service Population:	6,503,894
Established:	1983
Classification:	Legacy
Legacy Date:	1832
Track Miles:	384
Stations:	120

2009 Operational Expenditures:

Total Expenditure	$858,509,601
Per Passenger Mile	$0.39
Per passenger Trip	$10.80

2009 Fare Generated Revenue:	$501,937,095
2012 Fare Rates:	$2.25-$22.00

Notes:

The original rail, that would become Metro North, was established in 1832 as the New York and Harlem Railroad. In 1983 Conrail was operating the commuter service but was nearly bankrupt. In an effort to keep the commuter rail service operating, the MTA purchased the line and began operating the system.

New Jersey Transit

Newark, NJ

Transit Agency:	New Jersey Transit Corporation
FTA Number:	2080
Agency Purview:	Multimodal
System Operator:	Herzog Transit Services
Freight Operator:	Conrail; CSX; and Norfolk Southern
Daily Ridership:	NA (Not Reported)*
2011Ridership:	78,555,100
MSA Population:	18,897,109
Service Population:	17,799,861
Established:	1983
Classification:	Legacy
Legacy Date:	1830's
Track Miles:	498
Stations:	165

2009 Operational Expenditures:

Total Expenditure	$841,817,971
Per Passenger Mile	$0.36
Per passenger Trip	$10.07

2009 Fare Generated Revenue:	$417,474,880
2012 Fare Rates:	$2-$16

Notes:

*No daily average ridership numbers are included in the APTA ridership report for 2012 or 2011.

New Jersey Transit Rail Operations, a secondary subsidiary to New Jersey Transit, was established in 1983 and charged with managing the state's commuter rail service. NJ Transit acquired the commuter rail system previously operated by Consolidated Rail Corporation (ConRail), after Congress ordered the discontinuation of Conrail passenger service in 1983. The first lines in the consolidated system were established in the mid-1830's, including the early iterations of the the Erie-Lackawanna, Central Penn, Jersey Central and the Reading lines.

SEPTA

Southeastern Pennsylvania Transportation Authority

Philadelphia, PA

Transit Agency:	Southeastern Pennsylvania Transportation Authority (SEPTA)
FTA Number:	3019
Agency Purview:	Multimodal
System Operator:	SEPTA
Freight Operator:	CSX
Daily Ridership:	123,500
2011 Ridership:	35,709,200
MSA Population:	5,965,343
Service Population:	3,337,770
Established:	1983
Classification:	Legacy
Legacy Date:	1915
Track Miles:	289
Stations:	153

2009 Operational Expenditures:

Total Expenditure	$219,782,314
Per Passenger Mile	$0.44
Per passenger Trip	$6.16

2009 Fare Generated Revenue:	$123,337,758
2012 Fare Rates:	$4 - $10

Notes:

Unlike the other US commuter rail systems that currently operate diesel engine locomotives, the SEPTA is an electric interurban commuter rail system. This system is one of the last two remaining electric commuter rail in the country (South Shore Line is the other electric power system).

Delaware Transit Corporation (TSA Number 3075) purchases commuter rail transit services from SEPTA. DTC subsidizes the SEPTA line that connects New Castle County, Delaware to downtown Philadelphia.

Keystone Line

Philadelphia, PA and Harrisburg, PA

Transit Agency:	Pennsylvania Department of Transportation (PennDOT)
FTA Number:	3057
Agency Purview:	Exclusively Commuter Rail*
System Operator:	Amtrak
Freight Operator:	None - Sealed Corridor
Daily Ridership:	1,800
2011 Ridership:	566,700
MSA Population:	6,514,818
Service Population:	3,100,000
Established:	2006
Classification:	New Start
Track Miles:	104
Stations:	12

2009 Operational Expenditures:

Total Expenditure	$16,271,442
Per Passenger Mile	$0.41
Per passenger Trip	$31.38

2009 Fare Generated Revenue:	$7,988,939
2012 Fare Rates:	$5-$30

Notes:

*Despite the obvious involvement with various modes of transportation, the only transit service that PennDOT operates is the KeyStone Line commuter rail.

While the Keystone Line functions as a commuter rail system, as well as being consider commuter rail by FTA, the 2006 infrastructure improvements allows the Keystone Line to reach speeds of 110 mph. This express service speed is second only to the Acela Line in northeast corridor and qualifies the Keystone Line for Federal Railroad Administration (FRA) high speed corridor funds.

A Keystone Line West line is being considered to connect Harrisburg to Pittsburgh with the same type of commuter rail service.

Downeaster

Portland, ME

Transit Agency:	Northern New England Passenger Rail Authority
FTA Number:	1115
Agency Purview:	Exclusively Commuter Rail
System Operator:	Amtrak
Freight Operator:	Pan Am Railways
Daily Ridership:	1,400
2011 Ridership:	518,500
MSA Population:	514,098
Service Population:	1,431,087
Established:	1995
Classification:	New Start
Track Miles:	116
Stations:	12

2009 Operational Expenditures:

Total Expenditure	$13,139,398
Per Passenger Mile	$0.36
Per passenger Trip	$27.87

2009 Fare Generated Revenue:	$6,630,944
2012 Fare Rates:	$6-$30

Westside Express Service

Portland, OR

Transit Agency:	Tri-County Metroplitan Transportation District of Oregon
FTA Number:	0008
Agency Purview:	Multimodal
System Operator:	TriMet
Freight Operator:	Portland and Western Railroad
Daily Ridership:	1,600
2011 Ridership:	400,800
MSA Population:	2,226,009
Service Population:	1,488,169
Established:	2009
Classification:	New Start
Track Miles:	15
Stations:	5

2009 Operational Expenditures:

Total Expenditure	$1,488,169
Per Passenger Mile	$2.97
Per passenger Trip	$25.60

2009 Fare Generated Revenue:	$107,831
2012 Fare Rates:	$2.50-$5

Notes:

The Westside Express Service is the only suburban to suburban commuter rail that does not have a downtown station.

FrontRunner

Salt Lake City, UT

Transit Agency:	Utah Transit Authority (UTA)
FTA Number:	8001
Agency Purview:	Mulitmodal
System Operator:	Utah Transit Authority
Freight Operator:	Union Pacific
Daily Ridership:	5,600
2011 Ridership:	1,629,500
MSA Population:	1,124,197
Service Population:	1,744,417
Established:	2008
Classification:	New Start
Track Miles:	44
Stations:	8

2009 Operational Expenditures:

Total Expenditure	$21,609,635
Per Passenger Mile	$0.67
Per passenger Trip	$16.34

2009 Fare Generated Revenue:	$2,058,878
2012 Fare Rates:	$2.35-$5.10

Coaster

San Diego, CA

Transit Agency:	North County Transit District (NCTD)
FTA Number:	9030
Agency Purview:	Multimodal
System Operator:	Transit America Services*
Freight Operator:	BNSF
Daily Ridership:	5,300
2011 Ridership:	1,547,200
MSA Population:	3,095,313
Service Population:	850,000
Established:	1995
Classification:	New Start
Track Miles:	42
Stations:	8

2009 Operational Expenditures:

Total Expenditure	$16,439,884
Per Passenger Mile	$0.39
Per passenger Trip	$10.95

2009 Fare Generated Revenue:	$6,975,640
2012 Fare Rates:	$4.00-$5.50

Notes:

*Transit America Services is a subsidiary of Herzog Transit Service.

Caltrain

San Francisco, CA

Transit Agency:	Peninsula Corridor Joint Power Board (PCJBP)
FTA Number:	9134
Agency Purview:	Multimodal
System Operator:	Transit America Services*
Freight Operator:	Union Pacific
Daily Ridership:	42,400
2011 Ridership:	13,243,200
MSA Population:	6,172,302
Service Population:	3,690,367
Established:	1987
Classification:	Legacy
Legacy Date:	1863
Track Miles:	75
Stations:	32

2009 Operational Expenditures:

Total Expenditure	$87,035,619
Per Passenger Mile	$0.30
Per passenger Trip	$7.66

2009 Fare Generated Revenue:	$41,263,557
2012 Fare Rates:	$3-$13

Notes:

*Transit America Service is a subsidiary of Herzog Transit Services. Transit America took over Caltrain operations on May 25th, 2012. Prior to Transit America, the system was operated by Amtrak (1992-2012) and Southern Pacific (1980-1992).

Altamont Commuter Express

San Jose, CA

Transit Agency:	Altamont Commuter Express (ACE)
FTA Number:	9182
Agency Purview:	Exclusively Commuter Rail
System Operator:	Herzog Transit Services
Freight Operator:	Union Pacific
Daily Ridership:	3,100
2011 Ridership:	746,600
MSA Population:	1,836,911
Service Population:	4,094,704
Established:	1998
Classification:	New Start
Track Miles:	86
Stations:	10

2009 Operational Expenditures:

Total Expenditure	$12,413,122
Per Passenger Mile	$0.35
Per passenger Trip	$15.57

2009 Fare Generated Revenue:	$4,557,146
2012 Fare Rates:	$3-$12

Sounder

Seattle, WA

Transit Agency:	Sound Transit
FTA Number:	0040
Agency Purview:	Multimodal
System Operator:	BNSF
Freight Operator:	BNSF
Daily Ridership:	9,900
2011 Ridership :	2,544,000
MSA Population:	3,439,809
Service Population:	2,726,408
Established:	2000
Classification:	New Start
Track Miles:	82
Stations:	10

2009 Operational Expenditures:

Total Expenditure	$34,020,024
Per Passenger Mile	$0.54
Per passenger Trip	$13.65

2009 Fare Generated Revenue:	$7,766,691
2012 Fare Rates:	$2.75-$4.75

Virginia Railway Express

Washington, DC and Alexandria, VA

Transit Agency:	Virginia Railway Express
FTA Number:	3073
Agency Purview:	Exclusively Commuter Rail
System Operator:	Keolis
Freight Operator:	CSX
Daily Ridership:	19,200
2011 Ridership:	4,714,000
MSA Population:	5,582,170
Service Population:	680,400
Established:	1992
Classification:	New Start
Track Miles:	90
Stations:	18

2009 Operational Expenditures:

Total Expenditure	$50,637,207
Per Passenger Mile	$0.46
Per passenger Trip	$13.09

2009 Fare Generated Revenue:	$25,909,794
2012 Fare Rates:	$3-$10.65

4.3 Systems Excluded from the Commuter Rail Survey

Listed below are the systems that have been labeled commuter rail by other entities, but were excluded from this study. Several systems are labeled as commuter rail by the American Public Transportation Association (APTA), but are not considered commuter rails by the Federal Transit Administration (FTA). This research considered a systems standing with the FTA and eligibility for federal transit funding to be one of the factors for categorizing a system as commuter rail. Instead, the Capital Corridor system and the Alaskan Railroad function more like interurban passenger rail system and are within the purview of the Federal Railroad Administration (FRA)

Capital Corridor

Location: Oakland, Sacramento and San Jose
Affiliated Agency: Capital Corridor Joint Powers Authority (CCJPA)
FTA Number: N/A
FTA Classification: N/A
APTA Classification: Commuter Rail

Notes:

Although the APTA considers the Capital Corridor a commuter rail system, the CCJPA is not registered as a FTA transit authority. The rail system and the CCJPA fall within the auspices of the Federal Railroad Administration (FRA) as an interurban passenger rail.

PATCO Line

Location: Philadelphia, PA and Camden, NJ
Transit Agency: Port Authority Transit Corporation
FTA Number: 2075
FTA Classification: Heavy Rail
APTA Classification: Heavy Rail

Notes:

Although often cited as a regional rail or commuter rail system by other transit authorities in the region, the PATCO is classified as heavy rail by the FTA and APTA.

PATCO, a subsidiary of the Delaware River Port Authority of Pennsylvania and New Jersey (DRPA), operates the PATCO line from Philadelphia to New Jersey. DRPA is a regional transit authority that operates four bridges over the Delaware River along the Pennsylvania-New Jersey state line.

Alaska Railroad

Location: Anchorage, AK
Affiliated Agency: Alaska Railroad Corporation
FTA Number: N/A
FTA Classification: N/A
APTA Classification: Commuter Rail

Notes:

The Alaska Railroad system functions as an interurban passenger rail. Despite having historically received some FTA funding as a means of supporting the transportation needs of seasonal tourism, the line does not operate as urban rail transit for Anchorage. However, that Alaska Railroad Corporation and the state are currently conducting a study on the viability of commuter

Section 5

CONCLUSIONS

Commuter rail systems are becoming more prevalent in the urban transportation landscape, a trend that is likely to continue for decades to come. As more new start commuter rail systems are established and locally modified to fit the unique urban forms found across US cities, the variation among commuter rails will increase. This research has established a definitive list of commuter rails systems and a base typology of commuter rail that will allow for more detailed analysis in future research. By situating commuter rail in relation to freight rail, passenger rail and urban rail transit, the unique issues surrounding commuter systems are better examined. The broad categorization of commuter rail into legacy systems and new start systems allows the historical differences in right-of-way acquisition to become apparent. This survey of U.S. commuter rail provides an initial step toward establishing a comparative analytic by which to examine best practices for future new start systems.

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Appendix A

Commuter Rail Systems

System Name	Location	Classification	Date	Legacy Date	Miles	Stations	Daily Ridership	MSA
Rail Runner Express	Albuquerque/Santa Fe, NM	New Start	2006	----	97	11	4,000	887,077
Capital MetroRail	Austin, TX	New Start	2011	----	32	9	1,600	1,716,000
MARC	Baltimore/Washington DC	Legacy	1984	1827	200	42	33,700	8,292,659
MBTA	Boston, MA	Legacy	1973	1830	368	123	130,700	4,552,402
Metra	Chicago, IL	Legacy	1984	1856	488	239	304,300	9,461,105
NICTD South Shore Line	Chicago, IL/South Bend, IN	Legacy	1989	1903	90	19	12,100	9,780,329
Trinity Railway Express	Dallas/Ft. Worth, TX	New Start	1996	----	34	10	8,400	6,371,773
A-Train	Denton/Dallas, TX	New Start	2011	----	21	6	1,400	6,371,773
MetroLink	Los Angeles, CA	New Start	1992	----	512	55	43,100	12,828,837
Tri-Rail	Miami, FL	New Start	1987	----	72	18	14,000	5,564,635
NorthStar	Minneapolis/St. Paul	New Start	2009	----	40	6	2,100	3,279,833
Music City Star	Nashville, TN	New Start	2006	----	32	6	1,100	1,589,934
Shore Line East	New Haven, CT	New Start	1990	----	59	11	2,100	862,477
MTA - Long Island	New York, NY	Legacy	1966	1834	700	124	324,300	18,897,109
MTA - Metro North	New York, NY	Legacy	1983	1832	384	120	281,200	18,897,109
NJ Transit	Newark, NJ	Legacy	1983	1830's	498	165	NA	18,897,109
SEPTA	Philadelphia, PA	Legacy	1983	1915	289	153	123,500	5,965,343
Keystone Line	Philadelphia/Harrisburg, PA	New Start	2006	----	104	12	1,800	6,514,818
Downeaster	Portland, ME	New Start	1995	----	116	12	1,400	514,098
Westside Express Service	Portland, OR	New Start	2009	----	15	5	1,600	2,226,009
FrontRunner	Salt Lake City, UT	New Start	2008	----	44	8	5,600	1,124,197
Coaster	San Diego, CA	New Start	1995	----	42	8	5,300	3,095,313
Caltrain	San Francisco, CA	Legacy	1987	1863	75	32	42,400	6,172,302
Altamont Commuter Express	San Jose, CA	New Start	1998	----	86	10	3,100	1,836,911
Sounder	Seattle, WA	New Start	2000	----	82	10	9,900	3,439,809
Virginia Railway Express	Washington, DC/Alexandria, VA	New Start	1992	----	90	18	19,200	5,582,170

Appendix B

Data Sources and Definitions for Profile Entries

Transit Agency: Name of commuter rail transit agency; Self-reported data/ FTA reports/APTA reports

FTA Number: Federal Transit Administration identification number from National Transit Database 2009

Agency Purview: Notes if agency operates multiple transit modes or solely commuter rail services.

System Operator: The entity that operates the commuter rail service for the system; Self-reported data

Freight Operator: The company conducting freight operations on the shared corridor

Daily Ridership: APTA Transit Ridership Report for the first quarter of 2012; Average weekday ridership

2011 Ridership: APTA Transit Ridership Report for the fourth quarter of 2011

MSA Population: U.S. Census Bureau, Population for Large Metropolitan Statistical Area for 2010; Commuter systems that incorporate two major MSAs are given the total population of both MSAs (i.e. – MARC MSA includes the combined population of both Baltimore and Washington DC)

Service Population: 2009 FTA profile; National Transit Database

Established: Date new start commuter rail system began operations or date the legacy system were modernized or acquired by the current transit agency.

Classification: New Start service are systems established after 1980; Legacy system existed prior to 1950, but were likely under private ownership prior to 1960.

Track Miles: Number of infrastructure miles being operated by the sytem; Self-reported data/FTA reports/APTA reports

Stations: Number of stations on the system

2009 Operational Expenditures: 2009 FTA profile; National Transit Database
(Total Expenditure, Per Passenger Mile, Per passenger Trip)

2009 Fare Generated Revenue: 2009 FTA profile; National Transit Database

2012 Fare Rates: Range of fares for a ticket; often times determined by how many zones a commuter travels; self-reported

Notes: Data collected from transit agency documents, third party research reports, rail system websites and published media sources.

Appendix C
Bibliography for Commuter Rail Profiles

SYSTEM WEBSITES

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Caltrain: http://www.caltrain.com/
Capital Metro - Austin Public Transit: http://www.capmetro.org/MetroRail/
Coaster commuter train: http://www.gonctd.com/coaster
Downeaster: http://www.amtrakdowneaster.com/
FrontRunner - Utah Transit Authority:
http://www.rideuta.com/mc/?page=UTA-Home-FrontRunner
Keystone Service
Amtrak: http://www.amtrak.com/keystone-service-train
PADOT: http://www.pacommutes.com/public-transit/rail/keystone-service/
MARC Train - Maryland Transit Administration: http://mta.maryland.gov/marc-train
MBTA: http://mbta.com/index.asp
Metra: http://metrarail.com/metra/en/home.html
Metrolink: http://metrolinktrains.com/
MTA Long Island Rail Road: http://mta.info/lirr/
MTA Metro-North Railroad: http://mta.info/mnr/
Music City Star - RTA Home. http://www.musiccitystar.org/
NJ Transit http://www.njtransit.com/hp/hp_servlet.srv?hdnPageAction=HomePageTo
New Mexico Rail Runner Express: http://www.nmrailrunner.com/
South Shore Line - Northern Indiana Commuter Transportation District: http://www.nictd.com/
Northstar Commuter Rail: http://northstartrain.org/
Virginia Rail Express – VRE: http://vre.org/
SEPTA - Southeastern Pennsylvania Transportation Authority. http://www.septa.org/
Shore Line East: http://www.shorelineeast.com/index.php
Sounder Train – SoundTransit: http://www.soundtransit.org/Rider-Guide/Sounder-train.xml
Trinity Railway Express (TRE): http://www.trinityrailwayexpress.org/index.html
Tri-Rail - South Florida Regional Transportation Authority: http://www.tri-rail.com/
Westside Express Service (WES) - TriMet: http://www.trimet.org/wes/index.htm


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Presentation Abstract for AAG 2013
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Urban Transit Policy Mobility: The Historical Development of U.S. Commuter Rail Policy and Financing

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Abstract:

Planners view commuter rail as a means of managing urban sprawl, stimulating economic development and reducing the environmental impacts of transportation. Commuter rail systems, which use shared right-of-ways to connect suburban hubs with downtown urban centers, have a large impact on the way people and freight move through US cities. Currently, there are 26 commuter rail systems operating in 29 major U.S. metropolitan areas. The paper presents a complete and definitive list of U.S. commuter rail systems and a 'new start' and 'legacy' typology for commuter rail. The authors trace the historical development of post-war publically subsidized commuter rail, as public transit agencies began taking over operations from unprofitable private legacy systems through current new start systems designed to foster economic growth and mitigate environmental impacts. New start commuter rail systems are established in an effort to address a dual sustainability - sustained economic growth and environmental sustainability. Three strategies of corridor right-of-way acquisition have been analyzed: (1) purchasing the track infrastructure, (2) purchasing an easement from the freight carrier that hold the rights to the corridor or (3) leasing a specific number of daily trips on the corridor. Additionally, three scenarios for establishing new start systems have been identified based on a city's existing infrastructure and previous commuter service. Many of these commuter rail scenarios, best practices and benchmarks are mobilized nationally and modified locally, in an effort to establish more environmentally friendly system design, sustained transit oriented development and better project financing for corridor acquisition.

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Alternative modes of urban transportation are becoming more important in sprawling urban areas with increasingly congested roadways. Many cities are turning to commuter rail as a viable mode of public transportation. Currently, there at 26 operational commuter rail systems located in 29 major U.S. metropolitan areas. Long term trends indicate that commuter rail service will continue to grow nationally, as forecasted by the 28 percent increase in national ridership between 1997 and 2007. During this period, commuter rail added 100 million additional riders (*1*).

City planners view commuter rail as a means of managing urban sprawl, stimulating economic development and reducing the environmental impacts of transportation. Commuter rail systems, which move passengers between the suburbs and the downtown on shared corridors, are beginning to have a large impact on the way people and freight move through US cities. Commuter rail and its subsequent transit oriented development (TOD) provide opportunities for cities to re-shape their urban form and stimulate economic development. By creating dense, mixed use TOD zones along commuter rail stations, urban transportation planners hope to foster the establishment of livable, economically prosperous and environmentally sustainable communities. Urban planning literature suggests that metropolitan areas with successful public rail transit become more competitive in their attempts to attract globally mobile investment. Cities across the country have implemented commuter rail systems, with varying success, in an effort to reap these benefits.

Despite the recent increase in commuter rail systems, there is often confusion among the general public in differentiating commuter rail from light rail and heavy rail. Even professional transportation and planning organizations differ as to which systems are classified as commuter rails, due in part to the lack of definitive research on the variations of commuter rail systems in the United States. This research situates commuter rail systems in the broader context of rail transportation, compiles a complete and definitive list of U.S. commuter rail systems and establishes a ‘new start’ and ‘legacy’ classification system for commuter rail. Examining new start and legacy systems, specifically the acquisition of right-of-way on shared-corridors, provides a means of tracing the historical development of contemporary commuter rail.

TYPOLOGY OF AMERICAN RAIL

This research divides American rail systems into four broad categories: freight rail, passenger rail, urban rail transit and commuter rail (see Table 1). The Federal Rail Administration (FRA) is charged with assisting and regulating passenger and freight rail. These two industries often share track infrastructure and right-of-way corridors, making one of the FRA’s primary concerns the safe and efficient integration of both services on shared corridors (*1*). In this context, the term ‘passenger rail’ refers to longer distance intercity rail transportation, such as Amtrak.

Urban rail transit, electric powered fixed guideways that transport passengers within the city center, is regulated by the Federal Transit Administration (FTA). Urban rail transit is divided into two categories - heavy rail and light rail. Heavy rail, sometimes called subways or rapid rail transit, operate on a separated right-of-way and moves large numbers of passengers at once. Light rail, sometimes called streetcars, operate on separated right-of-way, reserved corridors along highway medians or at-grade with street traffic. In common parlance, ‘light rail’ usually refers to a separated right-of-way, while ‘streetcar’ usually refers to at-grade vehicles that mix with traffic (*2*, *3*).

Commuter rail, sometimes called regional rail or suburban rail, is uniquely situated between standard passenger rail and urban rail transit. Commuter rail refers to a rail route that connects the downtown of a major city to the surrounding suburban communities. Commuter rail systems operate frequent and regular services that are scheduled around traditional peak commuting hours. These services are designed to move commuters within the greater metropolitan area, allowing suburban passengers to be connected to the city center – and vice versa. (*2*, *3*) Commuter rail systems operate on shared corridors with freight rail lines and Amtrak passenger rail. These shared commuter corridors usually range between 30 and 200 miles of track, although the very largest systems have up to several hundred miles of track.

TABLE 1 Typology of U.S. Rail Systems

	Internal Typology	Regulatory Agency	Geographic Scale
Freight Rail	Class I Regional Rail Shortline	FRA	National/Regional Network
Passenger Rail	Amtrak Alaskan Railroad High Speed Rail	FRA	National Intercity Connectivity
Commuter Rail	Legacy New Start	FTA, FRA	Greater Metropolitan Commuter Shed
Urban Rail Transit	Light Rail (Street Cars) Heavy Rail (Subway or Metro)	FTA	Intra-Urban /Downtown

HISTORY OF PASSENGER RAIL AND COMMUTER RAIL

The 1920s were the golden age of rail, as the number of US passenger miles hit its peak. By 1970, passenger miles dropped to a mere twenty percent of the miles traveled in 1920 (*4*). While passenger miles peaked in the late 1920's, ridership increased until the 1940s. Rail ridership peaked between 1944-1945, due in part to war related gasoline rationing and the suspension of automobile production (*5*). Since 1945, rail ridership has been in state of decline, as privately held commuter and passenger rail companies became financially unviable (*4*, *6*).

One of the reasons that passenger rail services began diminishing in the post-war era was the lack of public subsidies for rail. Unlike the highway and aviation industries, which did not own their modal infrastructure, the rail industry owned both the infrastructure (tracks and right-of-ways) and their rolling stock (locomotives and train cars) (*7*). Other modes of transportation had public investment in infrastructure, most notably federally funded highway projects (*1*). This business model exposed passenger rail to more risk than the highway and aviation industries, since the rail industry had a vertically integrated operation with privately owned infrastructure. With little public investment in rail infrastructure and rapidly increasing post-war demand for personal transportation, operating private passenger rail services become less and less profitable. Many privately held regional rail companies began discontinuing passenger rail routes and stopping regional commuter rail services (*8*, *9*).

The discontinuance of these failing rail services were traditionally regulated by state government, as each state was allowed to set their own set of wide ranging and inconsistent conditions by which companies could withdrawal passenger rail services. In an attempt to better regulate and manage rail service in a more uniformed manner, the Interstate Commerce Commission (ICC) was charged with approving service discontinuances in 1958 (*9*). While this federal intervention provided more consistent terms of discontinuation, it did not slow the rapid rate at which local and regional rail lines were closing.

In response to the rapid decline of passenger train routes, the federal government consolidated the declining private network of intercity passenger rail carries into a federally subsidized national rail system, known as Amtrak. While freight rail services still operated as private, for-profit entities, the Rail Passenger Service Act of 1970 allowed the federal government to relieve freight rail lines of their common carriage responsibilities to transport passengers (*1*, *9*). While existing passenger rail services were allowed to opt out of the Amtrak common share program, the bill required all non-participating railroads to maintain their current service routes for at least four years (*9*).

Many of the discontinued private regional passenger carriers had operated both intercity passenger rail and express commuter rail services. When these carriers relinquished their common carrier responsibilities to Amtrak's intercity rail operations, the commuter rail services they offered were discontinued with no replacement service. In many traditional US cities, commuter rail was a vital part of the urban transit system. Recognizing the need for commuter rail services and the decline of private carries, several these cities began to establish public transit authorities to maintain the commuter train services that were being lost. These cities established what would become the 9 legacy commuter rail systems that currently operate today.

In 1962, President Kennedy delivered a special message to congress in which he called for planning efforts and capital assistance for US urban mass transit. In 1964, the Urban Mass Transit Administration (UMTA), precursor to the Federal Transit Administration, began providing capital grants for metropolitan areas that had a comprehensive transit plan. The first focus of the grants was to address the problem of deteriorating commuter rail services (*5*). The timing of this federal transit funding coincided with urban environmental movements and anti-freeway movements, both of which called for better public transit systems. The availability of federal transit funds and the increasing public support for urban rail immediately made an impact on urban transit projects, specifically the establishment of urban rail projects to replace proposed highway projects. The two largest, most notable transportation projects that embraced this rail renaissance were San Francisco and Washington, DC. San Francisco was planning an elevated superhighway project that was rejected in favor of building what would become the BART light rail system. Washington DC opted for the construction of the DC Metro subway over a proposed 8 lane highway that would have cut across the city (*5*). In an effort to improve funding for urban transit, the 1974 National Mass Transportation Assistance Act, allowed some funds from the Highway Trust Fund, which is funded by fuel taxes, to be diverted to rapid transit projects (*5*).

SITUATING COMMUTER RAIL

This research has identified 26 systems as a comprehensive and definitive list of U.S. commuter rails systems (see Table 3). During the course of this research, criteria had to be constructed to definitively establish a complete list of commuter rail systems (see Table 2). These criteria are based on a composite of the core elements of commuter rail as set forth by the Federal Transit Administration (FTA) and American Public Transportation Association (APTA)

classification system. However, there are discrepancies in the operational and design elements that constitute commuter rail even among these two agencies.

Table 2 Commuter Rail Criteria

Greater Metropolitan Commuter Shed	The system operates within the greater metropolitan commuter shed and connects downtown centers with suburban hubs*
Frequent Service	Headways of 15 minute, 30 minute or 60 minute increments with more frequent service in the peak of commuting hours
Regular Service	Services are based on a regular weekday schedule that focus on peak commuting hours.
Shared Corridor	Rail infrastructure and corridor right-of-ways are shared with freight and passenger rail carriers^
Track Miles	Most systems have between 30 and 200 miles of track
Speed	Commuter train speeds do not exceed 79 mph^

* Some commuter express services connect two metro areas in close proximity (see table 3)

^ The Keystone system is part of a new high speed passenger corridor as a result of recent Amtrak infrastructure modifications (sealed corridor with no freight carrier and increased speeds)

A typology of commuter rail systems can get muddled when multiple transportation agencies classify rail systems differently. This research considered four systems with multiple classifications. Three of these systems failed to meet the criteria for commuter rail classification, as set forth by this study. While the Alaskan Railroad system and the northern California Capital Corridor are designated as commuter rail by the American Public Transportation Association (APTA), they are not designated as commuter rail systems by the FTA. As a general guideline, this research considers a system's standing with the FTA to be a key factor in its inclusion as a commuter rail. The Capital Corridor system and the Alaskan Railroad function as interurban passenger rail systems and are within the purview of the Federal Railroad Administration. The third system is the PATCO Line, a subsidiary of the Delaware River Port Authority of Pennsylvania and New Jersey. This line operates between Philadelphia and New Jersey and is often described as a commuter rail system by state and local transit agencies in the region, despite PATCO being classified as heavy rail by the FTA and APTA.

The Keystone Line, connecting Philadelphia to Harrisburg, PA, is considered a commuter rail in the research, despite having very similar characteristics to intercity passenger rail. These passenger rail characteristics stem from 2006 track improvements, which includes a sealed corridor. The improvements allow the Keystone Line to reach speeds of 110 mph, well above the typical commuter rail top speed of 79 mph. The express service speed of 110 mph, which is second only to the Amtrak Acela passenger rail line in northeast corridor, qualifies the Keystone Line as an FRA high speed corridor. However, the Keystone Line functions as a commuter rail system and meets the key criteria established by this study. The Keystone Line has trains departing hourly during peak hours, 12 stations over the system's 104 mile corridor and is designated a commuter rail system by the FTA.

TABLE 3 US Commuter Rail Systems

System Name	Location	Track Miles	Stations	Daily Ridership
Rail Runner Express	Albuquerque, NM Santa Fe, NM	97	11	4,000
Capital MetroRail	Austin, TX	32	9	1,600
MARC	Baltimore, MD Washington DC	200	42	33,700
MBTA	Boston, MA	368	123	130,700
Metra	Chicago, IL	488	239	304,300
NICTD South Shore Line	Chicago, IL South Bend, IN	90	19	12,100
Trinity Railway Express	Dallas, TX Ft. Worth, TX	34	10	8,400
A-Train	Denton/Dallas, TX	21	6	1,400
MetroLink	Los Angeles, CA	512	55	43,100
Tri-Rail	Miami, FL	72	18	14,000
NorthStar	Minneapolis, MN St. Paul, MN	40	6	2,100
Music City Star	Nashville, TN	32	6	1,100
Shore Line East	New Haven, CT	59	11	2,100
MTA - Long Island	New York, NY	700	124	324,300
MTA - Metro North	New York, NY	384	120	281,200
NJ Transit	Newark, NJ	498	165	NA
SEPTA	Philadelphia, PA	289	153	123,500
Keystone Line	Philadelphia, PA Harrisburg, PA	104	12	1,800
Downeaster	Portland, ME	116	12	1,400
Westside Express Service	Portland, OR	15	5	1,600
FrontRunner	Salt Lake City, UT	44	8	5,600
Coaster	San Diego, CA	42	8	5,300
Caltrain	San Francisco, CA	75	32	42,400
Altamont Commuter Express	San Jose, CA	86	10	3,100
Sounder	Seattle, WA	82	10	9,900
Virginia Railway Express	Washington, DC Alexandria, VA	90	18	19,200

Daily ridership from the APTA Transit Ridership Report for the first quarter of 2012

LEGACY SYSTEMS AND NEW START SYSTEMS

Drawing from Polzin and Page's (*10*) typology of light rail systems, all 26 commuter rail systems have been classified using a legacy and new start dichotomy. Currently, there are 9 legacy rail systems and 17 new start systems operating in the US. Legacy systems are systems that previously operated as private commuter rail services but were acquired by public transit agencies after World War II. New start systems are recent commuter rail services that were originally established by public transit agencies after 1980.

TABLE 4 Legacy Commuter Rails Systems and Establishment Date

System Name	Location	Date of Current Operation	Legacy Date
MARC	Baltimore, MD Washington, DC	1984	1827
MBTA	Boston, MA	1973	1830
Metra	Chicago, IL	1984	1856
NICTD South Shore Line	Chicago, IL South Bend, IN	1989	1903
MTA - Long Island	New York, NY	1966	1834
MTA - Metro North	New York, NY	1983	1832
NJ Transit	Newark, NJ	1983	1830's
SEPTA	Philadelphia, PA	1983	1915
Caltrain	San Francisco, CA	1987	1863

(Date of Current Operation refers to the date the current system started operation as a part of a public transit authority. Legacy Date is the date the original passenger rail line and commuter service was established by a private entity.)

Legacy rails are systems that were in operation as privately owned transit or passenger rail services, prior to 1950. With the decline of rail ridership after World War II, many private rail companies discontinued regional rail services. Some of these systems were then acquired by local public transit agencies as a means of maintain a vital part of the urban transportation network of large traditional American cities. Most of these systems began current operations under the auspices of a public transit agency in the 1970s and 1980s, although their private precursors often date back to the mid-1800s. Municipal transit authorities often acquired these systems as a turn-key operation, complete with right-of-way and rolling stock.

Many legacy system were purchased from Conrail by public transit authorities in 1983 and 1984, as a part of the Northeast Rail Service Act of 1981 (NERSA). NERSA relived Conrail from its commuter service obligations, allowing the nearly bankrupt company to sell its commuter rail systems to state and municipal transit agencies (*11, 12*). The systems purchased from Conrail as a result of NERSA are: MARC, MBTA, Metro North, NJ Transit and SEPTA.

New start systems are commuter rail projects originally established by public transit agencies after 1980. Rather than purchasing the right-of-way and rolling stock from an existing private commuter service, new start systems have had to negotiate the terms of establishing a new shared corridor with the freight rail carries that own the track infrastructure. Currently, most legacy and new start commuter rail systems subcontract the day-to-day operations to

private companies. However, these systems are still under the governance of local public transit agencies.

TABLE 5 New Start Commuter Rails Systems and Establishment Date

System Name	Location	Date
Rail Runner Express	Albuquerque, NM Santa Fe, NM	2006
Capital MetroRail	Austin, TX	2011
Trinity Railway Express	Dallas, TX Ft. Worth, TX	1996
A-Train	Denton, TX Dallas, TX	2011
MetroLink	Los Angeles, CA	1992
Tri-Rail	Miami, FL	1987
NorthStar	Minneapolis, MN St. Paul, MN	2009
Music City Star	Nashville, TN	2006
Shore Line East	New Haven, CT	1990
Keystone Line	Philadelphia, PA Harrisburg, PA	2006
Downeaster	Portland, ME	1995
Westside Express Service	Portland, OR	2009
FrontRunner	Salt Lake City, UT	2008
Coaster	San Diego, CA	1995
Altamont Commuter Express	San Jose, CA	1998
Sounder	Seattle, WA	2000
Virginia Railway Express	Washington, DC Alexandria, VA	1992

NEW START COMMUTER RAIL

For the past 30 years, the Federal Transit Authority has offered funding through new start grants for fixed guideway transit systems, including commuter rail systems. These grants are designed to offer financial support for local and state governments to plan, implement and operate urban mass transit system. The agency has been charged with establishing and evaluating the grant criteria for each phase of new start commuter rail – alternatives analysis, preliminary engineering and final design (*13*).

A survey of new start systems shows three common scenarios faced by local transit agencies as they consider establishing new commuter rail systems. Many new start commuter rails are built in areas that have recently begun to rapidly urbanize. These systems are designed and built from the ground up, often with no previous history of commuter rail service. Occasionally, the initial justification for these new start systems is as a temporary solution to mitigate congestion from a major highway project, as required by the Federal Department of Transportation. The Shore Line East in New Haven, Connecticut had its origins as a temporary

congestion mitigation plan, but the success of the system has lead to the permanent operation of the commuter service. The initial alternative analysis study for the forthcoming SunRail system in Orlando, Florida was implemented as a means of mitigating a major construction project on US Interstate 4.

The second scenario is the reestablishment of long dormant commuter lines that existed in large urban center but were not acquired by public transit agencies after their discontinuance. Some new start commuter rails had commuter services operating prior to 1950, but those services were abandoned for several decades prior to the implementation of new commuter rails. One example of this is the Virginia Railway Express, which services Washington, DC and Alexandria, Virginia. The contemporary commuter serivce began operations in 1992, nearly four decades after the last commuter rail system in Northern Virginia was discontinued.

The third scenario is the modification of an existing passenger rail service to provide commuter rail services. These new start systems expand the capacity of existing Amtrak passenger rail services, allowing a set of commuter express trains to run hourly at peak hours. The Downeaster in Portland, Maine and the aforementioned Keystone Line are excellent examples of this approach to establishing commuter rail.

One of the most important parts of establishing a new start commuter rail system is acquiring rail corridor access from the freight carriers that own the infrastructure. There are three arrangements for acquiring commuter right-of-way. The first is the outright purchasing of the corridor and track infrastructure. This usually requires the transit agency to allow the freight carrier to lease an exclusive right-of-way for freight movements on the tracks. The second arrangement is to purchase an easement from the freight carrier. The third is leasing time on the corridor. The Sounder in Seattle, Washington combined both, purchasing a section of track between Tacoma and Lakewood and agreeing to a long term lease to run 30 commuter trains a day from Seattle to Tacoma. The acquisition of the right-of-way requires commuter rail systems to expand the capacity of the corridor to accommodate future commuter and freight needs. This includes actions such as double tracking of the shared corridor or funding infrastructural improvements for alternate lines to bypass the shared corridor.

Purchasing the corridor requires the commuter rail system to maintain track infrastructure, including the dispatching services. By controlling dispatching services, a commuter system can give priority to commuter trains. The RailRunner system in Albuquerque/Santa Fe, New Mexico purchased their corridor and operates the dispatch services for the line. Easement and leasing arrangements, such as the Tri-Rail system in Miami, Florida, allow the freight lines to maintain the signaling and dispatching operations on the line, thereby allowing the freight carrier to prioritizing freight trains over commuter trains. The Tri-Rail system a has historically had problems with their on-time performance record because of their inability to control system dispatching services, allowing the freight dispatchers to prioritize freight trains over commuter trains. As an example of policy mobility, the Tri-Rail system recently restructured their lease agreement to purchase the tracks used by the commuter system (*14*). Tri-Rail was able to establish this new agreement similar to the SunRail contract to purchase track infrastructure in Orlando. The Miami system was able to mobilize the shared corridor policy from Central Florida and renegotiate a similar contract for South Florida.

Unlike densely populated downtowns that exist in traditional American cities, such as New York and Boston, the current generation of the booming cities is characterized by low-density urban sprawl, stemming from automobile-centric city planning. These multinucleated suburban cities, whose vanguard includes Atlanta, Dallas and Los Angeles, are extending the

metropolitan commuter sheds that now serve as *de facto* urban units. Small suburban communities now function similar to urban neighborhoods in the pre-war American city.

These new urban forms are giving rise to a new type of commuter rail line. The most recent new start commuter rail systems are beginning to function more as a hybrid between light rail and traditional regional rail. While legacy and early new start systems have only one or two stations in the downtown proper, more recent systems serve as both a suburban-to-downtown function as well as intra-urban transit system with several stations in the city center. This design element has been incorporated in the Rail Runner Express in Albuquerque/Santa Fe, New Mexico and Capital MetroRail in Austin, Texas. Commuter rail projects currently under construction, such as SunRail in Orlando, Florida and FasTracks in Denver, Colorado, are also implementing a multiple-station design in the city center. Breaking with the traditional suburb to downtown model of commuter rail services, the Westside Express in Portland, Oregon has implemented the first suburb to suburb commuter rail system. This speaks to the growing importance of suburban connectivity in the contemporary urban form. This system connects Wilsonville to the Beaverton transit center, where commuter rail passengers can transfer to the Portland light rail system and travel downtown.

CONCLUSION

Commuter rail systems are becoming more prevalent in the urban transportation landscape, a trend that is likely to continue for decades to come. As more new start commuter rail systems are established and locally modified to fit the unique urban forms found across US cities, the variation among commuter rails will increase. This research has established a definitive list of commuter rails systems and a base typology of commuter rail that will allow for more detailed analysis in future research. By situating commuter rail in relation to freight rail, passenger rail and urban rail transit, the unique issues surrounding commuter systems can be better examined. The broad categorization of commuter rail into legacy systems and new start systems allows the historical differences in right-of-way acquisition to become apparent. This research serves as an initial step toward establishing a comparative analytic by which to examine best practices for commuter rail systems in the U.S. cities.

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