

Final Report



Prepared for

**Morris County Department of Planning & Development
Division of Transportation
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In association with



**NJ 124 Corridor
Transit Access Improvement Study**

June 2013



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The *NJ124 Corridor Transit Access Improvement Study* was conducted under the leadership of the 2013 Morris County Board of Chosen Freeholders.

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About the MCDOT

The Morris County Division of Transportation (MCDOT) is part of the Morris County Department of Planning & Development.

MCDOT serves the county through regional transportation planning, implementation, and coordination of various modes of transportation. The Division secures federal and state funds for road, bridge, railroad, bicycle, and pedestrian projects. The Division conducts studies and coordinates planning efforts with state agencies, municipalities, county departments, and the North Jersey Transportation Planning Authority. Two Freeholder appointed boards, the Morris County Board of Transportation and the Morris County Freight Rail Advisory Committee, advise the Division on its activities. MCDOT directs efforts toward the best use of transportation resources to benefit the region.

For transportation information in Morris County and beyond, visit www.MorrisDOT.org.

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ES

Executive Summary

Background

The NJ 124 Transit Access Improvement Study is a 14-month comprehensive analysis of the current utilization and accessibility of three commuter rail stations – Chatham, Madison, and Convent – along the Morristown branch of NJ TRANSIT’s Morris & Essex Line within the NJ 124 corridor. This study was funded through the North Jersey Transportation Planning Authority’s Subregional Studies Program. The project study area, depicted in Figure ES-1, encompasses six municipalities along NJ 124 including Chatham Borough, Madison Borough, Morris Township, Chatham Township, Florham Park Borough and Harding Township. Chatham Borough, Madison Borough and Morris Township are the host communities for the three rail stations studied in this report. This report examines existing and future transportation conditions in the study area. The potential for properties within the three station areas to redevelop as denser, mixed use residential and commercial land uses (also known as transit-oriented development or TOD) is also studied in this report. Policy and infrastructure recommendations to improve station access for all transportation modes and all users to meet future transit ridership demand are provided.

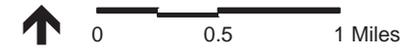
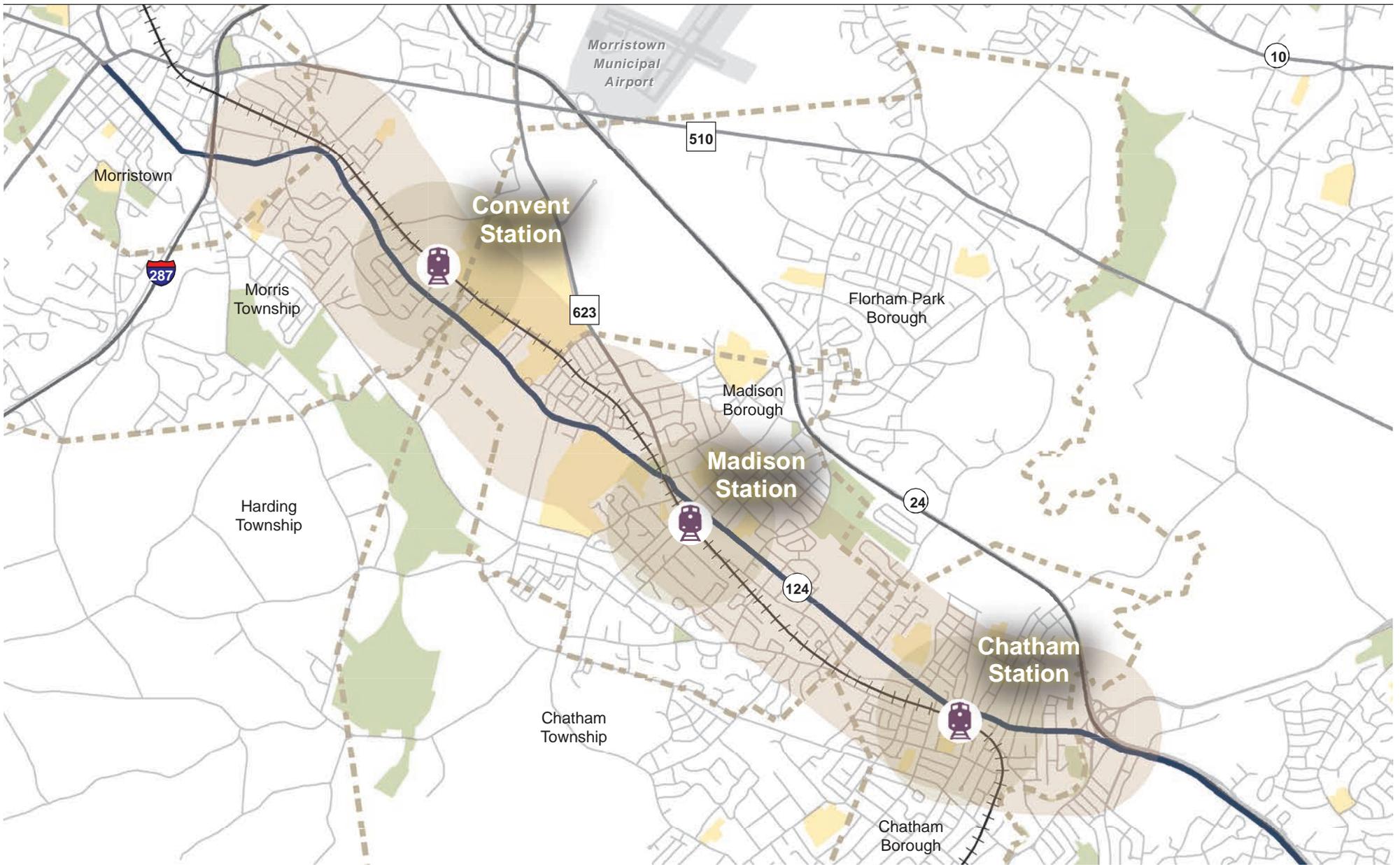




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-  Town Line
-  1/2 Mile Radius
-  Airports
-  Railroad Line
-  School, College or University
-  Parks
-  Train Station



Morris County NJ 124
Transit Access Study

NJ 124 Study Corridor

FIGURE **ES-1**



This report will help the study area's state, regional, county and municipal partners to make informed recommendations as they work to maintain the value of the NJ 124 corridor for years to come.

The NJ 124 Transit Access Improvement Study included a series of Technical Memorandums that informed the findings of this final report. These Technical Memos are detailed below:

- *Literature Search and Review Technical Memo* includes a review of previously prepared reports and studies in the study area that included analysis and recommendations of highway transportation, station parking, bicycle and pedestrian infrastructure, roadway and transit safety, transit infrastructure and operations, and planning and operations data.
- *Stakeholder Interviews and Open House Survey Findings Technical Memo* summarizes the stakeholder interviews and the public open house event that were held as part of the public outreach program for the study.
- *Web Survey Results Technical Memo* presents commute and demographic data of rail riders and non-rail riders from the study area that were collected through a project-specific online survey.
- *ScoreCard Survey Results Technical Memo* presents ridership and commuting characteristics of rail riders using Chatham, Madison, or Convent Stations that were collected by NJ TRANSIT as part of their regular ScoreCard survey efforts.
- *Zoning, Land Use and Market Analysis Technical Memo* investigates study area demographic and land use factors that affect station access.
- *Current and Future Station Access Demand Analysis Technical Memo* provides an analysis of existing and projected rail line patronage for the three stations, enabling an assessment of future access needs. Study area bus patronage is also presented.
- *Parking Capacity Utilization by Station Technical Memo* summarizes the results of a parking utilization and duration study that was conducted at each of the study area rail stations.





- *Access by All Modes Evaluation Technical Memo* evaluates existing and potential station access conditions including transit infrastructure and service, roadway infrastructure and automobile access, bicycle and pedestrian infrastructure and access, and safety analysis.
- *Objectives and Recommendations Technical Memo* recommends strategies and improvements to address the infrastructure, land use, transit service, and other study area station access gaps that were identified previously.

Technical Advisory Committee

The Technical Advisory Committee for this study included representatives of the following agencies and organizations:

- Chatham Borough
- Chatham Township
- Florham Park Borough
- Harding Township
- Madison Borough
- Morris Township
- Morris County Division of Engineering
- Morris County Division of Transportation
- New Jersey Department of Transportation
- North Jersey Transportation Planning Authority
- NJ TRANSIT
- TransOptions, Inc.



Key Findings

- The roadways (especially NJ 124) that are used to access the study area rail stations are congested due to geometric constraints, multi-modal usage, parking maneuvers, roadway striping and intersection controls (traffic signals and stop signs).
- Pedestrian and bicycle accessibility to the stations are secondary to automobile traffic. Improvements to the existing pedestrian and bicycle infrastructure could improve the safety, efficiency, and reliability of access by these modes to the NJ TRANSIT stations in the study area. These improvements could result in more commuters accessing the stations without an automobile.
- Drivers typically arrive early on weekday mornings and park for extended periods of time at all three stations. The average parking duration observed in the study corridor exceeds ten hours at nearly all of the commuter lots. There is little opportunity for parking spaces to be reused during the typical weekday.
- Parking at Chatham and Madison Stations is very close to capacity; however, Convent Station has some excess parking capacity in its various lots. Both permit and daily spaces are close to capacity, which results in limited ability to adjust parking policies to improve parking utilization at the stations.
- The existing bus service in the corridor cannot be consistently used to access the eastbound train in the morning (and vice versa in the evening) at the three stations. At Madison and Convent Stations the existing bus service meets westbound trains in the morning (and vice versa in the evening), which allows for commuters to travel the “last mile” from the train stations to the study area’s businesses and corporate parks.
- There are underutilized properties adjacent to all three train stations. Convent and Madison Stations have the highest potential for properties in the station area to re-develop in a transit-supportive manner (increased density and with mixed land uses).
- Commuters indicated that they would take the train more if access to the stations were improved.





Key Recommendations

A number of infrastructure improvements are documented in the final study report. These recommendations are based on analysis of existing transportation land use conditions as well as stakeholder and public feedback.

Corridor-wide suggestions include:

- Bicycle and pedestrian route mapping;
- Improved distribution of information about how to use and access the train stations including bicycle and pedestrian maps at stations and parking maps; and
- Improved bicycle lane markings and pedestrian access maintenance.

More localized station-area suggestions include:

- Roadway and intersection improvements;
- Road safety improvements such as signage and striping;
- Bicycle and pedestrian infrastructure improvements such as mid-block pedestrian crossings and added bicycle lockers;
- Parking facility expansions; and
- Implementation of shuttle bus routes.



Policies fostering transit-oriented development and encouraging alternatives to driving such as biking, walking, carpooling and drop-offs (kiss and ride) are also recommended in order to improve access throughout the NJ 124 Corridor.

Table ES-1 lists the study recommendations. The implementation of the recommendations will require the commitment and coordination of all of the stakeholders (Technical Advisory Committee members) in the study area, the dedication of existing funding sources, and the identification of new funding sources (including potential partnerships with the private sector).



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Table ES-1 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
N/A		Improve mapping for all modes			X	X	X		X	Short	Low
N/A		Enhance on-line information			X	X	X		X	Medium	Medium
N/A		Create Preferential parking strategies (carpools etc)				X			X	Medium	Medium
N/A		Create Transit information packages for colleges and universities							X	Short	Low
N/A		Consolidate NJ TRANSIT fare zones							X	Medium	Medium
N/A		Conduct Operation Lifesaver training at area universities and Convent station							X	Short	Low
N/A		Improve train station pedestrian access maintenance (snow removal, other maintenance issues)					X		X	Short	Low
N/A		Adopt a complete streets policy (Borough of Madison & Morris Township)			X	x	X	X	x	Short	Low
N/A		Create a bicycle sharing program with coordinated bicycle maintenance					X			Medium	Medium
N/A		Install enhanced wayfinding and bicycle route signage					X			Short	Low
N/A		Make signage and markings for pedestrians and bicyclists at all three stations consistent with MUTCD and AASHTO Bicycle Guide			X		X	X		Short	Low
N/A		Stripe advanced stop bars eight to ten feet from crosswalks in pedestrianized areas.		Corridor-Wide	X		X	X		Short	Low
N/A		Create bicycle markings and signage along the shoulders of NJ 124		Chatham Station			X			Medium	Low
N/A		Restripe all other bike routes and stencils that are faded and barely visible in Madison	Multiple Locations	Madison Station			X			Short	Low
N/A		Develop a bicycle master plan	Chatham Borough				X			Medium	Medium
Ch - 1	a	Restripe the eastbound and westbound approaches			X					Short	Low
	b	Modify the signal timing	NJ 124 & Hillside Ave.		X						
Ch - 2	a	Provide Signal Timing offsets to coordinate traffic signals	NJ 124 in Chatham		X					Short	Medium
	a	Restripe the eastbound and westbound approaches			X					Short	Low
	b	Modify the signal timing			X						
	c	Install signage to increase the "no turn on red restrictions"			X		X	X			
	d	Remove "State Law: stop for pedestrians in crosswalk sign"			X		X	X			
	e	Install "Turning Vehicles Yield to Pedestrians" sign			X		X	X			
	f	Install advanced pedestrian or school crosswalk signage on all approaches of the intersection			X		X	X			
Ch - 3	g	Install "Share the Road" bicycle signs	NJ 124 & Passaic Ave.		X		X				
Ch-4	a	Add a pedestrian crosswalk	NJ 124 & Washington Ave.				X			Short	Low
	a	Restripe the westbound approach of the intersection			X					Short	Low
	b	Modify the signal timing			X						
	c	Install signage to increase the "No Turn on Red" restrictions to all hours and days and add this restriction to westbound and southbound approaches of the intersection			X		X	X			
	d	Remove "State Law: stop for pedestrians in crosswalk sign"			X			X			
	e	Install "Turning Vehicles Yield to Pedestrians" sign			X			X			
Ch-5	f	Install "Share the Road" bicycle signs	NJ 124 & Fairmount Ave.		X		X				
Ch-6	a	Conduct a signal warrant study at this interesection, if signal is not warranted, repair pedestrian warning flashers and install "State Law: Stop for Pedestrians in Crosswalk" signage	NJ 124 & Coleman Ave./Railroad Plaza North		X		X	X		Short	Low
Ch-7	a	Conduct a signal warrant study	Fairmount Ave and Station Driveway	Chatham Station	X					Short	Low

Table ES-1 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Ch-8	a	Install a "No Turn on Red" sign	Lafayette and Van Doren Avenues		X		X	X		Short	Low
	b	Remove "Stop for pedestrians in crosswalk sign" and replace with "Turning Vehicles Yield to Pedestrians"			X		X	X			
	c	Install a "Share the Road" sign at this intersection			X		X	X			
Ch-9	a	Replace "Stop for Pedestrians in Crosswalk" sign with "Turning Vehicles Yield to Pedestrians"	Fairmount Ave and Watchung Ave		X		X	X		Short	Low
	b	Install "Share the Road" bicycle signage on all approaches of the intersection			X		X	X			
	c	Install new crosswalks on north and south legs of the intersection			X		X				
	d	Install "State Law: Stop for Pedestrians in Crosswalk" at intersection			X		X				
Ch - 10	a	Install ped ramps on the north and south legs of the intersection	Fairmount Ave and Watchung Ave			X			Medium	Medium	
Ch - 11	a	Install shared lane markings/sharrows	Fairmount Ave and Red Road			X			Short	Low	
Ch - 12	a	Install a street-light	Fairmount Ave and Red Road			X			Medium	Medium	
Ch - 13	a	Install a crosswalk at the south leg of the intersection	Fairmount Avenue and 2nd Street		X		X	X		Short	Low
	b	Install an advanced pedestrian or school crosswalk signal on all approaches of the intersection			X		X	X			
	c	Install an advanced pedestrian or school crosswalk signal on all approaches of the intersection			X		X	X			
	d	Install shared lane markings/sharrows or parking lane stripes			X		X	X			
Ch - 14	a	Install pedestrian ramps at all four corners of the intersection	Fairmount Avenue and 2nd Street				X	X	Medium	Medium	
Ch - 15	a	Repair the speed feedback sign	North Passaic Avenue and Weston Avenue		X			X		Short	Low
	b	Install shared lane markings/sharrows			X		X				
Ch - 16	a	Implementation of the Morris County bike map, which includes Fairmount and Watchung Avenues as shared facilities and NJ 124 as a bicycle route	Fairmount and Watchung Avenues				X		Medium	Medium	
Ch - 17	a	Develop bicycle facilities	Kings Road and Woodland Road				X		Medium	Medium	
Ch - 18	a	Monitor bike facilities to ensure adequate supply	Chatham Station				X		Short	Low	
Ch - 19	a	Create a pedestrian and bicycle connection across the sports field south of the station to the driveway to connect to Lum Avenue	Chatham Station				X		X	Medium	Medium
Ch - 20	a	Add coordinated pedestrian signal and lighted crosswalks under the railroad trestle	Various Locations				X			Medium	Medium
Ch - 21	a	Install two additional electronic pay parking stations	Chatham Station Parking Lot				X			Medium	Medium
Ch - 22	a	Provide additional signage to highlight commuter parking availability at nearby municipal lots for Chatham permit holders	Chatham Station Parking Lot				X			Short	Low
Ch - 23	a	Create a new parking lot adjacent to Lot 1 on the site of the athletic field	Chatham Station Parking Lot				X			Long	High
Ch - 24	a	Construct a three-level parking structure on the site of existing lot 1	Chatham Station Parking Lot				X			Long	High
Ch - 25	a	Create two shuttle bus routes at Chatham Station, serving the northern and southern part of the town	Various Locations	Chatham Station					X	Medium	High
Ma - 1	a	Restripe the eastbound and westbound approaches of the intersection	NJ 124 and Rosedale Avenue/Cross Street		X					Short	Low
	b	Modify the intersection signal timing			X						
	c	Install pedestrian signals or school crosswalk			X		X	X			
	d	Install "Turning Vehicles Yield to Pedestrians" and "No Turn on Red" at all approaches			X		X	X			
	e	Install "Share the Road" signage on all approaches of the intersection			X		X	X			

Table ES-1 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Ma - 2	a	Create eastbound and westbound turn lanes	NJ 124 and Greenwood Avenue/Prospect Street		X					Short	Low
	b	Add southbound left turn signal phase			X						
	c	Add signal actuation for left-turn movements with pedestrian projection			X						
Ma - 3	a	Add pedestrian crosswalk and signal across NJ 124	NJ 124 between Greenwood Avenue and Waverly Place			X	X		Medium	Medium	
Ma - 4	a	Create eastbound and westbound turn lanes	NJ 124 and Central Avenue/Waverly Place		X					Short	Low
	d	Install "Turning Vehicles Yield to Pedestrians" and advanced pedestrian signage at all approaches of the intersection			X		X	X			
	e	Install "Share the Road" signage at all approaches of the intersection			X		X	X			
Ma - 5	a	Add mid-block pedestrian crossing including crosswalk and signage	NJ 124 between Waverly Place/Central Avenue and Green Village Road			X	X		Medium	Medium	
Ma - 6	a	Add signal actuation for left turn movements with pedestrian protection at intersection	NJ 124 and Central Avenue/Waverly Place			X			Medium	Medium	
Ma - 7	a	Modify the intersection signal timing	NJ 124 and Park Avenue			X			Short	Low	
Ma - 8	a	Modify the intersection signal timing	NJ 124 and Kings Road		X					Short	Low
	b	Install a west crosswalk advanced pedestrian or school crosswalks and "Turning Vehicles Yield to Pedestrians" signage on all approaches of the intersection			X		X	X			
	c	Install "No turn on red" restrictions on eastbound and northbound approaches of the intersection			X		X	X			
Ma - 9	a	Install pedestrian signals and ramps on all approaches of the intersection	NJ 124 and Kings Road							Medium	Medium
	b	Extend the bike lanes on NJ 124 through the intersection of the intersection					X				
Ma - 10	a	Install crosswalks on the east and west legs with advanced pedestrian or school crosswalk signage on all approaches of the intersection	NJ 124 and Alexander Avenue		X		X	X		Short	Low
	b	Install "State Law: Stop for Pedestrians in Crosswalk"			X		X	X			
Ma - 11	a	Install bike lanes	NJ 124 and Alexander Avenue		X		X			Medium	Medium
	b	Install pedestrian signals and ramps on all approaches of the intersection			X		X				
Ma - 12	a	Install a north crosswalk	Central Avenue and Brittin Street		X		X	X		Short	Low
	b	Install an advanced school crosswalk sign			X		X	X			
	c	Install a "State Law: Stop for Pedestrians in Crosswalk" on the southbound approach			X		X	X			
	d	Install a "share the Road" sign on all approaches of the intersection			X		X	X			
Ma - 13	a	Install a north crosswalk	Greenwood Avenue and Brittin Street			X	X		Short	Low	
	b	Remove bike lane markings and install "Share the Road" signs or sharrows. On Street parking should also be prohibited.	Greenwood Avenue and Brittin Street			X	X		Short	Low	
Ma - 14	a	Install pedestrian ramps on the north side							Medium	Medium	
Ma - 15	a	Relocate the share the road sign to improve its visibility	Greenwood Avenue north of NJ 124			X	X		Short	Low	
Ma - 16	a	Install a bicycle actuated signal	Danforth Road and NJ 124			X			Medium	Medium	
Ma -17	a	Remove the "State Law: Stop for Pedestrians in Crosswalk" sign and replace with "Turning Vehicles Yield to Pedestrians in Crosswalk"	Kings Road and Waverly Place				X	X		Short	Low
	b	Implement "No Turn on Red" restrictions on the northbound, southbound, and westbound approaches of the intersection			X		X	X			
	c	Install a "Share the Road" sign at all approaches of the intersection			X		X	X			
	d	Install advanced pedestrian or school crosswalk on all approaches			X		X	X			

Table ES-1 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Ma - 18	a	Install streetlights at the north, east and west crosswalks	Kings Road and Waverly Place	Madison Station			X			Medium	Medium
	b	Install a west pedestrian ramp	Kings Road and Maple Avenue				X			Medium	Medium
Ma - 19	a	Install a west crosswalk	Kings Road and Maple Avenue		X		X	X		Short	Low
	b	Install a "State Law: Stop for Pedestrians in Crosswalk"			X		X	X			
	c	Move the pedestrian crossing across Kings Road to improve connectivity			X		X				
Ma - 20	a	Remove "Yield to Pedestrians in Crosswalk"	Park Avenue and Ridgedale Avenue		X		X	X		Short	Low
	b	Install a west crosswalk			X		X				
	c	Install "Turning Vehicles Yield to Pedestrians"			X		X	X			
	d	Install advanced pedestrian or school crosswalk signage			X		X	X			
	e	Add "No Turn on Red" restrictions on all approaches			X		X	X			
	f	Install "Share the Road" signs on all approaches			X		X	X			
Ma - 21	a	Install west pedestrian ramps and signals	Park Avenue and Ridgedale Avenue		X		X			Medium	Medium
Ma - 22	a	Install crosswalks, and advanced pedestrian signage on all approaches	Park Avenue and Kinney Street		X		X	X		Short	Low
Ma - 23	a	Install pedestrian ramps on all approaches	Park Avenue and Kinney Street		X		X			Medium	Medium
Ma - 24	a	Extend existing bike routes on Kings Road, Green Village Road, Green Avenue, Prospect Street, Central Avenue, and Greenwood Avenue to the NJ Transit Station	Multiple Locations				X			Medium	Medium
Ma - 25	a	Replace bike markings east of downtown	NJ 124				X			Short	Low
	b	Restripe all bike stencils and install "Share the Road" signs west of downtown	NJ 124				X				
Ma - 26	a	Extend the Traction Line recreation trail to Madison	Multiple Locations				X			Long	High
Ma - 27	a	Improve pedestrian lighting on NJ 124 between Madison Station and Drew University	Multiple Locations				X	X		Medium	Medium
Ma - 28	a	Reduce Speed Limit to 25 MPH	Central Avenue and Elmer Street/Cook Avenue					X		Short	Low
	b	Install advance pedestrian or school crosswalk signage on all approaches			X		X				
	c	Add: "State Law: Stop for Pedestrians in Crosswalk" signage			X		X				
	d	Install "Share the Road signage on all approaches			X		X				
Ma - 29	a	Relocate the station bicycle lockers from their remote location	Madison Station				X			Short	Low
Ma - 30	a	Improve the pedestrian experience along Kings Road from the parking lot, including wider sidewalks and additional pedestrian lighting	Madison Station				X			Medium	Medium
	b	Install three to four electronic pay parking stations at Lot 3	Madison Station			X					
Ma - 31	a	Construct a multi-level parking facility on the site of existing Lot 3	Madison Station			X				Long	High
	b	Create a formal kiss-and-ride location on the eastbound side of the station	Madison Station			X					
Ma - 32	a	Create four shuttle bus route serving Madison Station	Various Locations					X		Medium	High

Table ES-1 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
										Short - <1 Year	Low - <\$25,000 per item
										Medium - <3 Years	Medium \$25,000 - \$100,000 per item
										Long ->3 Years	Above \$100,000 per item
Co - 1	a	Modify the intersection signal timing	NJ 124 and Convent Road	Convent Station	X					Short	Low
	b	Correct and clarify the mismatched sidewalks and crosswalks	NJ 124 and Convent Road		X		X	X			
Co - 2	a	Install new pedestrian signals with countdown timers	NJ 124 and Convent Road		X					Medium	Medium
Co - 3	a	Conduct a signal warrant study and safety assessment	Old Turnpike Road and Punch Bowl Road		X					Short	Low
	b	Assess the effect of restricting left turns from westbound Old Turnpike Road to southbound Punch Bowl Road			X						
	c	Relocate the existing south crosswalk to the intersection			X		X				
	d	Install bike lanes or "Share the Road" signage			X		X	X			
Co - 4	a	Install new traffic signal, realign the northbound approach, and reconstruct the bus turnouts	NJ 124 and Punch Bowl Road		X				X	Long	High
Co - 5	a	Install a pedestrian ramp on the south leg of the southwest corner and install crosswalk	Old Turnpike Road and Punch Bowl Road		X		X	X		Medium	Medium
Co - 6	a	Install sidewalk on the east side of the south and north legs, on the west side of the north leg, and on the north and south sides of the west leg of the intersection	Old Turnpike Road and Convent Road		X		X	X		Medium	Medium
	b	Install pedestrian ramps on all approaches			X		X	X			
	c	Install sidewalks and other pedestrian amenities					X				
Co - 7	a	Install crosswalks on all four legs	Old Turnpike Road and Convent Road		X		X	X		Short	Low
	b	Install advanced pedestrian signage on all approaches									
	c	Place the eastbound approach under stop control			X			X			
	d	Install "Share the Road" signs on all approaches			X		X	X			
Co - 8	a	Extend the bike lane beyond the border of Madison Borough and Morris Township	NJ 124				X			Medium	Medium
Co - 9	a	Create a bike route between the Traction Line Recreation Trail and NJ 124	Convent Road			X			Medium	Medium	
Co - 10	a	Implement a bike connection from NJ 124 to Woodlawn Avenue and the Loantaka Reservation	Various Locations			X			Medium	Medium	
Co - 11	a	Install bike markings and signage	Old Turnpike Road			X			Short	Low	
Co - 12	a	Install a bike route and sidewalks	Punchbowl Road			X			Long	High	
Co - 13	a	Provide a direct connection between Convent Station and Park Avenue through the College of St. Elizabeth	Various Locations			X			Long	High	
Co - 14	a	Restripe the bike stencils south of Convent Station	Woodlawn Avenue			X			Short	Low	
Co - 15	a	Eliminate the stairs along the trail	Traction Line Recreation Trail and Normandy Parkway			X			Medium	Medium	
Co - 16	a	Add additional bike lockers	Convent Station			X			Short	Low	
Co - 17	a	Create an additional bike/ped connection	Traction Line Recreation Trail and Pilgrim Court/Constitution Way			X			Medium	Medium	

Table ES-1 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Co - 18	b	Improve lighting between the station and the Fairleigh Dickinson campus	Convent Station	Convent Station			X			Medium	Medium
Co - 19	a	Connect the two segments of the sidewalk at the west end of the parking lot.	Convent Station				X			Short	Low
	b	Review and simplify parking regulations	Convent Station			X					
Co - 20	a	Conduct a review of resident and non-resident waiting lists to possibly re-allocate spaces	Convent Station			X				Medium	Medium
Co - 21	a	Construct a multi-level parking structure on the site of Lot 1	Convent Station			X				Long	High
Co - 22	a	Create two shuttle bus routes at Convent Station, serving the northern and southern part of the town	Various Locations						X	Medium	High



1

Introduction

NJ 124 is a state roadway that enables east-west travel and is the primary access route that connects the communities of Chatham Borough, Madison Borough, and Morris Township in southeastern Morris County. While the parallel NJ 24 provides limited highway access for through trips, NJ 124 traverses the downtown business districts of the three municipalities. Adjacent municipalities, including Florham Park Borough, Harding Township, and Chatham Township also rely upon NJ 124 for local connectivity. Chatham Borough, Madison Borough, and Morris Township surround NJ 124 and comprise this project's study area (Figure 1-1). However, mobility to or through these municipalities from Florham Park, Harding, and Chatham Township was also considered. With street-side parking, high pedestrian activity, multiple traffic signals, and an intersecting but disjointed street network, NJ 124 in the study area is best described as congested. This results in travel delays for all modes that use the corridor.

Paralleling NJ 124 is the Morristown Branch of NJ TRANSIT's Morris & Essex (M&E) commuter rail line. The M&E provides passenger train service from Hackettstown to New York Penn Station and Hoboken Terminal. Three stations directly serve the NJ 124 communities as follows:

- Chatham Station (Chatham Borough)
- Madison Station (Madison Borough)
- Convent Station (Morris Township)

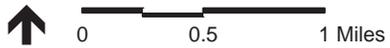
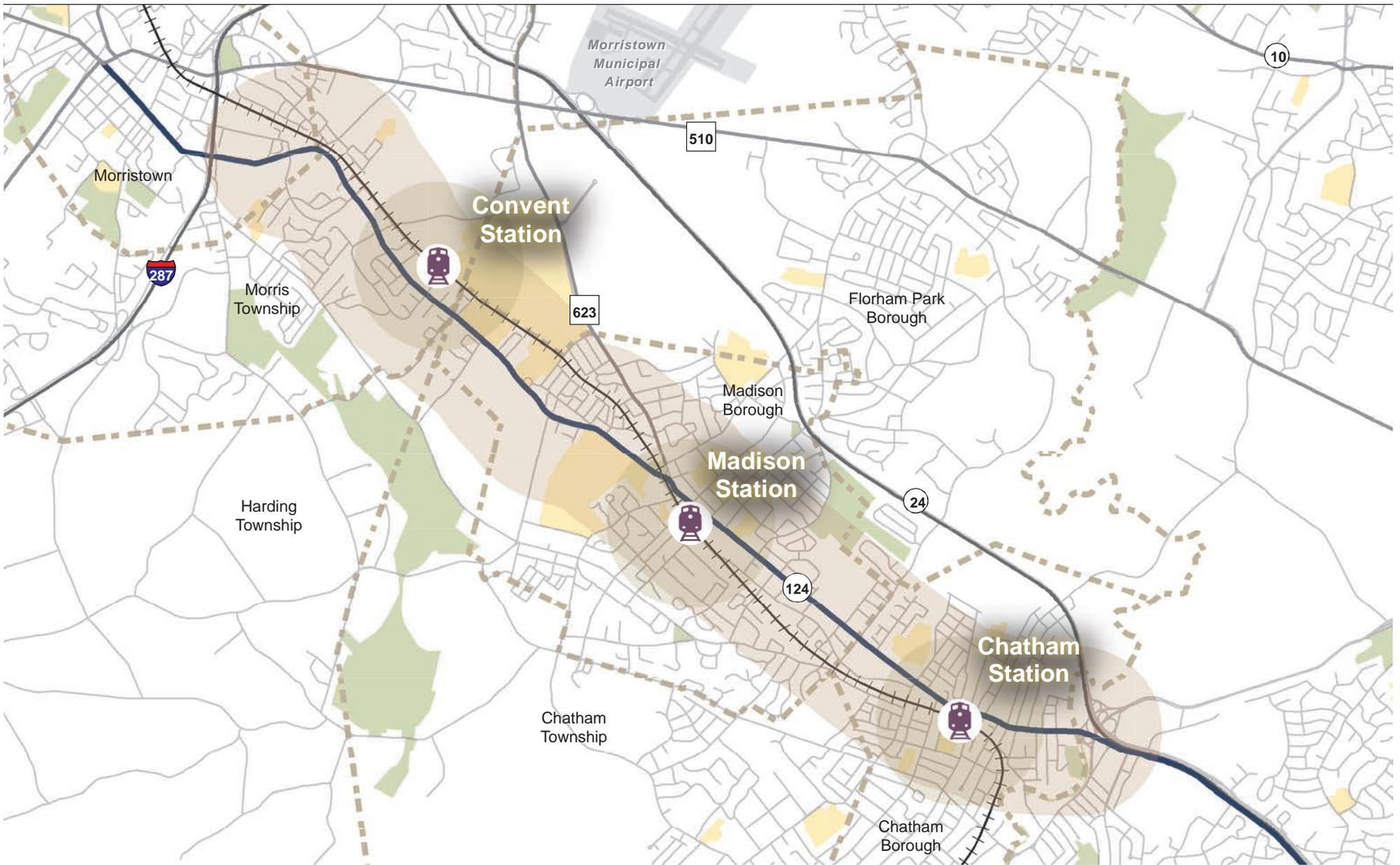
Commuters access these stations via automobile (permit or daily parking), drop off (kiss and ride), walking, or bicycling. Parking at Madison and Chatham Stations is currently and has historically been close to capacity; Convent Station currently has some parking vacancy in certain lots. This condition along with the congestion on NJ 124 has prompted the need to study future methods to enhance multimodal accessibility and meet future demand at the three stations while improving the study area's overall mobility.



NJ 124 Corridor Transit Access Improvement Study

Final Report

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-  Town Line
-  1/2 Mile Radius
-  Airports
-  Railroad Line
-  Study Area
-  School, College or University
-  Parks
-  Train Station



Morris County NJ 124
Transit Access Study

NJ 124 Study Corridor

FIGURE %%



NJ 124 Corridor Transit Access Improvement Study

Final Report

The goal of this study was to determine the most effective and acceptable course of action to improve access to train stations in southeast Morris County for all users of all ages and abilities, including transit dependent populations.

Data collection and technical analyses that are described in Chapters 2 and 3 of this report led to the development of recommendations to improve mobility in the study area and accessibility to the train stations. Recommendations for roadway (and parking), pedestrian, bicycle and transit access are included as well as recommendations related to potential land use modifications. Overarching recommendations include improving the availability and completeness of information regarding station access and measures to increase corridor safety are also included.

This study was completed through the guidance of a Technical Advisory Committee that included representation from the Morris County Division of Transportation, Morris County Division of Engineering, the North Jersey Transportation Planning Authority (NJTPA), NJ TRANSIT, the NJ Department of Transportation, TransOptions and representatives from each of the study area municipalities (Chatham Borough, Madison Borough, Morris Township, Chatham Township, Harding Township, and Florham Park Borough). Details of the stakeholder and public engagement can be found in Chapter 4. Public engagement through a variety of outreach opportunities further informed this study and the recommendations included in Chapter 5.



2

Existing and Future Transportation Conditions

2.1 Introduction

This chapter summarizes the existing and potential station access conditions for the NJ 124 Corridor Transit Access Improvement Study including:

- Transit Infrastructure and Service
- Roadway Infrastructure and Automobile Access
- Station Area Parking and Utilization
- Bicycle/ Pedestrian Infrastructure and Access
- Safety Analysis

Land use conditions in the study area are documented in Chapter 3 of this report.

In documenting study area conditions, particular attention was paid to areas with potential deficiencies that hinder access to NJ TRANSIT stations such as sidewalk network gaps, parking deficiencies, or roadway transit service that does not connect with NJ TRANSIT commuter rail service. An assessment of future demand provided insight on whether current conditions will continue or worsen in the future.

Existing conditions were documented based on site visits and review of existing studies in addition to public feedback (see Chapter 4) through interviews with various stakeholders, a public open house meeting, and data received from two transportation surveys.

2.2 Rail Infrastructure and Service

The NJ 124 study area is served by the Morristown Line of combined NJ TRANSIT Morris and Essex Lines route, with stations at Chatham Borough (Chatham Station), Madison Borough (Madison Station), and Morris Township (Convent Station). The study area is also served by three NJ TRANSIT bus routes (873, 878, 879), and the Madison Avenue Direct (MAD) Shuttle. The locations of each station are as follows:

- Chatham Station: Front Street between Fairmount and Washington Avenues (Figure 2-1)
- Madison Station: Kings Road between Prospect Street and Green Avenue/ Waverly Place (Figure 2-2)
- Convent Station: Convent Road and Old Turnpike Road (Figure 2-3)

Figure 2-1: Chatham Station



Figure 2-2: Madison Station



Figure 2-3: Convent Station





Each of these stations is located approximately one block south of NJ 124.

All three commuter rail stations have station buildings and low-level platforms. Madison Station is the only station that is handicapped accessible (through the use of mini-high platforms). Each station has side-platforms, with a fence separating the eastbound and westbound platforms for safety reasons. Due to this fence, cross-platform movements are limited at each of the stations and crossings are provided via below-grade tunnels at the stations as well as via adjacent roads (which pass underneath the tracks). Cross-platform movements at Convent Station must be done via Convent Road, which crosses the rail line at grade to the east of the station. Grade crossing safety equipment is in place at this crossing.

The Chatham and Madison ticket offices are open from 5:30 AM to 9:00 AM on weekdays only. The Convent Station ticket office is open from 4:30 AM to 12:30 PM on weekdays only. Ticket vending machines are available on the platforms at all of the stations in the study area.

Each of the stations has designated parking facilities comprised of permit-only and daily spaces. Details about these facilities and parking utilization are provided in Section 2.4 of this report. Additionally, each station includes bicycle storage facilities, which are described in detail in Section 2.5 of this report. Pedestrian walking paths to the stations are also described in Section 2.5 of this report.

The Morris and Essex Line trains that originate at either Hackettstown or Dover stop (in the eastbound direction) at Convent, Madison, and Chatham Stations and then proceed express, semi-express, or local to either Hoboken or New York's Pennsylvania Station (PSNY) (shown in Figure 2-4) in the AM peak hours. The majority of daily train service at these stations terminates or originates at PSNY (26 out of the 38 weekday eastbound trains terminate in New York, and 27 out of the 37 weekday westbound trains originate in New York). Running times between the three stations and the eastern terminals are shown below:

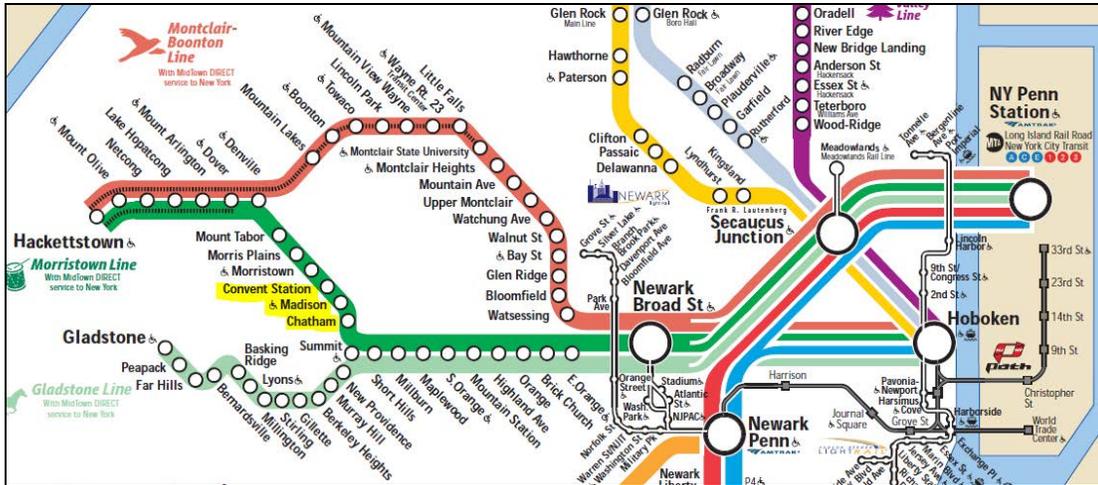
- Convent Station to PSNY: 48-70 minutes
- Convent Station to Hoboken: 48-69 minutes

- Madison to PSNY: 44-66 minutes
- Madison to Hoboken: 46-65 minutes

- Chatham Station to PSNY: 40-55 Minutes
- Chatham Station to Hoboken: 40-58 minutes

Train service is available from all three stations on all seven days of the week, between approximately 4:30 AM and 2:30 AM.

Figure 2-4: NJ TRANSIT Rail Map, Excerpt



Train fares between the three stations and PSNY and Hoboken are listed in Table 2-1.

Table 2-1: NJ TRANSIT Rail Fare Structure

	New York Penn Station				Hoboken Station			
	One-Way	One-Way (Reduced)	Weekly	Monthly	One-Way	One-Way (Reduced)	Weekly	Monthly
Chatham Station	\$10.00	\$4.50	\$85.50	\$284.00	\$9.00	\$4.00	\$75.50	\$248.00
Madison Station	\$11.00	\$5.00	\$93.00	\$308.00	\$9.75	\$4.50	\$82.50	\$273.00
Convent Station	\$11.50	\$5.25	\$98.00	\$324.00	\$10.00	\$4.50	\$85.50	\$284.00

College students that participate in NJ TRANSIT’s University Partnership Program may purchase monthly student passes online and save 25 percent off regular monthly pass fares. All three institutions in the study area (Drew, College of St. Elizabeth, and Fairleigh Dickinson) participate in this program. Stakeholder interviews identified a demand for daily, weekly, or multi-use discounted tickets for college students. There was also a desire to have a “one stop shop” information center about transit service on campus.

Additionally, senior citizens and disabled persons are entitled to fare discounts throughout the NJ TRANSIT system. Monthly rail passes valued at \$54 or more include a free trip for at least one zone of travel on all NJ TRANSIT buses (the number of zones you can travel on a bus varies depending on the value of your monthly rail pass). Weekly rail passes valued at \$16.50 or more include a free trip for one zone of travel on all NJ TRANSIT buses.



2.2.1 Bus Service

The NJ 124 Transit Study Area is also served by three NJ TRANSIT bus routes, NJ TRANSIT #873, #878, and #879 buses, and the Madison Avenue Direct (MAD) Shuttle.

#873 Bus Route

The #873 bus runs parallel to the rail corridor along Route 124 between Parsippany-Troy Hills and Livingston (this route does not stop adjacent to the stations, but in close proximity along NJ 124). This route serves multiple malls, hospitals, and government office buildings. There are also connections available to other buses east of the study area at Livingston Mall and west of the study area in Morristown. NJ TRANSIT has looked at extending this route into the Drew and Fairleigh Dickinson University campuses but found that this would increase the travel time too much.¹

The #873 bus operates from 6:50 AM to 6:19 PM on weekdays, and from 9:00 AM to 6:18 PM on weekends. It has an end-to-end running time of one hour, and headway of one-to-two hours on both weekdays and Saturdays.

The #873 bus is split into two fare zones (the dividing line being located just east of Convent Station). Bus fares are listed in Table 2-3.

Table 2-2: NJ TRANSIT Route #873 Fare Structure

	Travel in One Zone	Travel in Two Zones	Transfer
Adult	\$1.50	\$2.35	\$0.70
Children/Senior Citizens	\$0.70	\$1.05	\$0.35

#878 and #879 Bus Routes

The #878 and #879 buses are circulator routes designed to distribute and collect rail passengers. These two bus routes serve Convent Station. Stakeholders indicated that the operating times of the NJ TRANSIT buses are not compatible with evening classes at the colleges/ universities nearby. The #878 bus operates via a loop (serving Campus Drive in Florham Park), and the #879 bus terminates at Florham Park near the AT&T Campus. The #878 bus operates from 6:49 AM to 9:48 AM and 3:51 PM to 5:59 PM, weekdays only. Its end-to-end running time is approximately 23 minutes, and it operates on a 30 minute headway. The #879 bus operates from 6:48 AM to 5:57 PM, weekdays only. Its end-to-end running time is 19 minutes and it operates on a 30 minute headway. NJ TRANSIT noted that taxi cabs/ food vendors often occupy the bus staging area at Convent Station (and occasionally the handicapped parking area), which is an issue requiring improved enforcement.

¹ Interview with NJ TRANSIT conducted on April 4, 2012



The #878 and #879 buses are only one fare zone. Bus fares for both routes are listed in Table 2-3. There are no intersecting routes so there is no transfer fare.

Table 2-3: NJ TRANSIT Routes #878 & #879 Fare Structure

Adult	\$0.70
Children/Senior Citizens	\$0.35

Madison Avenue Direct (MAD) and Private Shuttles

TransOptions provides a circulator bus along NJ 124 and Convent Road called the Madison Avenue Direct (MAD). This circulator route serves the three colleges in the NJ 124 Corridor, along with Madison Station. This route overlaps with NJ TRANSIT’s #873 bus, and NJ TRANSIT has expressed interest in allowing TransOptions to run the MAD shuttle in place of #873. This bus runs from NJ 124 and Union Ave (approximately) and in front of the College of St. Elizabeth’s Annunciation Center on Convent Road. The MAD bus runs from 1:00 PM to 8:30 PM on weekdays and 4:30 PM to 9:00 PM and has a headway of approximately one hour. The fare is \$1.50 per trip (the fare is kept identical to the NJ TRANSIT bus fare to discourage competition).

This route stops at the Madison Station eight times in the PM (between 1:27 and 8:16). The span-of-service (the route begins around noon) does not facilitate bi-directional travel (using the bus for both the AM and PM commutes). Although this bus does stop at Madison Station, any timed connections it makes with the train are assumed to be coincidental.

As a result of this study’s community outreach efforts, it was confirmed that several private shuttles operate between the stations and businesses in the study corridor, including Pfizer in Giralda Farms, the Wyndham Hotel, and Maersk Inc. As of March/ April 2012 when meetings with the project’s stakeholders were conducted, the fiscal state of the Pfizer shuttle was tenuous. The stakeholder meetings also identified potential new traffic generators that may want shuttle service, including Realogy, Bayer, Lyons Hospital, and Atlantic Health. NJ TRANSIT indicated that each of the bus routes in the study area is operated with a single vehicle. Adding stops along the routes would likely require the addition of a bus; therefore, an additional subsidy would be required to add vehicles to the routes.

2.2.2 Intermodal Transfers

Timed transfers between existing bus service and the rail line are limited. This is perhaps due to the multiple variables involved in the scheduling of bus service. According to the web travel survey conducted for this project, less than one percent of the survey respondents reported use of the local bus system as their mode of access to rail stations, indicating a potential disconnect between these



corridor transit services. Further survey feedback indicated interest in improved/ increased shuttle services/ intermodal connections in this corridor ranked as the second highest potential access improvement by respondents; although, that survey result contradicts some feedback received in the stakeholder meetings and other public outreach conducted for this study.

There are two main types of connections that can occur between trains and buses, with two sub-types depending on the direction of travel on the train.

- Type 1
 - Serve local businesses (train to bus in AM, bus to train in PM)
 - Origins west of Convent Station to destinations located near Convent/ Madison/ Chatham (inbound, eastbound train to bus)
 - Origins east of Chatham Station to destinations located near Convent/ Madison/ Chatham (outbound, westbound train to bus)
- Type 2
 - Serve local residences (bus to train in AM, train to bus in PM)
 - Origins near Convent/ Madison/ Chatham to destinations west of Convent Station (bus to outbound, westbound train)
 - Origins near Convent/ Madison/ Chatham to destinations east of Chatham Station (bus to inbound, eastbound train)

Each of the bus routes in the study corridor was assessed for their ability to enable the above described transfers.

2.2.2.1 Route #879 (connects to Convent Station)

This route primarily serves local businesses (Type 1) and makes six trips in the AM (between 7:01 and 9:44) and six trips in the PM (between 3:39 and 6:00).

In the AM:

- 67 percent of buses arrive within 15 minutes after an eastbound train arrives at Convent Station
- 33 percent of buses arrive within 15 minutes after a westbound train arrives at Convent Station

In the PM:

- 67 percent of buses arrive 15 minutes prior to an eastbound train's arrival at Convent Station
- 100 percent of buses arrive within 15 minutes prior to a westbound train's arrival at Convent Station



Connections in the other directions are sparse and coincidental (for example: in the PM peak, only one bus arrives 15 minutes prior to the departure of an eastbound and westbound train, making it unreliable for trips serving local residences (Type 2). The bus only makes stops at/ in front of major centers of employment. Providing stops in residential areas, as well as adjusting the schedule so some additional buses arrive prior to the departure of trains might allow this route to serve local residences (Type 2).

2.2.2.2 Route #878 (connects to Convent Station)

This route primarily serves local businesses (Type 1) and makes six trips in the AM (between 7:01 and 9:44) and five trips in the PM (between 3:39 and 6:00).

In the AM:

- 56 percent of buses arrive within 15 minutes after an eastbound train arrives at Convent Station
- 56 percent of buses arrive within 15 minutes after a westbound train arrives at Convent Station

In the PM:

- 67 percent of buses arrive 15 minutes prior to an eastbound train's arrival at Convent Station
- 100 percent of buses arrive within 15 minutes prior to a westbound train's arrival at Convent Station

Connections in the other directions are sparse and coincidental, although slightly better than on the #879. The #878 bus only makes stops at/ in front of major centers of employment. Providing stops in residential areas, as well as adjusting the schedule so some additional buses arrive prior to the departure of trains might allow this route to serve local residences (Type 2).

2.2.2.3 Route #873 (connects near Convent, Madison, and Chatham Stations)

Towards the Livingston Mall, this route stops at each station five times in the AM (between 6:59 and 11:56) and four times in the evening (between 1:08 and 6:14). Towards Parsippany-Troy Hills, this route stops at each station four times in the AM (between 6:08 and 11:06) and five times in the PM (between 2:05 and 6:01). Because this route intersects with the Morris & Essex Line nearby multiple stations, it is difficult to make timed connections between trains and buses at every station.

The span-of-service (the route ends in the evening around 5:30/ 6:00PM) does not facilitate bi-directional travel (using the bus for both the AM and PM commutes).



With an enhanced span-of-service, transfers of passengers leaving from office parks in the western part of the study area after 5:30 PM and destined for residences along the Morris & Essex Line could be accommodated. A systematic approach to connections that looks at both this route and the MAD shuttle would be beneficial.

2.2.2.4 Summary of Intermodal Connections

Table 2-4 summarizes the percent of total bus trips that meet the train within 15 minutes (in each direction). In some cases, the percent of total trips that meet the train is higher for the peak hour, but not consistently across all bus routes and stations. While there are numerous variables involved in the scheduling of bus service, creating connections by scheduling buses in concert with rail service would improve station accessibility.

Table 2-4: Summary of Bus to Rail Trip Connections

	Bus Route	#873		#878	#879	MAD Shuttle
	Direction	<i>EB</i>	<i>WB</i>	<i>Loop</i>	<i>Loop</i>	<i>Loop</i>
Convent Station	From NYC/HOB	33%	67%	41%	38%	
	To NYC/HOB	44%	22%	82%	75%	
Madison Station	From NYC/HOB	44%	33%			25%
	To NYC/HOB	44%	56%			38%
Chatham Station	From NYC/HOB	22%	44%			
	To NYC/HOB	44%	56%			

2.2.3 Ridership

In 2005, NJ TRANSIT conducted a comprehensive rail rider survey of the NJ TRANSIT system, including the Morristown Line. Data collected at that time represents the most recent ridership validation effort. NJ TRANSIT ridership information for 2005 was provided to Morris County and is included in Table 2-5.



Table 2-5: NJ TRANSIT 2005 Study Area Station Daily Ridership

Station	2005 Daily Boarding Riders (Eastbound and Westbound)
Chatham	1,286
Madison	1,429
Convent	1,146
Total	3,861

Source: NJ TRANSIT, 2005

NJ TRANSIT also provided 2011 AM Peak ridership data at the three stations, as presented in Table 2-6.

Table 2-6: NJ TRANSIT 2011 AM Peak Passenger Volumes

STATION	ON	OFF	Total
Chatham	798	71	869
Madison	672	123	795
Convent	582	334	916
Total	2,052	528	2,580

Source: NJ TRANSIT, 2012

In 2008, NJ TRANSIT provided the NJTPA and Morris County with 2030 ridership forecasts and passenger mode of access (how patrons get to the train station) forecasts for Chatham, Madison, and Convent Stations. Those forecasts included future projected parking demand at each of the three study area stations. However, that analysis and the forecasts provided are no longer valid. The forecasts were based upon a Morristown Line service schedule that assumed construction of a new Hudson River rail tunnel to New York City and pre-recession demographic forecasts, and did not include major fare increases that were subsequently implemented in 2010. Since the 2008 forecasts, the Hudson River tunnel project was cancelled, and in 2010, service was reduced on the Morris & Essex lines by seven trains and fares were increased by approximately 25 percent.

2.2.3.1 Rail Ridership Forecasts

NJ TRANSIT has provided new ridership forecasts for 2020 for the combined three study area stations to support the NJ 124 Transit Access Study effort. Updated mode of access forecasts and individual ridership projections for the study area stations are not available. The ridership forecasts were performed using an updated NJ TRANSIT Demand Forecasting Model (NJTDFM) which includes:

- 2010 Census Data (Population and Households)
- 2010 NJ TRANSIT fare increases and service cuts



- Increased Trans-Hudson crossing (Port Authority), NJ Turnpike and Garden State Parkway tolls (including additional increases to 2015)
- 2012 PATH Fare Increase
- Updated NJTPA demographics reflecting recession job losses
- NYMTC forecasts for NYC employment growth including reopening of the World Trade Center

NJ TRANSIT provided Morris County with base 2010 daily ridership data by station from the NJTDFM. This information is included in Table 2-7.

Table 2-7: NJ TRANSIT 2010 Study Area Station Daily Ridership

Station	2010 Daily Boarding Riders (Eastbound and Westbound)	Change in Daily Ridership (2005-2010)
Chatham	1,471	+185 (14.3%)
Madison	1,467	+38 (2.7%)
Convent	1,224	+78 (6.8%)
Total	4,162	+301 (7.8%)

Source: NJ TRANSIT, 2012, NJTDFM 2010 Base Year

For the purposes of this study, these 2010 ridership forecasts are considered to be the existing ridership at each of the study area stations.

The daily ridership forecast, presented in Table 2-8, is for all day boarding riders at Chatham, Madison, and Convent Stations in 2020. This ridership forecast assumes that the 2010 service cuts have been restored.

Table 2-8: NJ TRANSIT 2020 Study Area Station Daily Ridership Forecast

	2020 Daily Ridership Forecast (Chatham, Madison, and Convent Stations)	Change in Daily Ridership (2010-2020)
Total	4,702	+540 (13%)

Source: NJ TRANSIT, 2012, NJTDFM 2020 Forecast Year

NJ TRANSIT is studying potential service enhancements on the Morristown Line to better serve the reopened World Trade Center employment market in Lower Manhattan. This potential service is summarized as:

- Increased local service between Hoboken and Summit (four trains)
- Four (two AM and two PM peak) local trains from Dover to Hoboken will run as semi-express trains, reducing travel time to/ from Chatham, Madison, and Convent Stations to Hoboken in the peak periods
- Four (two AM and two PM peak) new Hoboken express trains, serving Chatham, Madison, and Convent Stations



Table 2-9 presents the 2020 forecasts using the updated NJTDFM and these service enhancements.

Table 2-9: NJ TRANSIT 2020 Study Area Station Ridership Forecast with Hoboken Service Enhancements

	2020 Daily Ridership Forecast (Chatham, Madison, and Convent Stations)	Change in Daily Ridership (2010-2020)	Change in Daily Ridership (2005-2020)
Total	4,822	+660 (15.9%)	+961 (24.9%)

Source: NJ TRANSIT, 2012, NJTDFM 2020 Forecast Year

2.2.3.2 Parking Demand and Capacity

As part of this study, a parking inventory was performed at all three of the study area stations in April 2012. The results of this field inventory are fully documented in Section 2.4 of this report. Table 2-10 summarizes the total available parking spaces, in official parking lots only, at each of the three stations.

Table 2-10: Parking Usage and Capacity at Study Area Stations

STATION	Total Spaces (Daily and Permit)	Station Parking Utilized	Percent Utilized
Chatham	402	394	98%
Madison	401	389	97%
Convent	589	442	75%
Total	1,392	1,225	88%

Source: VHB, April 2012

This field inventory varies from the data presented on the NJ TRANSIT website for these stations (1,346 total spaces) but is generally consistent. Station parking utilization and demand at the NJ 124 corridor stations vary as a result of current parking management strategies. At each of the station lots, spaces are allocated between permit and daily parking. The municipalities that manage the parking facilities vary the mix of permit and daily parking based upon demand and other policies. As presented in Table 2-10 above, Chatham and Madison Station lots are utilized to capacity, while there is currently some parking availability at Convent Station.

In addition to utilization, parking demand analysis factors in the turnover of spaces. The parking analysis revealed that there is minimal turnover of spaces, with average parking durations ranging from 9-12 hours per day. However, some parking turnover can be expected and thus it has been estimated that two percent of the parking is available/ utilized by a second parker during the day.



In June 2012, NJ TRANSIT conducted a system-wide rail rider ScoreCard survey. Survey respondents who indicated that they boarded or alighted at Chatham, Madison, and Convent Stations were asked additional questions relating to station access. The results of that survey indicate that about four percent of the eastbound (EB) rail boarders at the three stations park in unofficial parking lots. The location and permanency of unofficial parking is not known; however, the practice is acknowledged and is considered in the calculation of potential parking deficits in the corridor. The customer satisfaction data from the ScoreCard survey is considered by NJ TRANSIT to be the only representative of peak period riders, as the sample size for off-peak riders is not large enough to reach any conclusions.

Since Chatham, Madison, and Convent Stations are proximate to each other, it might be assumed that daily parkers will board at the station where daily parking is most available. To the contrary, based on survey data Chatham and Madison stations are more desirable locations to board the M&E line for the commuters in the corridor. There are many factors that contribute to this preference including the desire to board at the most eastern station, the difference in the fare structure between the stations, parking restrictions for residents/ non-residents, and access considerations. However, for the purposes of this parking analysis, the three stations were considered as a composite for ridership, parking capacity, parking demand, and parking deficit.

Approximately, 81 percent of the total daily riders boarding at these three stations are eastbound (EB) boarders and this percentage is assumed to remain constant through the forecast period. Historically, westbound (WB) boarders have little to no impact on parking demand. NJ TRANSIT Forecasting Department staff recommends that a factor of 48 percent, which represents the percentage of boarders that drive and park at the station per day, be used to estimate peak and off peak period parking demand at the three corridor stations. Since WB boarders have no impact on parking demand, this factor would be applied to EB boarders only.

Table 2-11 provides current and future estimated parking demand and deficits. By 2020, between 250 and 500 official parking spaces would be needed across the three stations; the higher end of the range assumes the four percent (75 parkers) who would use unofficial parking spaces would instead use official parking lots. The lower end of the range assumes that unofficial parking is still being used and that the current deficit (121 parkers) will find alternate official parking by 2020. Which station area(s) should accommodate this demand is based upon many factors including the factors described above, land availability, traffic impact, and accessibility.

Shortages of existing and future parking may result in a lowering of the number of future rail riders. Shortages may also shift rail customers to access the stations



by other non-parking modes (bus, walk, bicycle, drop-off) than are reported and forecasted for these stations. Recommended infrastructure improvements and strategies to encourage alternative mode access are included in Chapter 5 of this report. Parking availability, travel times, fares, and other policies may also encourage residents in the study area to access the rail system at other stations not in the study area, or to drive to further stations east (such as the PATH stations in Jersey City) as reported by respondents through this study’s outreach efforts.

Table 2-11: Current (2010) and Forecasted (2020) Parking Demand and Deficit

	Daily Ridership (Corridor Stations)	EB Boarders (80.5% of total)	Actual or Forecast Parking Demand (48% of EB)	Parking Needed (incorporates turnover and private parking)	Parking Capacity	Estimated Current & Forecast Parking Deficit (Corridor Stations) ²	Change from 2010 Parking Deficit
Current 2010	4,162	3,350	1,608	1,513	1,392	-121	
2020 Forecast	4,702	3,890	1,867	1,757	1,392	-365	-244 ³
2020 Forecast Hoboken Service Enhancements	4,822	4,020	1,925	1,812	1,392	-420 ⁴	-299

2.2.3.3 Ridership on other Corridor Transit Services

Table 2-12 provides March 2012 ridership for the #878 and #879 routes. The 2012 data is consistent with March 2011 data including sustained monthly ridership at approximately 2,000 passengers. The average passengers per trip are 5.9 for the #878 bus and 3.3 for the #879 bus.

NJ TRANSIT also provided monthly and annual 2011 ridership data for the #873 route. In 2011 this route averaged 193 riders per weekday and 94 riders per weekend day (Saturday). The #873 bus runs along NJ 124. The bus does not stop directly at any of the corridor stations, but does stop approximately one block from each station on NJ 124. The #878 and #879 primarily serve alighting passengers at Convent Station that are destined to the employment centers in close proximity to the corridor. These buses do not serve as feeder buses and thus have little to no impact on parking utilization.

TransOptions provided ridership for the Madison Avenue Direct (MAD) Shuttle. The average weekday boardings for the 139 days of reported operation from September 5, 2011 to December 22, 2011 was 5.3. Since the MAD Shuttle does not

² Assumes four percent park in unofficial lots

³ Low end of future deficit range assumes unofficial parking and that existing deficit is met

⁴ High end of future deficit range is without unofficial lot parking is 420+75=495 (~500)



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operate in the AM peak period, the shuttle has no effect on parking utilization. Average weekday ridership for the MAD shuttle ridership for the 11 day period between January 17, 2012 and January 28, 2012 was two boarding passengers and two alighting passengers.

In September 2012, TransOptions operated the MAD Shuttle free of charge (temporarily removing the \$1.50 fare). Table 2-13 reports the results for the three weeks of operation.

These results indicate that a combination of the free fare and extensive advertising during this period resulted in higher average daily ridership on the MAD Shuttle than the reported fall 2011 and January 2012 periods.

Table 2-12: NJ TRANSIT March 2012 #878 and #879 Bus Ridership

Line No.	Date	#878	#879	Total
Thursday	1	70	40	110
Friday	2	58	29	87
Monday	5	73	24	97
Tuesday	6	75	23	98
Wednesday	7	73	40	113
Thursday	8	58	45	103
Friday	9	57	27	84
Monday	12	78	21	99
Tuesday	13	67	34	101
Wednesday	14	62	30	92
Thursday	15	60	34	94
Friday	16	58	38	96
Monday	19	51	30	81
Tuesday	20	70	44	114
Wednesday	21	66	36	102
Thursday	22	67	32	99
Friday	23	65	32	97
Monday	26	72	30	102
Tuesday	27	72	40	112
Wednesday	28	63	30	93
Thursday	29	59	32	91
Friday	30	64	30	94
Total Passenger Trips		1,438	721	2,159
Avg. Psgrs./Veh. Trip		5.9	3.3	4.7
Avg. Psgr. Trips/Day		65	33	98

Source: NJ TRANSIT; routes do not operate on weekends



Table 2-13: MAD Shuttle “Free Fare” Ridership September 2012

Week	Riders per Week	Average Riders per Day
1	44	9
2	60	12
3	133	27

Source: TransOptions

2.3 Roadway Infrastructure and Automobile Access

The Morris and Essex commuter rail line is a major factor in the “dual peak” characteristics of roadways in the study corridor. The NJ 124 corridor experiences the typical morning and evening commuter-based peak operating roadway characteristics of a suburban region with its own local and regional employment centers. Rail commuters departing from these stations for trips to employment destinations out of the corridor (i.e. New York City, Newark, and the Hudson River waterfront) travel to and from these stations primarily by automobile. Rail commuters who access these stations by auto typically arrive at the stations before the morning peak and depart the stations after the evening peak traffic conditions of the corridor. While riders from origins outside of the corridor arrive at these stations during the typical peaks. However, they do not contribute to traffic in the corridor since they complete their commute to destinations in the corridor most typically by walking or transit/ shuttle modes.

Most of the roadways in this five-mile study corridor are typical of suburban arterials and collector streets, with one travel lane per direction, on-street parking in the town centers, and turning lanes at some key intersections. This length of NJ 124 in this corridor has a total of 20 signalized intersections, with additional signalized intersections throughout the network on surrounding roadways. NJ 124 parallels the NJ 24 freeway through this study area, with NJ 24 serving as the primary east-west highway for regional traffic east of I-287 and NJ 124 serving as a local access route for the suburban area south of NJ 24.

This assessment of existing roadway and traffic conditions is based on an extensive review of the traffic data and technical analyses from the previous reports on corridor conditions that were reviewed for this project. Regional baseline traffic volumes were obtained from the NJTPA’s North Jersey Regional Transportation Model- Enhanced (NJRTM-E).



2.3.1 Regional Traffic Conditions

Information obtained from the NJRTM-E regional transportation model indicates that NJ 24 carries approximately 15,000 vehicles eastbound in the morning peak period (6:00 to 9:00 AM), while NJ 124 carries about 2,700 vehicles eastbound in the same period. In the evening peak period (3:00 to 6:00 PM), baseline traffic volumes for these two roadways are about 12,000 and 3,000 vehicles, respectively.⁵ The traffic volumes for each period from the NJRTM-E for both NJ 24 and NJ 124 are shown in Table 2-14. Older two-way annual average daily traffic (AADT) volumes for NJ 24 and NJ 124 are shown in Table 2-15.

As shown in Table 2-14, the traffic volumes on NJ 124 generally represent about 15 to 18 percent of the combined NJ 24 and NJ 124 volumes in the study corridor between Summit and Morristown (I-287). The NJ 124 traffic volumes listed in Table 2-14 are somewhat lower than the NJDOT data for comparable locations listed in Table 2-15. Data obtained from the Morris County traffic count program for the period from 2003-09 are consistent with the NJDOT data. Two-way AADT volumes reported in the Morris County traffic count database for the segment of NJ 124 just east of downtown Madison ranged from 20,900 (2008) to 23,950 (2004). West of the point where Park Avenue splits from NJ 124 at the western end of downtown Madison, the AADT volumes reported in the Morris County traffic data records ranged from 13,350 (2003) to 16,600 (2009).

⁵ The NJRTM-E peak periods are defined independent of any considerations for the dual “local” and “commuter” peak periods described previously. The 6:00-9:00 AM morning period includes both travel peaks, while the data documented in the Task 6 parking memorandum developed for this study indicated that at least 50 percent of the spaces at the commuter lots at these three stations are still occupied at 6:00 PM when the NJRTM-E evening peak period ends.



Table 2-14: 2011 Vehicular Volumes by Time Period (NJRTM-E Model)

Roadway	Location	Direction	Time of Day (Peak Periods)				TOTAL (24 hours)
			AM 6-9 AM	MD 9 AM to 3 PM	PM 3-6 PM	NIGHT 6 PM to 6 AM	
NJ 24	West of JFK Parkway (Summit)	WB	8,537	16,002	15,116	10,825	50,480
		EB	15,377	17,140	12,404	10,325	55,246
	Western Terminus (near Interstate 287)	WB	9,538	18,438	16,161	12,872	57,009
		EB	14,903	15,820	11,664	9,668	52,055
NJ 124	Chatham / Madison Area	WB	1,895	2,906	2,468	2,343	9,612
		EB	2,699	2,737	2,647	1,912	9,995
	Morris Township Area	WB	3,305	3,340	3,512	2,613	12,770
		EB	2,751	2,695	3,380	1,937	10,763

Table 2-15: NJDOT AADT Volumes⁶

Roadway	Area	Location	AADT	Year
NJ 24	Summit	East of NJ 124	101,132	2009
	Florham Park	South of Brooklake Road	84,956	2009
	Morris Twp	North of Columbia Tpk. (CR 510)	86,545	2009
NJ 124	Madison	East of Rosedale Avenue	18,763	2010
	Madison	Between Elm St. and Kings Rd.	11,436	2010
	Convent Station	North of Dodge Drive	12,539	2009

The NJRTM-E transportation model contains projected forecasts of volumes on a roadway link-by-link basis for the 2035 future horizon year. Along NJ 24 and NJ 124 in the study corridor, projected increases in daily traffic volumes on individual roadway links range from 5 to 30 percent between 2011 and 2035. Traffic volume growth is projected to be lower on NJ 24 (5 to 11 percent) than on NJ 124 (11 to 30 percent), with the off-peak midday and night periods seeing the highest growth on both roadways. On NJ 24, the average morning and evening peak period traffic volume growth forecasts for the 2011-2035 horizon are about 6.6 and 4.7 percent, respectively. These growth factors correlate to very low annual (compounded) growth rates in the 0.2 to 0.3 percent range. On NJ 124, the

⁶ NJ Department of Transportation - http://www.nj.gov/transportation/refdata/roadway/traffic_counts/



corresponding average morning and evening peak period traffic is projected to increase by 18.7 and 18.3 percent, respectively, from 2011 to 2035. This correlates to a low compounded annual growth rate of about 0.7 percent. For both roadways, the projected growth rates are indicative of traffic volume growth in a heavily-developed region with minimal roadway capacity to accommodate substantial increases in peak period traffic volumes.

In 2010 the County of Morris Division of Engineering published a review of existing and future conditions associated with the potential redevelopment of the former Exxon Research Facility in Florham Park.⁷ While not situated directly on NJ 124, this site influences travel in the study area because of access constraints along Park Avenue in Madison and Florham Park, at a number of intersections in the study corridor along NJ 124, and around the NJ 24 interchange at Columbia Turnpike (CR-510). The “2010 Exxon Site Report” summarized the operations and impacts on the local network in this study corridor for both baseline conditions (2010) and for the future forecast year (2028). Summaries for each municipality are included in the sections following the corridor-level overview in the next section of this document.

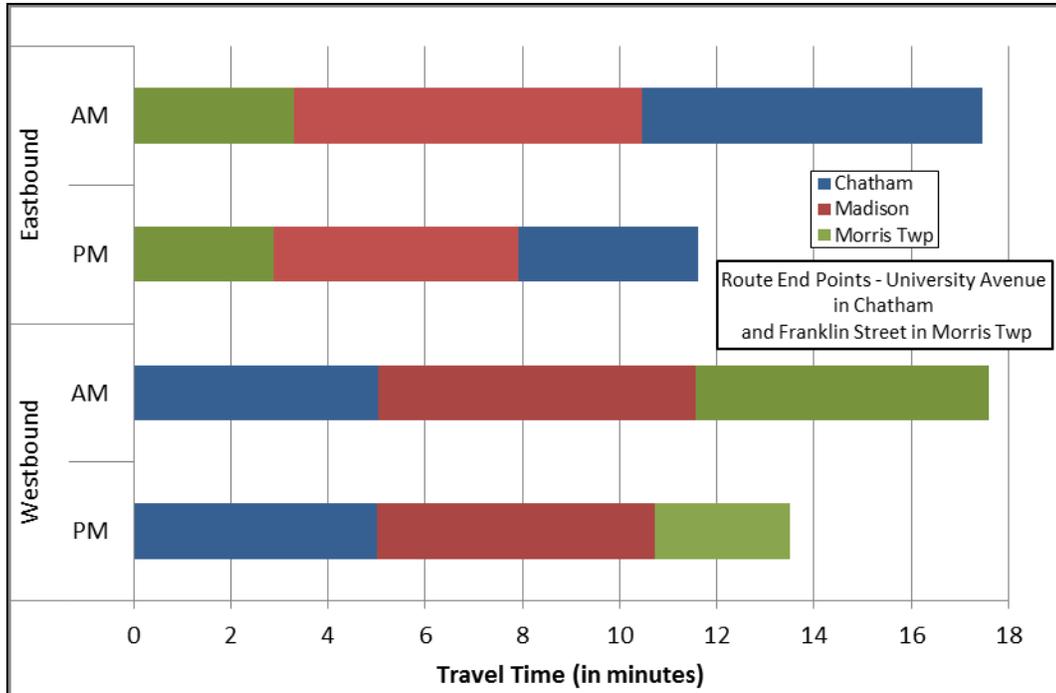
The data and findings of the 2010 Exxon Site Report were used extensively in this documentation of existing traffic conditions in the study corridor, since the report contains recent (2010) and detailed (intersection-level volumes and operating conditions) information about traffic circulation at key intersections in the immediate vicinity of each of the three study area stations.

2.3.2 NJ 124 Corridor

Travel time runs were also conducted on NJ 124 in 2012. The results of this data collection effort are summarized in Figure 2-5. The AM peak period (6:00 – 10:00 AM) was the most congested period, with an average travel time in excess of 17 minutes to traverse the corridor in either direction. The PM peak period (3:00 – 7:00 PM) was not as congested as the AM peak, but corridor-length travel times exceeded 11 minutes in both directions during the PM peak.

⁷ *Review of Existing & Future Conditions to Various Intersections within the Borough of Florham Park, Borough of Madison, Hanover Township, Morris Township, Chatham Borough and the Town of Morristown Due to the Potential Redevelopment of the Former Exxon Research Facility on Park Avenue in the Borough of Florham Park*, The Louis Berger Group, Inc., January 2010

Figure 2-5: NJ 124 Eastbound and Westbound Travel Time (Chatham Borough to Morris Township)



The following sections document existing conditions on NJ 124 through the three primary study area municipalities as related to the three NJ TRANSIT stations.

2.3.3 Chatham Station

NJ 124 traverses 1.4 miles through Chatham Borough and is primarily a two-lane roadway through the downtown with no dedicated left turn lanes, and on-street parking on both sides of the road. This section has four non-coordinated signalized intersections and seven stop-controlled intersections, with speed limits ranging from 30 to 35 mph within the downtown area (see Figure 2-6). The area directly around the train station consists of stop-controlled intersections, with one lane in each direction of travel. This section discusses existing conditions as well as mitigation measures and access constraints at Chatham Station.

2.3.3.1 Existing Conditions

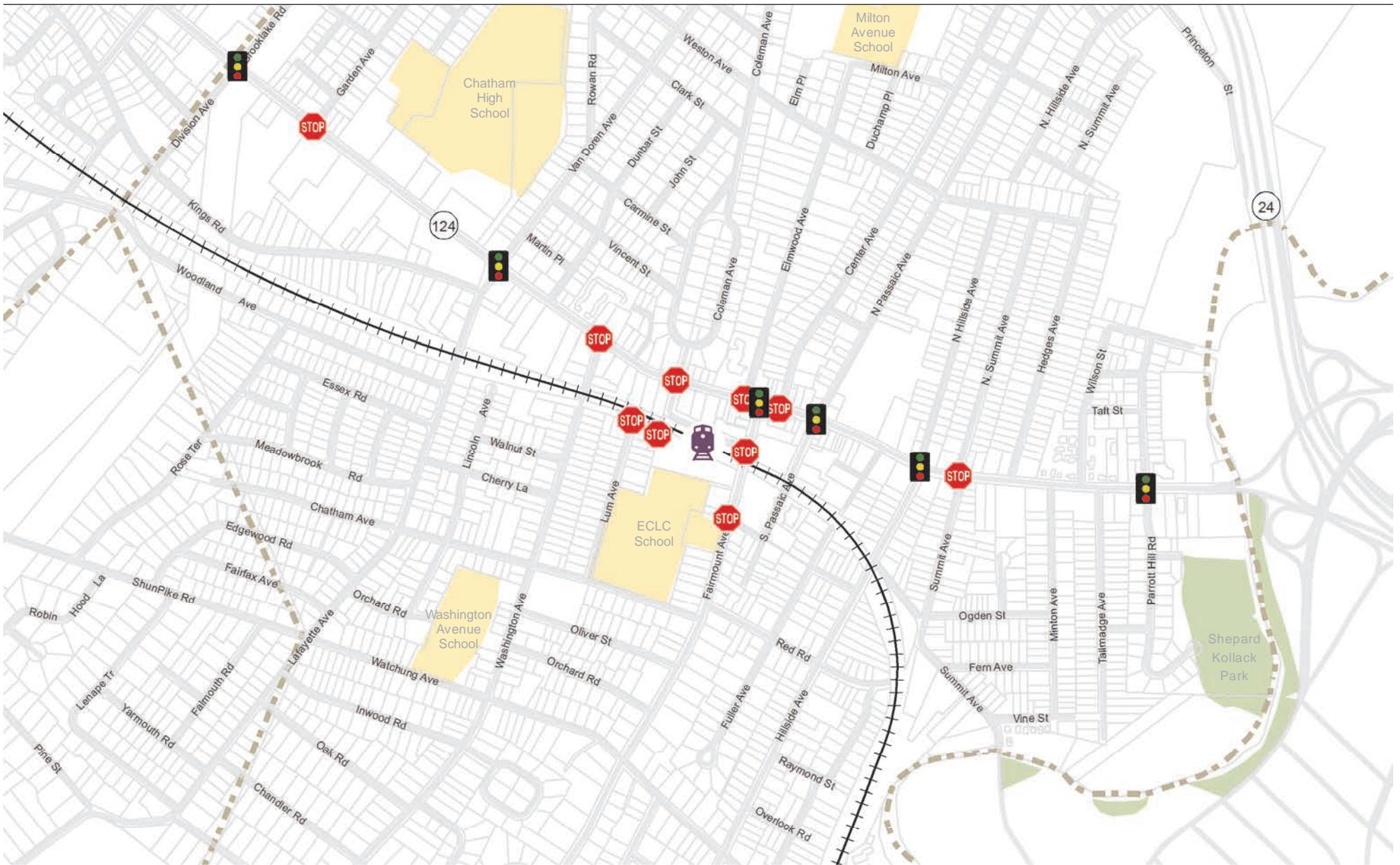
Intersection analyses documented in the 2010 Exxon Site report for intersections along NJ 124 show that the roadway operates at or over capacity with slow speeds and congested conditions. These conditions are due to the volume of



traffic and the existing roadway configuration. Currently there is approximately 40 feet of right-of way width on NJ 124 from Fairmont Avenue to Passaic Avenue, with one travel lane in each direction and on-street parking on both sides of the roadway. Field observations indicate that the congested conditions on NJ 124 in Chatham Borough are exacerbated by the close spacing of several T-intersections in the downtown area (Elmwood Avenue and Center Avenue from the north, Fairmount Avenue from the south) and the offsetting intersections of north-south arterial roadways. These conditions force drivers to make a series of turns onto and off of NJ 124 to complete a north-south travel path. For example, Fairmount Avenue serves as the major north-south arterial south of NJ 124, while North Passaic Avenue provides connections to the north from Chatham to Florham Park and Livingston (refer to Figure 2-7); this means that vehicles traveling along this route must negotiate their way through the Borough via a combination of a left and right turn (or the reverse) onto and off of NJ 124 at these two intersections.

The local street network around the train station in Chatham Borough consists of the following streets:

- Washington Avenue
- Lum Avenue
- Railroad Plaza South
- Railroad Plaza North
- Fairmount Avenue (County Route 638)
- South Passaic/ North Passaic (County Route 607) Avenue (NJ 124 defines the two segments)



-  Town Line
-  Parks
-  Railroad Line
-  School, College or University
-  Train Station
-  Signalized
-  Stop-Controlled



Morris County NJ 124
Transit Access Study

Intersection Types in Chatham Borough

FIGURE 2-6

Figure 2-7: Eastbound NJ 124, East of Fairmount Avenue



Chatham Station is accessed directly by three of these roadways, as shown in Figure 2-8: Fairmount Avenue, Railroad Plaza North, and Railroad Plaza South. Fairmount Avenue is designated as County Route 638, and carries one travel lane in each direction with restricted on-street parking on both sides. Fairmount Avenue is also the main access point to the commuter parking lot on the eastbound (south) platform of the station. Railroad Plaza South is a narrow street with a 26-foot right-of-way and no parking, used primarily by the residents of that neighborhood to access the station. Railroad Plaza North is a somewhat wider street at about 50 feet, which serves as access to the westbound (north) platform of the station. This street contains daily and permit parking spaces on both sides of the road.

The north/ south streets, Washington Avenue, Fairmount Avenue, and Passaic Avenue experience some levels of congestion, mainly due to the queues at their intersection with NJ 124 at traffic lights. One note of concern for these local streets is the congestion in the morning and evening school hours. The ECLC School, located south of the train station, receives students from a number of communities in northern New Jersey, with many of these students arriving in buses, mini-buses, and passenger vans. These buses typically line up on Fairmount Avenue and through the main station parking lot located on the eastbound platform side of the station. The operation is well organized and does not cause substantial traffic backups on the surrounding streets. However, it does result in some additional traffic circulation through the parking lot. Upon exiting the school in the rear of the building, many of the buses will take Lum Avenue to Railroad Plaza South and cut back through this parking lot to reach Fairmount Avenue and NJ 124.⁸

⁸ This activity has little or no impact on parking operations in this lot at the station because the parking lot is usually filled by the time students arrive at the ECLC School.



Morris County NJ 124
Transit Access Study

Chatham Train Station Access Roadways

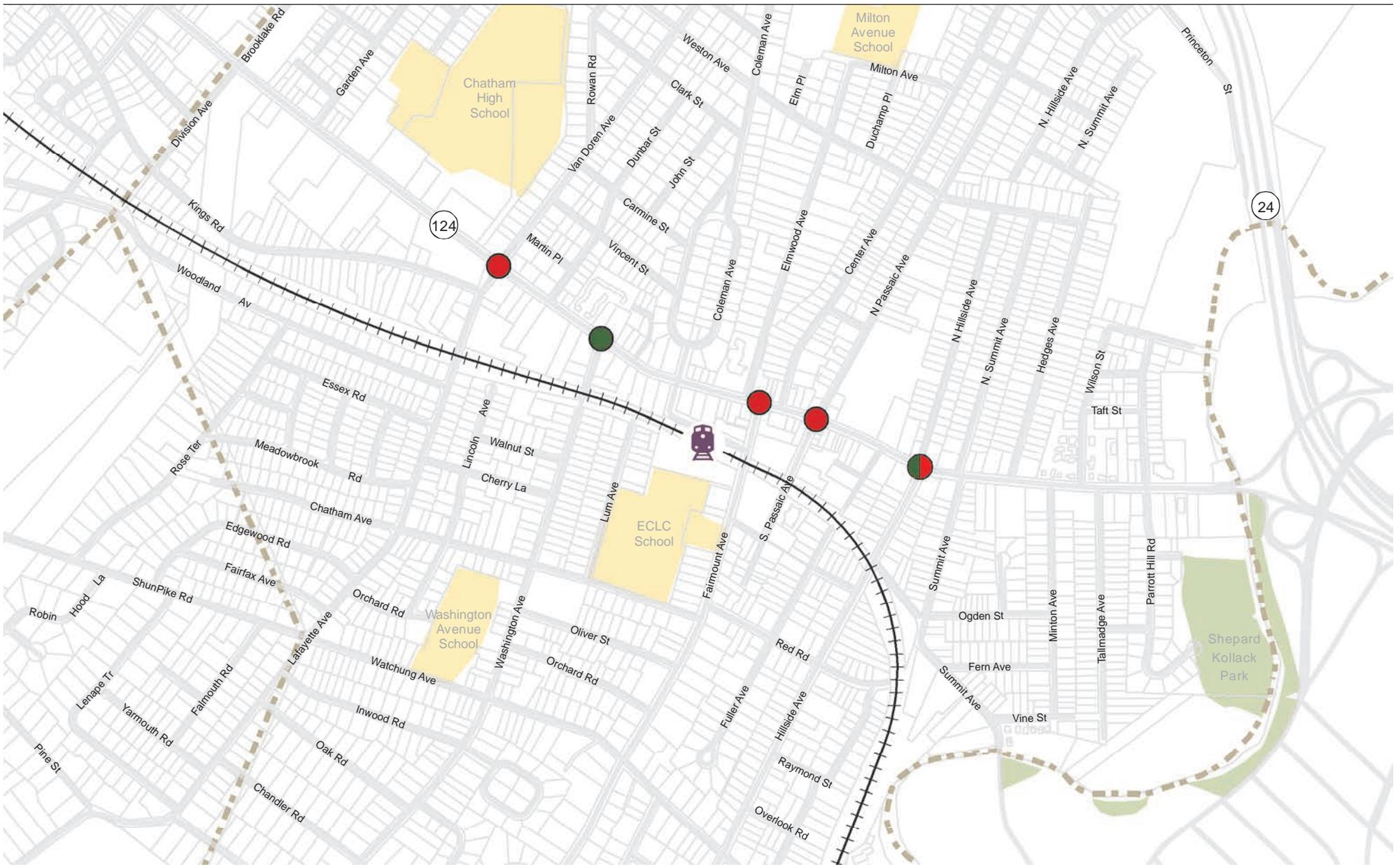
FIGURE 2-8



Currently, the intersections of Passaic Avenue, Fairmount Avenue, and Lafayette Avenue along NJ 124 are congested in both the AM and PM peak periods, as shown in Figure 2-9. This congestion is caused by high vehicular traffic volumes and long queuing on the local streets related to parking maneuvers and left-turning vehicles. Since this area has a narrow right-of-way along NJ 124, there is currently no striping for dedicated left turn lanes along NJ 124. At one intersection (Passaic Avenue), a dedicated lead green phase on the southbound Passaic Avenue approach allows traffic from Passaic Avenue to turn left onto eastbound NJ 124. There is no dedicated left turn lane at this approach, however.

Data from the travel time runs conducted along NJ 124, which were summarized in Figure 2-5 for the length of the corridor, were refined to illustrate specific intersection-by-intersection delays in each municipality along NJ 124. Figures 2-10 through 2-13 are the time-space diagrams for all of the travel time runs conducted through Chatham for NJ 124 eastbound and westbound, respectively. The y-axis is the distance in feet from the start of the run (Division Avenue in the eastbound direction and University Avenue in the westbound direction), while the x-axis shows total time traveled in minutes. Flat horizontal segments along a line from left to right (and bottom to top) indicate elapsed time with no movement, or delays in traffic due to traffic signals or vehicles stopped for other reasons (e.g., parking maneuvers and pedestrian crossings). Straight lines on a time-space diagram with no horizontal segments correspond to travel time runs with good signal progression along the corridor. These are illustrated on these figures as an estimated “Free-Flow Travel Time.”

The “Free-Flow Travel Time” of this corridor serves as a baseline for comparing individual runs; eastbound and westbound progression is around 2.4 minutes. Average travel times in the eastbound direction range from 2.4 to 6 minutes in the AM peak and 3.5 to 9.5 minutes in the PM peak. The westbound travel times range from 2.4 to 9.4 minutes in the AM peak, while the PM peak has a narrower range of 4 to 5.5 minutes.



0 500 1,000 Feet

Congested intersections have a Level of Service of D, E, or F as reported in the 2010 Exxon Site Report.

-  Town Line
-  Parks
-  Railroad Line
-  School, College or University
-  Train Station

-  No Congestion AM/PM
-  No Congestion AM/Congestion in PM
-  Congestion in AM/No Congestion PM
-  Congestion Both AM/PM



Morris County NJ 124
Transit Access Study

Congested Intersections in Chatham Station

FIGURE 2-9



Figure 2-10: NJ 124 Eastbound Travel Times Runs - AM Peak

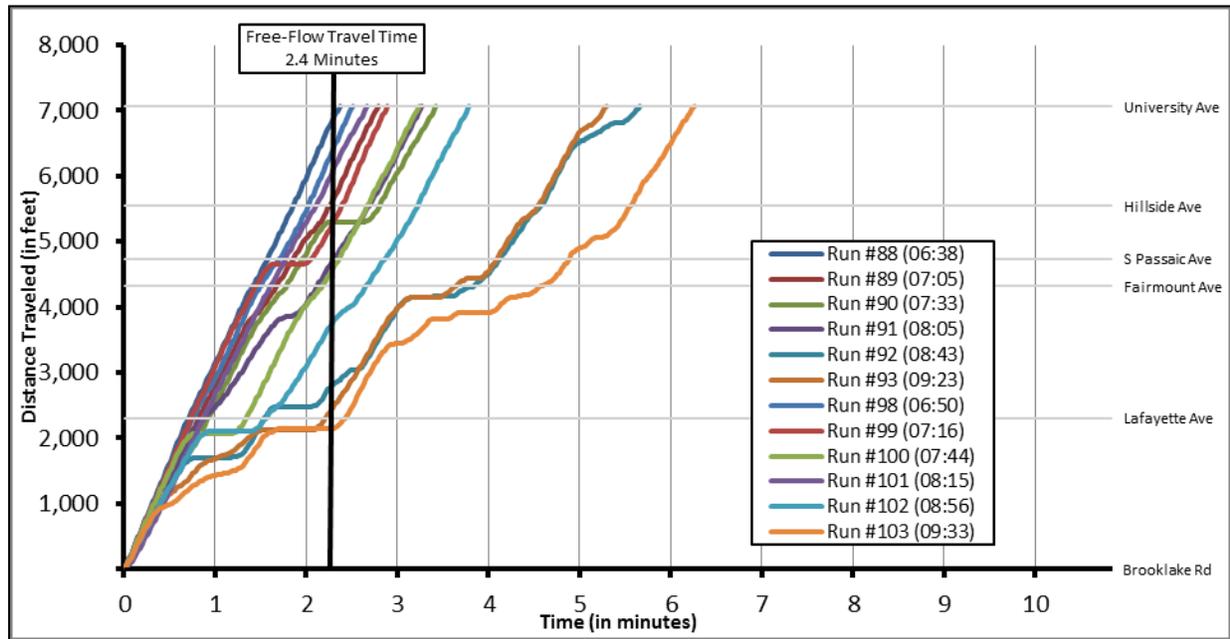


Figure 2-11: NJ 124 Eastbound Travel Times Runs - PM Peak

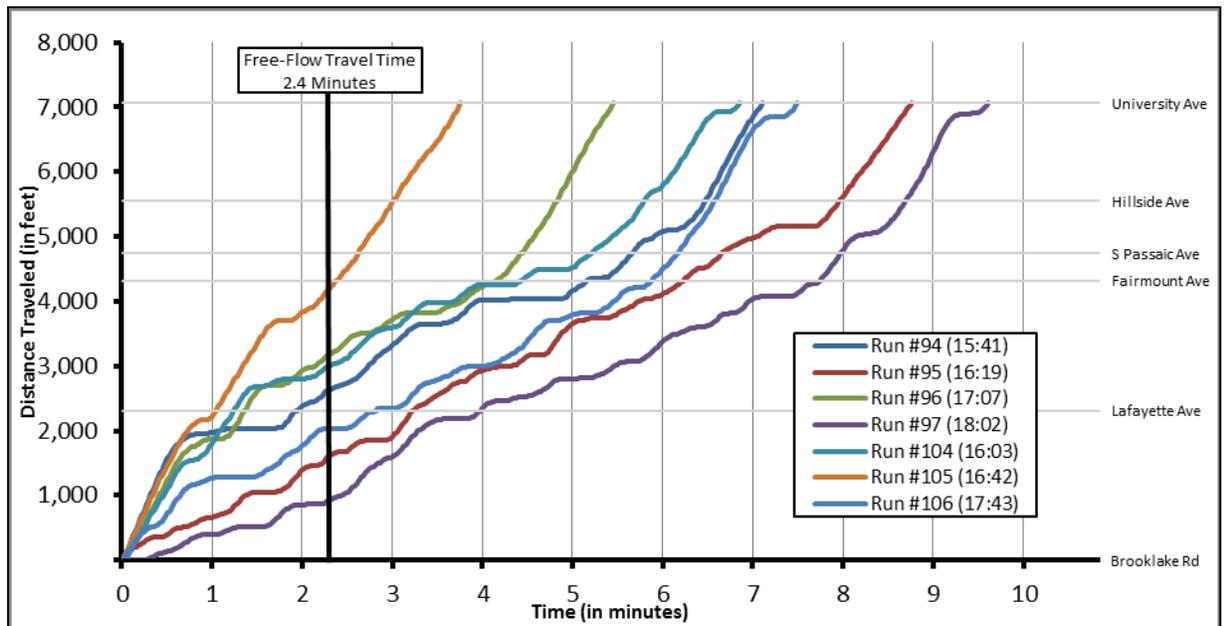




Figure 2-12: NJ 124 Westbound Travel Times Runs – AM Peak Period

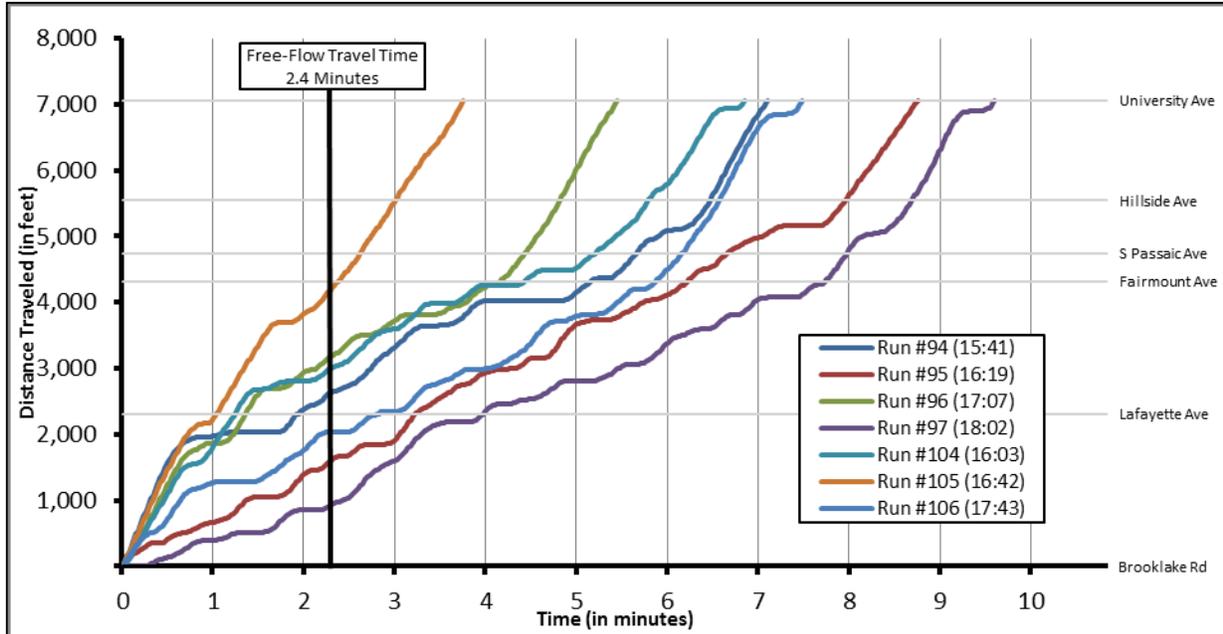
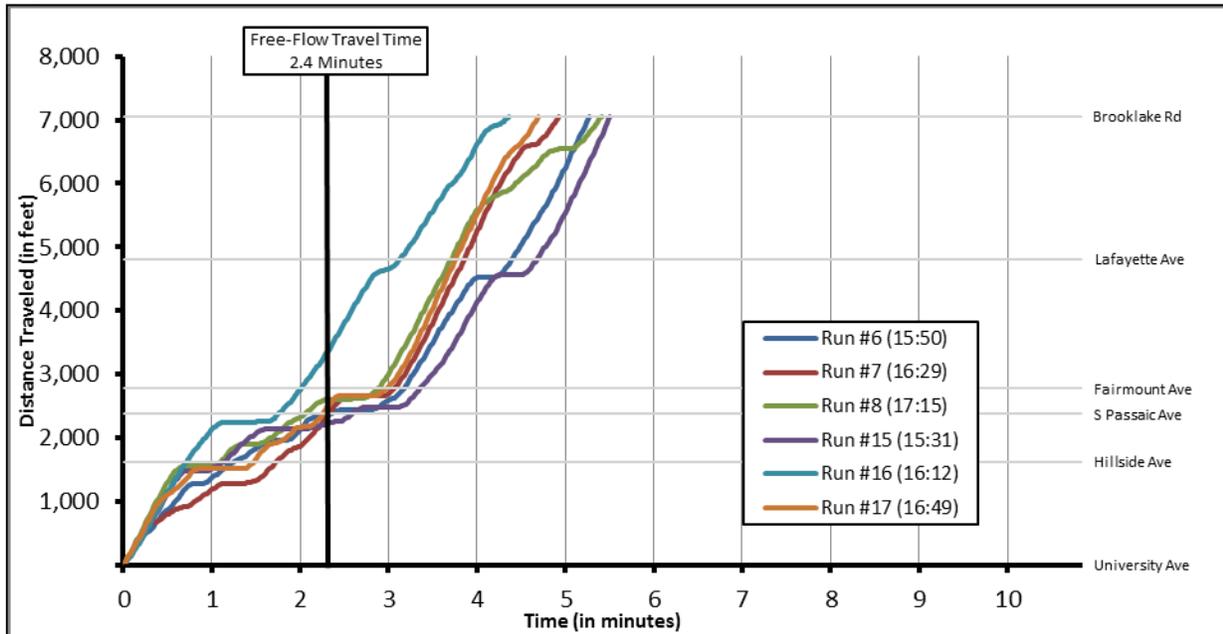


Figure 2-13: NJ 124 Westbound Travel Times Runs – PM Peak Period





2.3.3.2 Existing Mitigation Measures

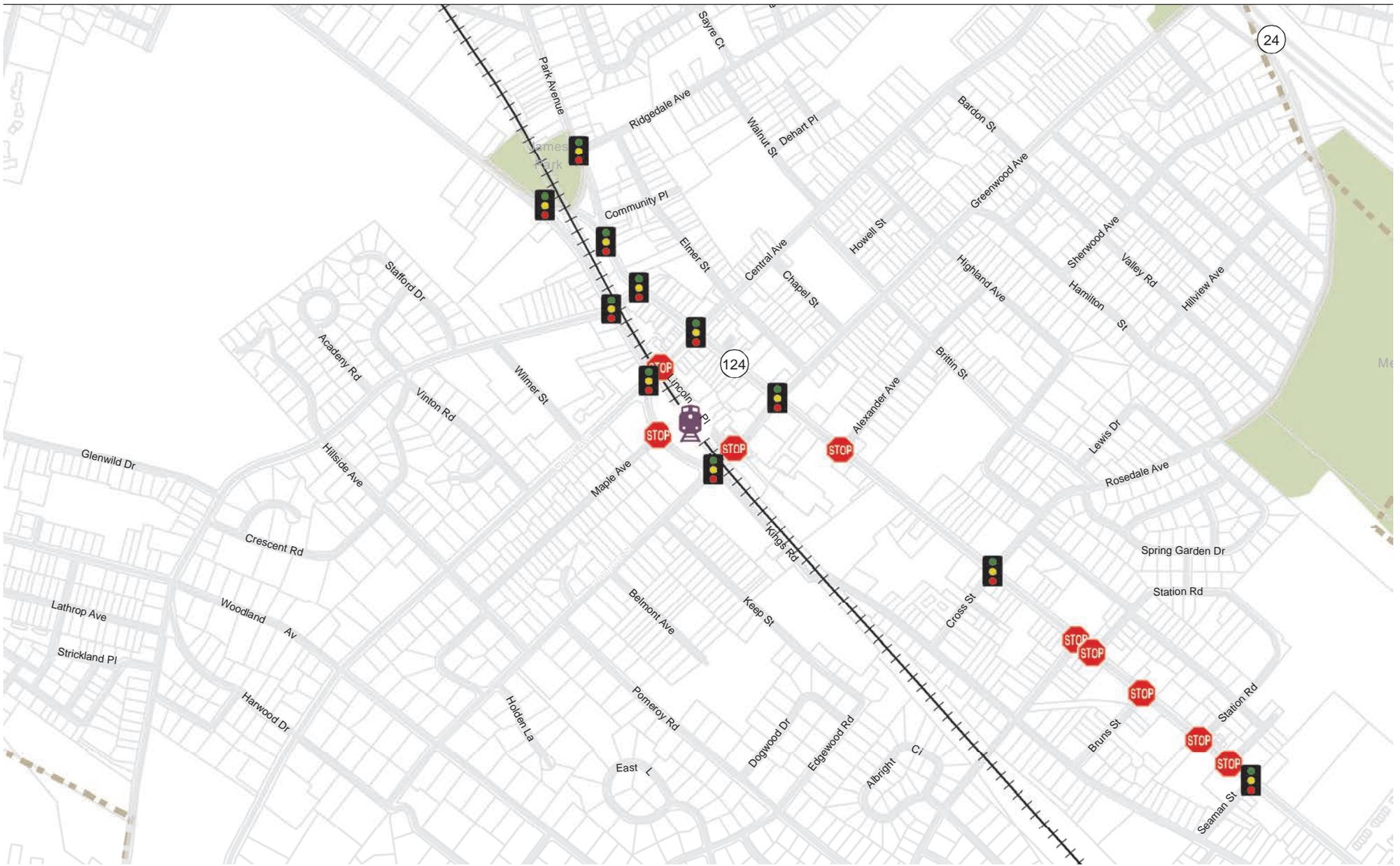
Mitigation of the existing traffic conditions has been examined in previous reports with a majority of the recommendations from the 2010 Exxon Site report. The report called for the removal of parking spaces in the downtown area to accommodate exclusive turning lanes, and modifying the signal timing in the corridor to provide signal progression. These measures are all short-term improvements to alleviate queues that extend between intersections; however they have not been implemented.

2.3.3.3 Access Constraints

The primary roadway access constraint for Chatham Station is the general congestion along the NJ 124 corridor. This represents a particular constraint for transit riders who use NJ 124 to access the station parking lots, and for riders who drive to the station from points north of NJ 124 through the congested intersections at Passaic Avenue and Elmwood Avenue. Observations conducted at the station indicate that some queuing takes place in the two main station parking areas during brief intervals in the evening after passengers disembark from westbound trains. This is caused primarily by left-turning vehicles exiting from the station lots onto Fairmount Avenue.

2.3.4 Madison Station

NJ 124 traverses the Borough of Madison for 3.1 miles, mainly consisting of two lanes of traffic with no dedicated left turning lanes and on-street parking through the downtown area. There are six non-coordinated signalized intersections on NJ 124 through Madison, along with additional signalized intersections on Park Avenue and on local streets south of the railroad alignment. There are also two mid-block pedestrian crossings. See Figures 2-14 and 2-15 for illustrations of these features. The mid-block crossing of NJ 124 between Alexander Avenue and Rosedale Avenue consists of a painted crosswalk with signage and pavement markings about 50 feet from either side of the crosswalk, consistent with current MUTCD standards. While this crosswalk appears to be designed primarily for school access, it provides pedestrian access across NJ 124 not far from the train station.



-  Town Line
-  Parks
-  Signalized
-  Railroad Line
-  School, College or University
-  Stop-Controlled
-  Train Station



Morris County NJ 124
Transit Access Study

Intersection Types in Madison Borough

FIGURE 2-14

Figure 2-15: Mid-block Crossing at Madison Junior School on NJ 124 (looking Westbound)



2.3.4.1 Existing Conditions

As with Chatham, NJ 124 in Madison experiences frequent congestion related to parking maneuvers and no storage lanes for left turning vehicles. Although most intersections operate at an acceptable overall level of service (LOS) in Madison, queues and delays can be lengthy on several intersection approaches. NJ 124 has a 43-foot right-of-way through downtown Madison, with one travel lane in each direction and parking on both sides of the street. Figure 2-16 shows the intersection of NJ 124 and Green Village Road, which is one of two locations in downtown Madison where special treatment is given to allow for left turns from NJ 124. Although there are no lane markings for a dedicated left-turn lane, a lead left-turn green phase is provided at this traffic signal for westbound traffic on NJ 124. A similar condition exists at the next intersection to the west, where NJ 124 curves to the southwest underneath the Morristown Line tracks and Park Avenue splits off to the northeast. At that location, westbound NJ 124 is striped to accommodate “left” turns on NJ 124 (traffic continuing to the west on NJ 124 via the curved section underneath the railroad bridge) and right turns on Park Avenue toward Florham Park. A lead left-turn phase is provided at this location for westbound NJ 124 traffic.

Figure 2-16: Westbound NJ 124 at Green Village Road



The local street network in Madison consists of the following streets (from west to east) and is shown in Figure 2-17:

- Park Avenue (County Route 623)
- Green Village Road (County Route 647)
- Kings Road
- Green Avenue / Waverly Place / Central Avenue (County Route 608)
- Maple Avenue
- Prospect Street / Greenwood Avenue

Kings Road serves as the access roadway for both the main commuter parking lot (Lot 1) and the lot east of Prospect Street (Lot 3). Minimal delays and queues were noted on the local street network during long stretches of the peak periods. However, queues form for brief periods during the PM peak by Kings Road / Prospect Street and Kings Road / Green Avenue when a westbound train drops off passengers returning home in the evening. These queues are caused by high traffic volumes exiting the parking lots during short periods of time.

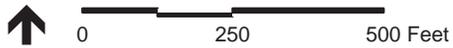
Figure 2-18 shows the major signalized intersections and congestion levels documented in various previous study documents reviewed as part of this project.



NJ 124 Corridor Transit Access Improvement Study

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Morris County NJ 124
Transit Access Study

Madison Train Station Access Roadways

FIGURE 2-17



NJ 124 Corridor

Transit Access Improvement Study

Final Report

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0 500 1,000 Feet

Congested intersections have a Level of Service of D, E, or F as reported in the 2010 Exxon Site Report.

- Town Line
- Parks
- Railroad Line
- School, College or University
- Train Station

- No Congestion AM/PM
- No Congestion AM/Congestion in PM
- Congestion in AM/No Congestion PM
- Congestion Both AM/PM

VHB Morris County NJ 124
Transit Access Study

**Congested Intersections
in Madison Borough**

FIGURE 2-18



As noted in the Exxon Site Report, specific intersection operation issues are as follows:

- *NJ 124 at Rosedale Avenue / Cross Street*
Volume exceeds capacity for the southbound, eastbound and westbound approaches.
- *NJ 124 at Green Village Road*
Morning rush hour volume exceeds capacity for left turns from Green Village Road onto Main Street.
- *NJ 124 at Central Avenue / Waverly Place*
Although the measured levels of service are acceptable, queues exceed the storage length between intersections; in particular, queuing eastbound traffic impacts the intersection of Green Village Road and Main Street (NJ 124).

Data from the travel time runs conducted along NJ 124 were refined to illustrate specific intersection-by-intersection delays in each municipality along NJ 124. Figures 2-19 through 2-22 are the time-space diagrams for all of the travel time runs conducted through Madison for NJ 124 eastbound and westbound, respectively. The y-axis is the distance in feet from the start of the run (Dodge Drive in the eastbound direction and Division Avenue in the westbound direction), while the x-axis shows total time traveled in minutes. Flat horizontal segments along a line from left to right (and bottom to top) indicate elapsed time with no movement, or delays in traffic due to traffic signals or vehicles stopped for other reasons (e.g., parking maneuvers and pedestrian crossings). Straight lines on a time-space diagram with no horizontal segments correspond to travel time runs with good signal progression along the corridor. These are illustrated on these figures as an estimated “Free-Flow Travel Time.”

The “Free-Flow Travel Time” of this corridor serves as a baseline for comparing individual runs; eastbound and westbound progression is around 4 and 4.4 minutes, respectively. Average travel times eastbound range from 4.8 to 8.5 minutes in the AM peak and 6.5 to 8.5 minutes in the PM peak. The westbound travel times ranged from 4 to 7 minutes in the AM peak, while PM ranged from 5 to 10 minutes. As shown in the time-space diagrams on the following pages, the most extensive delays along the NJ 124 corridor in Madison are experienced in the downtown area between Greenwood Avenue and Kings Road. The step-like configuration of many of the data lines in the graphs generally indicates poor signal progression through a series of intersections through the downtown area.



Figure 2-19: NJ 124 Eastbound Travel Times Runs – AM Peak Period

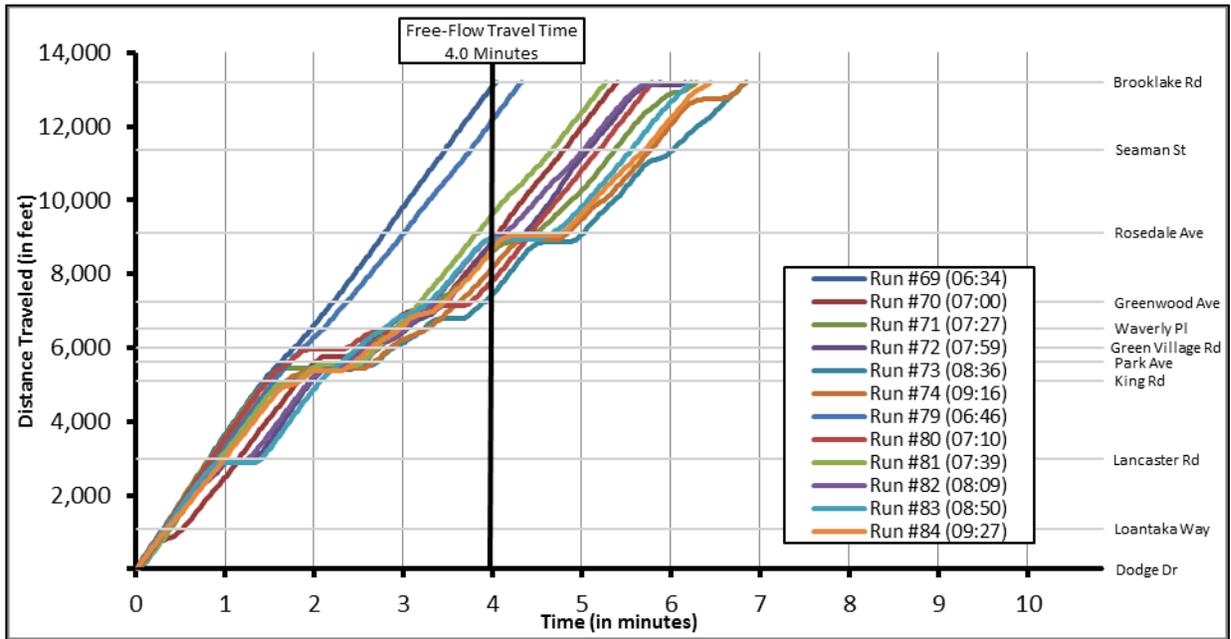


Figure 2-20: NJ 124 Eastbound Travel Times Runs – PM Peak Period

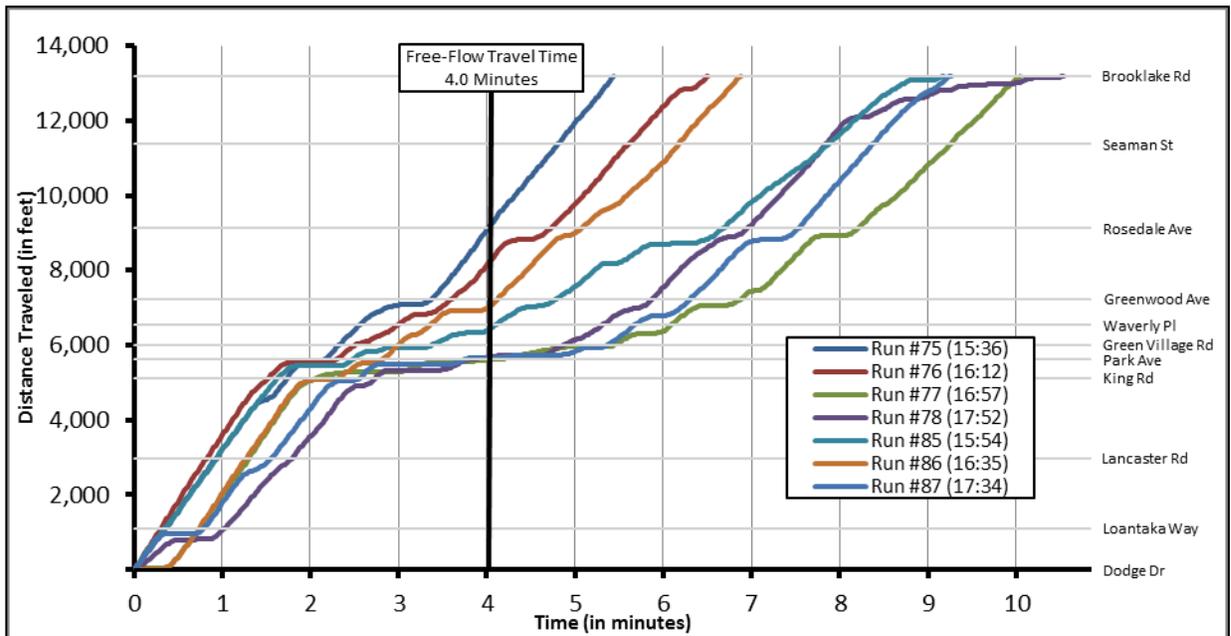




Figure 2-21: NJ 124 Westbound Travel Times Runs – AM Peak Period

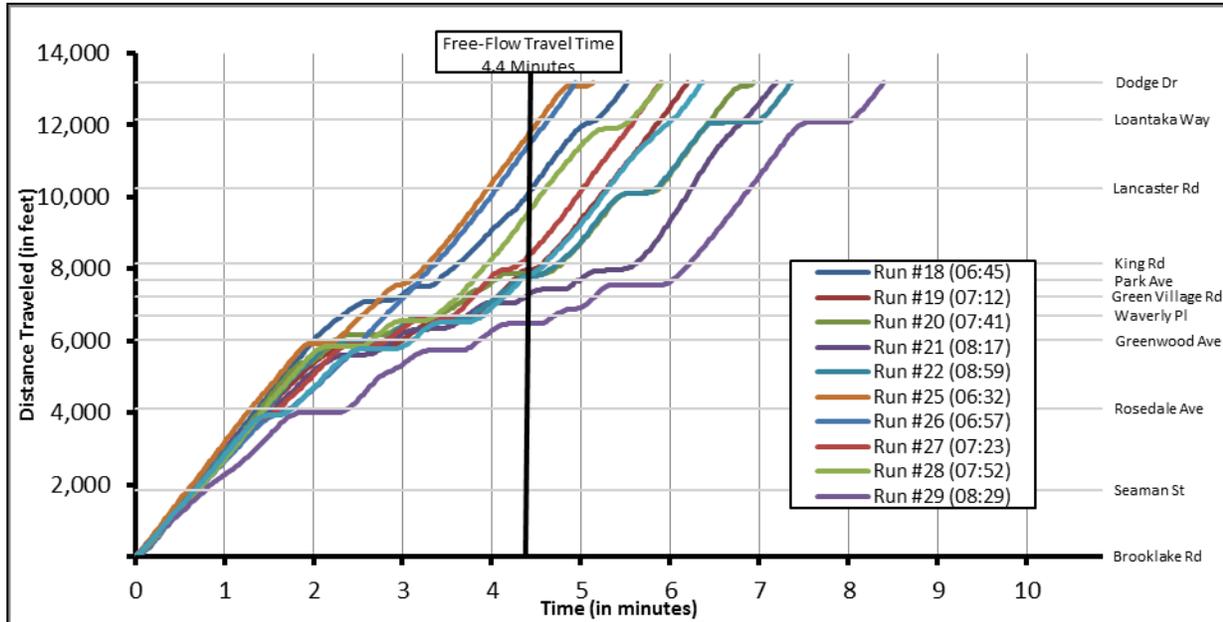
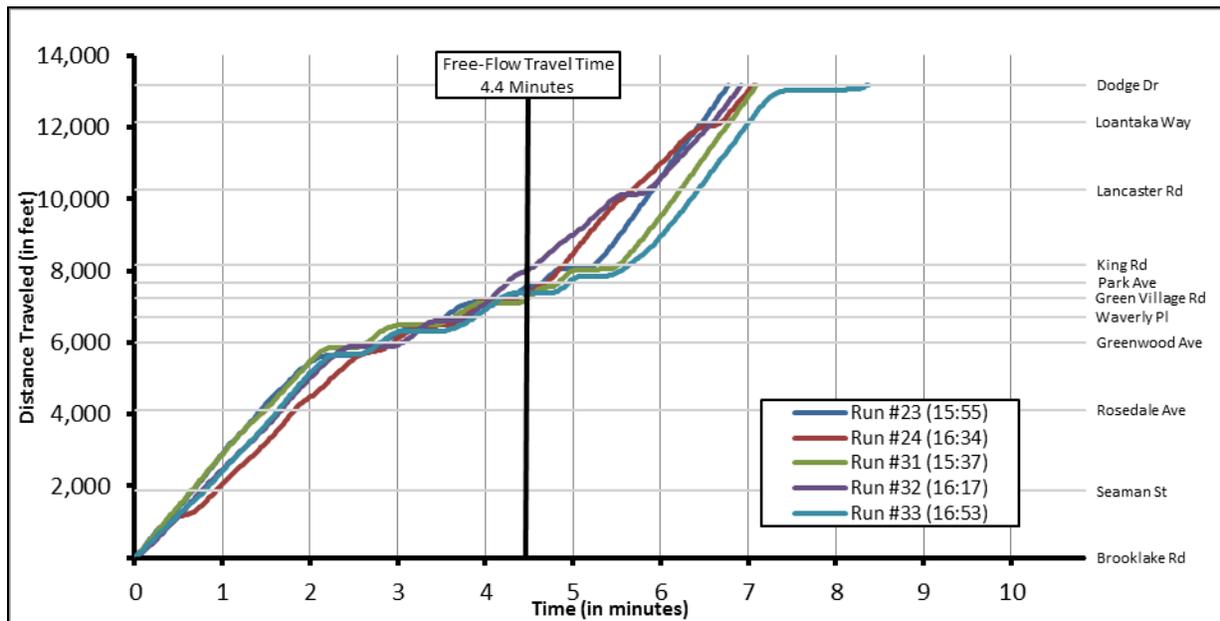


Figure 2-22: NJ 124 Westbound Travel Times Runs – PM Peak Period





2.3.4.2 Existing Mitigation Measures

A number of short-term mitigation measures for existing traffic conditions were proposed in the 2010 Exxon Site Report. This report concluded the following:

- Main Street & Green Village Road
 - Restripe westbound approach from one (1) lane to two (2): provide an exclusive left-turn bay and an exclusive through lane.
 - Modify signal timing to decrease overall intersection delay.
- Main Street & Rosedale Avenue/ Cross Street
 - Restripe the eastbound and westbound approaches from one (1) to two (2) shared lanes: provide a left/ through lane and a right/ through lane. Restripe receiving lanes to two (2) lanes, followed by a right lane merge.
 - Modify signal timing to decrease overall intersection delay.

Currently, these measures have not been implemented.

2.3.4.3 Access Constraints

The primary roadway access constraints for Madison Station are described previously in this section. The intersections through the heart of Madison along NJ 124 between Rosedale Avenue and Kings Road are typically congested during morning and evening peak periods, as well as on weekends when the central business district of Madison is quite active. The roadway geometry and lack of signal coordination at the closely-spaced intersections on NJ 124 at Park Avenue and Kings Road can be problematic when a westbound vehicle on NJ 124 turns left onto Kings Road against oncoming traffic; there is insufficient horizontal clearance for following westbound traffic to pass a vehicle stopped at this location when oncoming (eastbound) traffic volumes on NJ 124 are heavy.

2.3.5 Convent Station

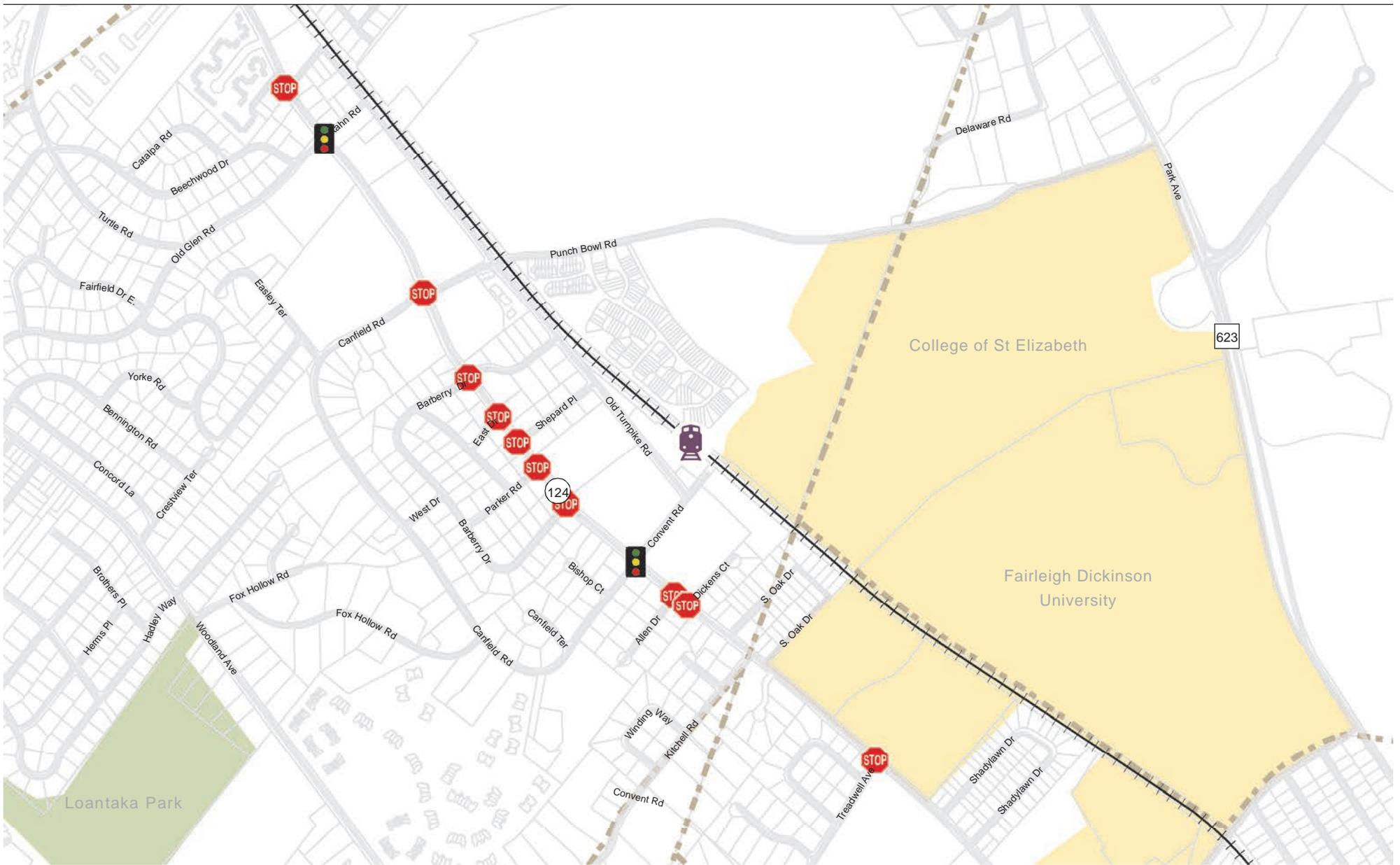
NJ 124 traverses Morris Township for almost 1.3 miles, mainly consisting of two lanes of traffic with dedicated turning lanes at larger intersections, and no on-street parking for most of the section. Unlike the other two study area municipalities, Morris Township does not have a town center and the traffic delays associated with on-street parking maneuvers and closely-spaced intersections. There are five non-coordinated signalized intersections on NJ 124 in Morris Township, as shown in Figure 2-23. There is approximately 40 feet of



NJ 124 Corridor Transit Access Improvement Study

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0 500 1,000 Feet

-  Town Line
-  Parks
-  Signalized
-  Railroad Line
-  School, College or University
-  Stop-Controlled
-  Train Station



Morris County NJ 124
Transit Access Study

Intersection Types in Morris Township

FIGURE 2-23

right-of-way at the intersections in Morris Township with no on-street parking along NJ 124 for sufficient horizontal clearance for dedicated turning lanes.

2.3.5.1 Existing Conditions

Generally, most of the Morris Township intersections operate at acceptable levels of service. As noted in the 2010 Exxon Site report, several movements at the unsignalized intersection of NJ 124 and Punch Bowl Road exceed capacity and queue lengths. This intersection also has heavy eastbound left-turning traffic from NJ 124 onto Punch Bowl Road in the AM peak period, which causes sudden stops and unsafe maneuvers (see Figure 2-24).

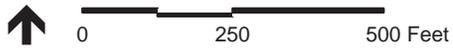
Figure 2-24: Westbound NJ 124, east of Punch Bowl Road



The local network around Convent Station consists mainly of unsignalized intersections with about 25 feet of right-of-way, carrying one travel lane in each direction. West of the station there is a residential street network between the rail alignment and NJ 124, though most of the vehicular traffic accessing the train station uses the following local streets as shown in Figure 2-25:

- Punch Bowl Road
- Old Turnpike Road
- Convent Road

The key congested intersections within Morris Township along NJ 124 are shown in Figure 2-26. The 2010 Exxon Site Report indicated that the unsignalized intersection of NJ 124 and Punch Bowl Road is one of the most heavily-congested locations in the study area during peak periods, especially when traffic is exiting the station during the evening peak. Punch Bowl Road carries heavy traffic volumes due to being the closest major north-south connection between NJ 124



Morris County NJ 124
Transit Access Study

Convent Train Station Access Roadways

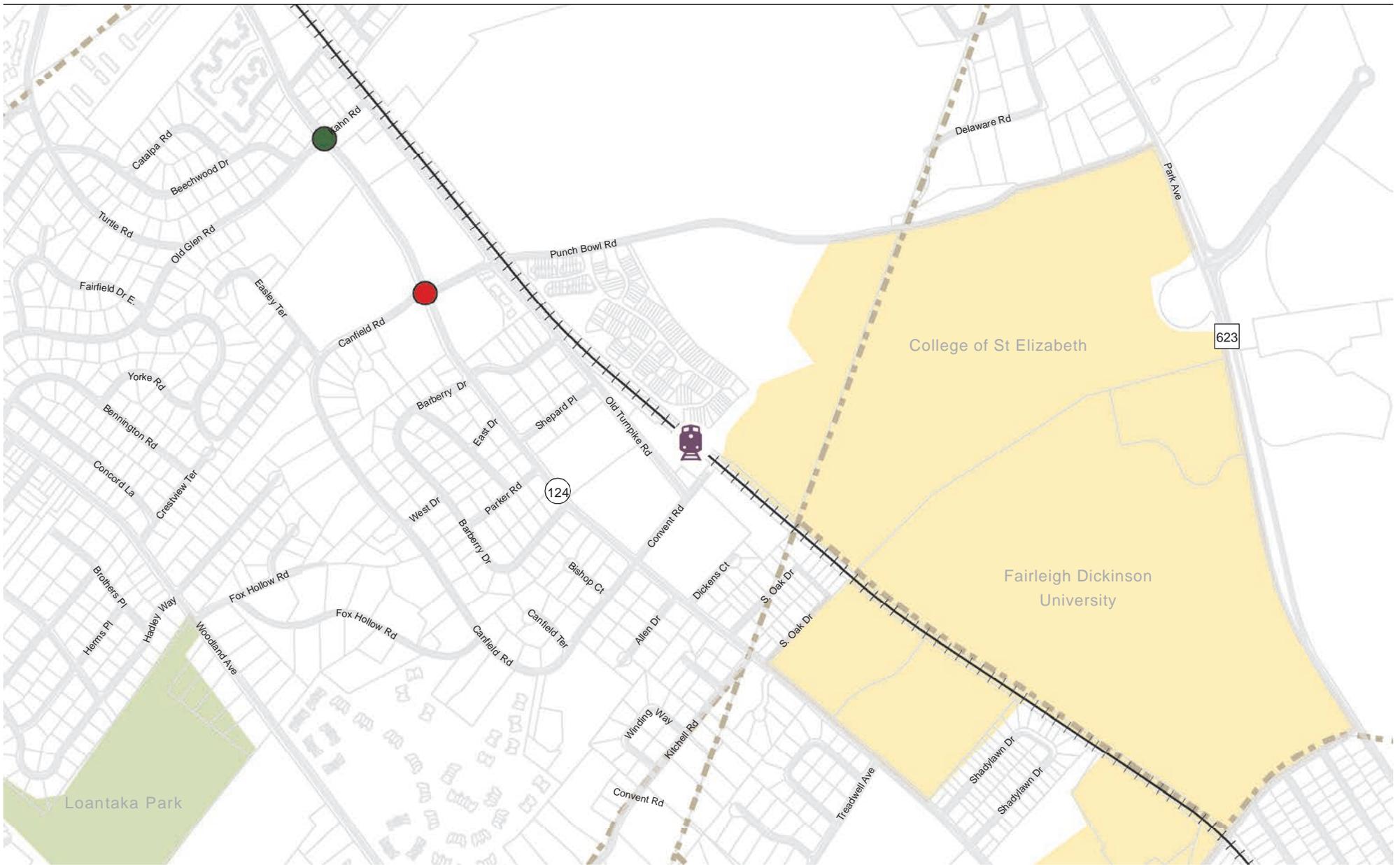
FIGURE 2-25



NJ 124 Corridor Transit Access Improvement Study

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Congested intersections have a Level of Service of D, E, or F as reported in the 2010 Exxon Site Report.

-  Town Line
-  Parks (100-2.5k)
-  Railroad Line
-  School, College or University
-  Train Station
-  No Congestion AM/PM
-  No Congestion AM/Congestion in PM
-  Congestion in AM/No Congestion PM
-  Congestion Both AM/PM

 Morris County NJ 124
Transit Access Study

**Congested Intersections
in Morris Township**

FIGURE 2-26



and Park Avenue west of the Fairleigh Dickinson and College of St. Elizabeth campuses. The Punch Bowl Road and Old Turnpike Road intersection is used by many commuters departing the station by car in the evening. This unsignalized intersection is located immediately south of the adjacent Morristown Line and Traction Line Recreational Trail bridges over Punch Bowl Road. The two streets do not intersect at a right angle, and as a result, there is insufficient sight distance to the right for vehicles at the westbound Old Turnpike Road approach at this intersection.

Data from the travel time runs conducted along NJ 124 were refined to illustrate specific intersection-by-intersection delays in each municipality along NJ 124. Figures 2-27 through 2-30 are the time-space diagrams for all of the travel time runs conducted through Morris Township for NJ 124 eastbound and westbound, respectively. The y-axis is the distance in feet from the start of the run (Franklin Street in the eastbound direction and Dodge Drive in the westbound direction), while the x-axis shows total time traveled in minutes. Flat horizontal segments along a line from left to right (and bottom to top) indicate elapsed time with no movement, or delays in traffic due to traffic signals or vehicles stopped for other reasons (e.g., parking maneuvers, pedestrian crossings). Straight lines on a time-space diagram with no horizontal segments correspond to travel time runs with good signal progression along the corridor. These are illustrated on these figures as an estimated “Free-Flow Travel Time.”

The “Free-Flow Travel Time” of this corridor serves as a baseline for comparing individual runs; eastbound and westbound travel time is around 3.2 minutes.

Average travel times eastbound range from 3 to 5.2 minutes in the AM peak and 3.7 to 10 minutes in the PM peak. The westbound travel times ranged from 3.2 to 4.8 minutes in the AM peak, while PM ranged from 4.5 to 9.4 minutes. As indicated in Figures 2-27 through 2-30, there are intermittent periods of slow-moving traffic at the eastern and western segments of the study corridor in Morris Township during the evening peak period.



Figure 2-27: NJ 124 Eastbound Travel Times Runs – AM Peak Period

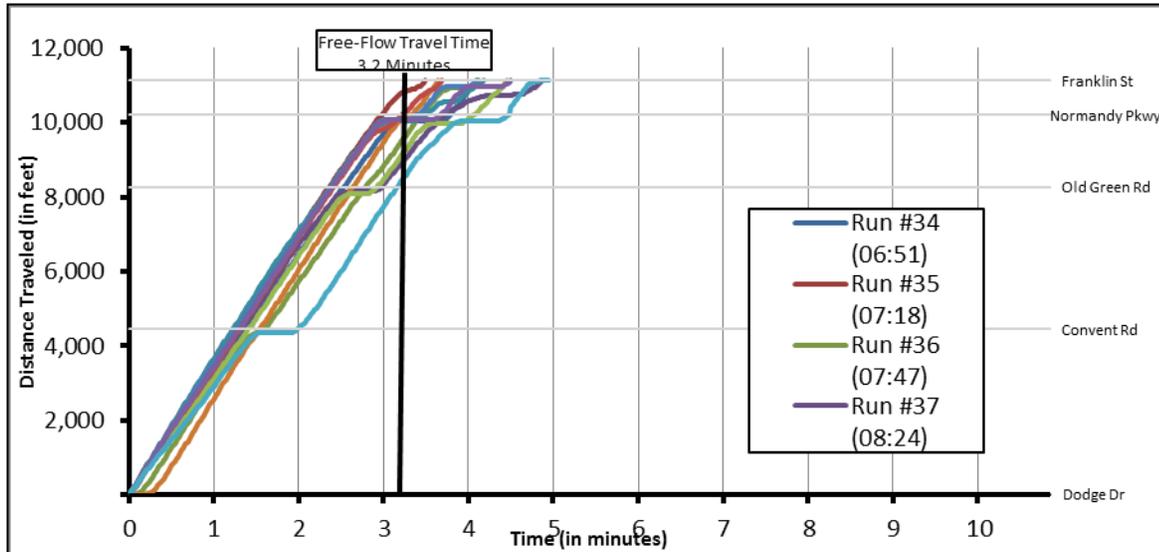


Figure 2-28: NJ 124 Eastbound Travel Times Runs – PM Peak Period

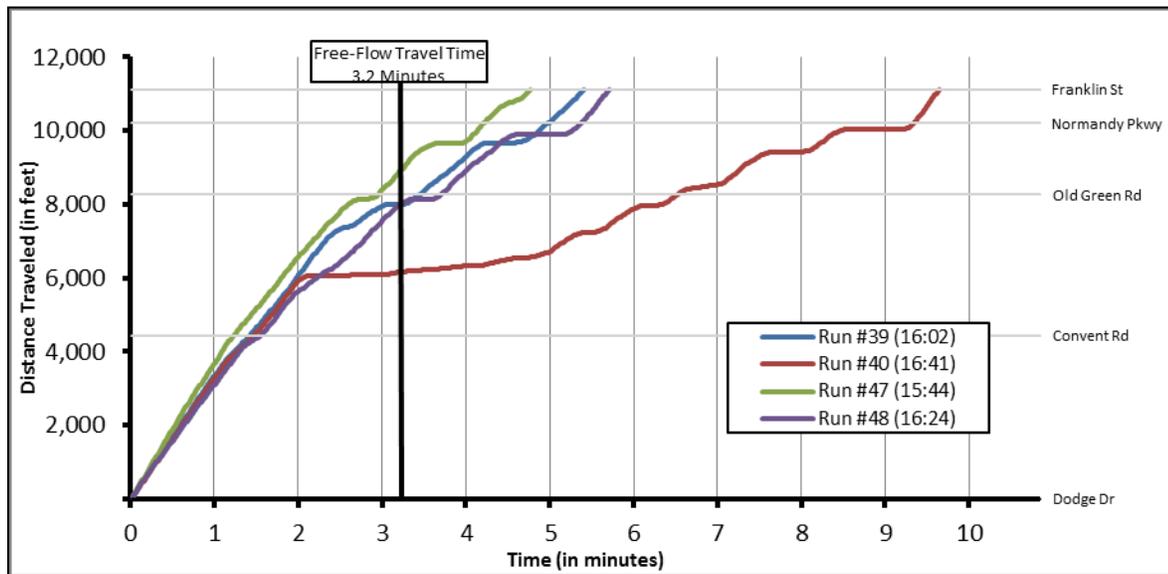




Figure 2-29: NJ 124 Westbound Travel Times Runs – AM Peak Period

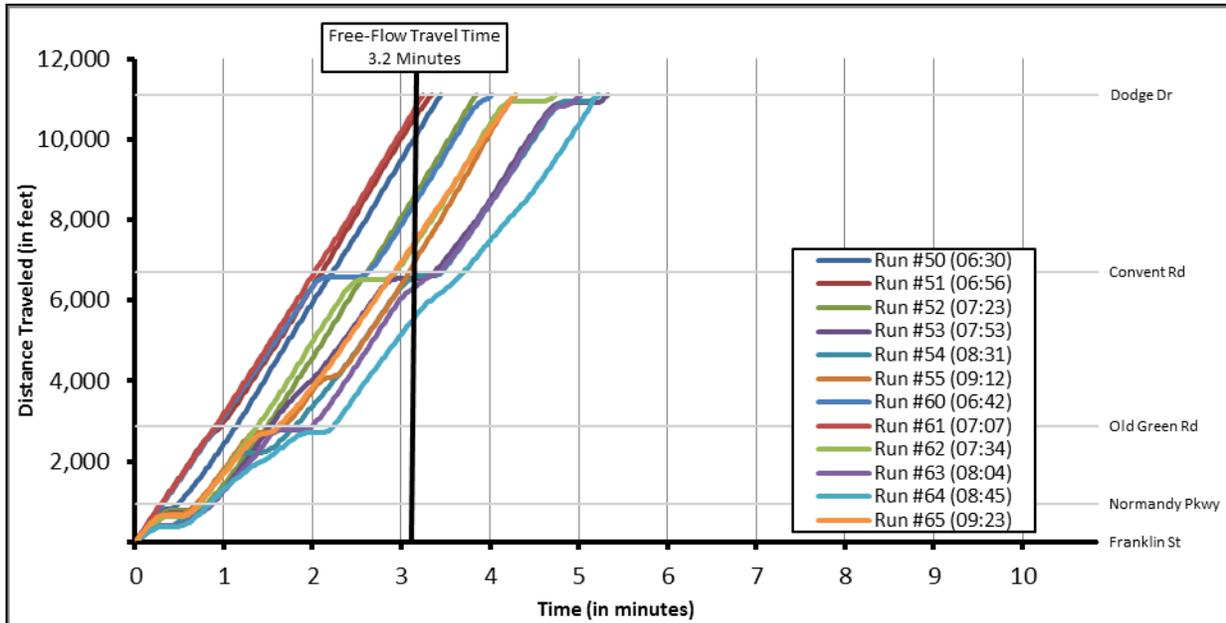
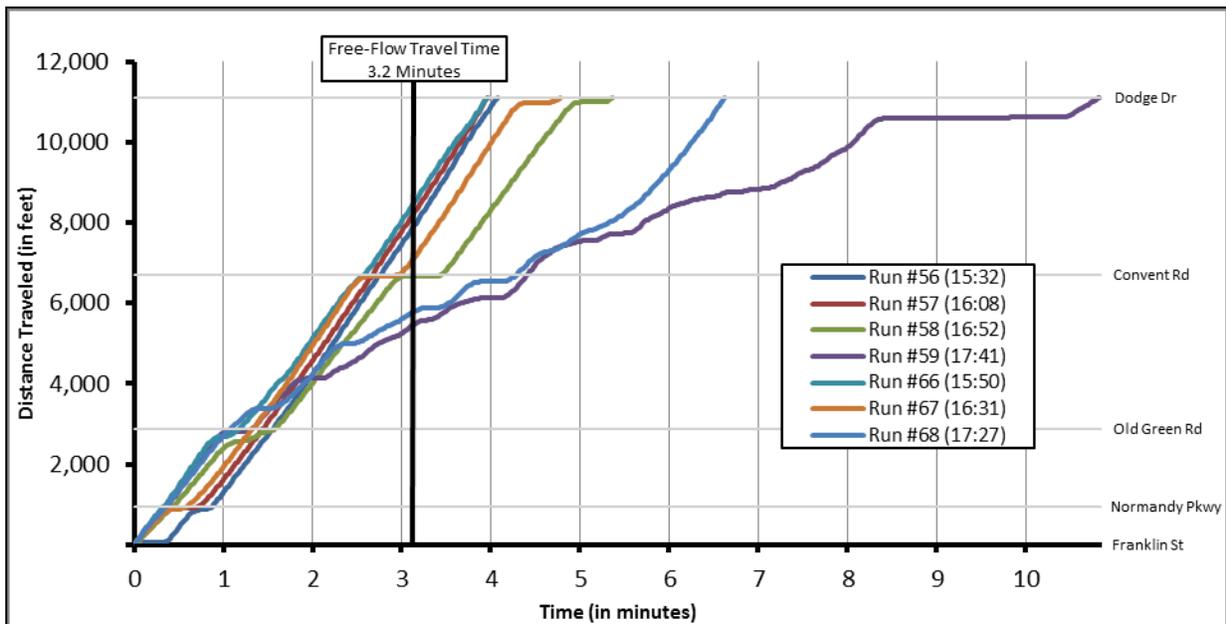


Figure 2-30: NJ 124 Westbound Travel Times Runs – PM Peak Period



2.3.5.2 Existing Mitigation Measures

A number of short-term mitigation measures for existing traffic conditions were proposed in the 2010 Exxon Site Report. This report recommended the following:

- NJ 124 & Old Glen Road / Kahn Road
 - Modify signal timing to decrease overall intersection delay.
- NJ 124 & Punch Bowl Road / Canfield Road
 - Restripe eastbound approach from one (1) lane to two (2) lanes: provide an exclusive left-turn bay.
 - Clear and trim trees and shrubs to increase intersection sight distance.
 - Provide advance intersection warning signs.
- NJ 124 & Normandy Parkway
 - Modify signal timing to decrease overall intersection delay.
 - Modify phasing for the EB left turn lane to protected plus permitted.

Currently, these measures have not been implemented.

2.3.5.3 Access Constraints

The intersections along NJ 124 between Franklin Street and Dodge Drive are typically congested during evening peak periods, as well as on weekends. As shown in Figure 2-31, the intersection of Old Turnpike Road and Punch Bowl Road is currently a three-way stop controlled intersection that has inadequate sight-distance underneath the rail bridge.

Figure 2-31: Westbound Punch Bowl Road, West of Old Turnpike Road





2.4 Station Area Parking and Utilization

This section summarizes station area parking utilization and duration, which is based on a field data collection effort conducted during the week of April 23, 2012. The following provides information on parking capacity and utilization levels at the three stations in the study area by lot and by time of day, and to provide insight into turnover rates and parking duration throughout a typical weekday at these locations. This represents a level of detail above and beyond the periodic parking data collected by TransOptions and the municipalities themselves, which tend to focus on periodic “snapshot” parking occupancy counts that do not include parking duration or occupancy by time of day.

Lot numbers were obtained from the NJ TRANSIT website and confirmed (where applicable) in the field. As a result, each of the three stations in the study area has its own set of independently numbered lots (i.e., there is a Lot 1 in Chatham, a Lot 1 in Madison, and a Lot 1 in Convent Station.).

Additional research was conducted to identify discrepancies among the three main sources of data used for parking conditions in this study: (1) the NJ TRANSIT website; (2) TransOptions parking data;⁹ and (3) the April 2012 VHB field survey. With few exceptions, most of the parking capacity figures were reasonably close, and minor discrepancies could be attributed to Americans with Disabilities Act (ADA) accessible spaces that may not be included in some of the published parking capacity totals because they are not specifically assigned as daily, permit/ resident, permit/ non-resident, etc. There are some discrepancies for individual lot capacity figures at Convent Station, but the overall total number of spaces obtained in the field survey (589 spaces) is reasonably close to the TransOptions total recorded capacity of 573 spaces. NJ TRANSIT only reports 525 total spaces at this station. This difference is almost entirely attributable to NJ TRANSIT recording only a 48-space capacity in Lot 4, compared to 100 recorded by TransOptions, and 114 identified in the VHB field verification. Since this lot is owned by St. Thomas More Church and operated as a commuter lot through formal arrangement with Morris Township, it is possible that the size of the church parking area used for commuter parking may have changed over the years.

Lot 1 at Chatham Station also has conflicting information among the three sources. There were 289 spaces identified in the field survey, which is reasonably consistent with the 297 posted on the NJ TRANSIT website. TransOptions reports 346 spaces, which may include on-street parking or additional commuter capacity in outlying municipal lots designated for shoppers but available under Chatham municipal parking regulations for permit holders when the main lot is full.

⁹ TransOptions indicated that their parking capacity data may be somewhat outdated and should be verified.



2.4.1 Chatham Station

The Chatham rail station has two primary parking areas for commuters, both of which are owned by the municipality. These are shown in Figure 2-32 and described below. The lots listed here only include those parking facilities that are used primarily by rail commuters at the station itself. There are a number of commercial buildings in the immediate vicinity of the station that have their own parking lots. The presence of extensive signage warning motorists that these are private parking lots indicates that illegal commuter parking may be a problem in the area.

- Lot 1: the main lot on the south side of the train station, primarily accessible via Fairmount Avenue (CR 638)
- Lot 2: the parking along the access street north of the station

In addition to these lots, there are several other municipal parking lots located around the downtown area of Chatham Borough. These are located along NJ 124, Center Street, and Bowers Lane. These lots are used primarily for local businesses and have parking time limits to ensure turnover during the course of the day, but some of the spaces can be used as “overflow” parking capacity for permit holders who arrive at the station after the two parking areas listed above are filled. Signage at the station directs permit holders to these lots. These supplemental lots were not included in the field survey.

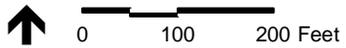
Lots 1 and 2 accommodate customers that pay on a day-to-day basis as well as those that hold monthly permits. Lot 1 has capacity for 134 daily and 155 monthly commuters, whereas Lot 2 has 64 daily spaces and 49 monthly spaces. The total capacity of the two Chatham Station parking areas is 402 spaces, which includes 10 ADA accessible spaces for disabled customers. Table 2-16 summarizes the parking capacity of each lot and their associated fees. Customers that pay the daily fee use electronic payment boxes located at the main station building.



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- Daily
- Daily/Permit
- Permit



Morris County NJ 124
Transit Access Study

**Chatham Train Station
Commuter Parking Lots**

FIGURE 2-32



Table 2-16: Chatham Station Parking Fees and Lot Capacity

Parking Lot #	Fees		Parking Spaces	
	Daily	Permit (Annual)	Daily	Permit
1	\$5.00	\$355.00	134	155
2	\$5.00	\$355.00	64	49

A field survey was conducted on Tuesday, April 24, 2012 to observe the capacity utilization of each lot during the course of a typical mid-week day. To ensure a normal distribution pattern of parking occupancy over the course of the day, the survey started at 6:00 AM and continued until the number of vehicles remaining in the lots was similar to the parking occupancy when the survey started. The parking accumulation profile for the two Chatham lots from 6:00 AM to 7:30 PM is shown in Figure 2-33. Both lots were consistently filled close to their capacity throughout the day until the utilization began to decline around 3:00 PM. The peak parking utilization observed for Lots 1 and 2 were 97 percent and 96 percent, respectively. The spaces used by commuters who park and pay on a daily basis was slightly higher than those reserved for monthly permit holders. Throughout the day, half of the ADA spaces were occupied.

During the field survey, a substantial level of school bus activity was observed in Lot 1 around 8:00 AM. The ECLC School located south of Lot 1 on Fairmount Avenue relies heavily on school buses to drop off and pick up students. A number of these buses operate wheelchair lifts, which requires additional dwell time. As a result, the buses waiting to drop off students begin to queue in front of the school, and it was observed that this queue spilled back onto Fairmount Avenue and into Lot 1. Additionally, some buses that had finished dropping off students cut through Lot 1 from the adjacent Lum Avenue (west of the station on the south side of the rail alignment) to gain access to Fairmount Avenue. Similarly, some buses use Lot 1 as a staging area as they wait to pick up students during the afternoon hours. This activity appears to have minimal impact on parking operations in Lot 1, since the lot is typically filled to capacity by the time the school day begins and remains filled throughout the course of the day.

A total of 24 spaces were sampled from the two lots to determine the parked time durations at each lot. Table 2-17 summarizes these findings and it shows that the average and 95th percentile parked time duration is about 12 hours for both lots. The lengthy parking durations, coupled with the minor incremental difference between the average and 95th percentile values, are indicative of a parking operation with minimal turnover over the course of a day. The 95th percentile defines the duration of time below which 95 percent of all sample vehicles park during the day, while the average parking duration roughly represents the 50th percentile. The small incremental difference between the average and 95th

percentile parking durations is typical of commuter parking facilities where most of the transit riders who park at the station pay their parking expenses on an annual, monthly, or daily basis (i.e., there is no difference in cost on a daily basis between short-term and long-term parking). The 95th percentile value represents a reasonable estimate of the maximum parking duration at this station for regular commuters.

Figure 2-33: Chatham Train Station Parking Accumulation Profiles

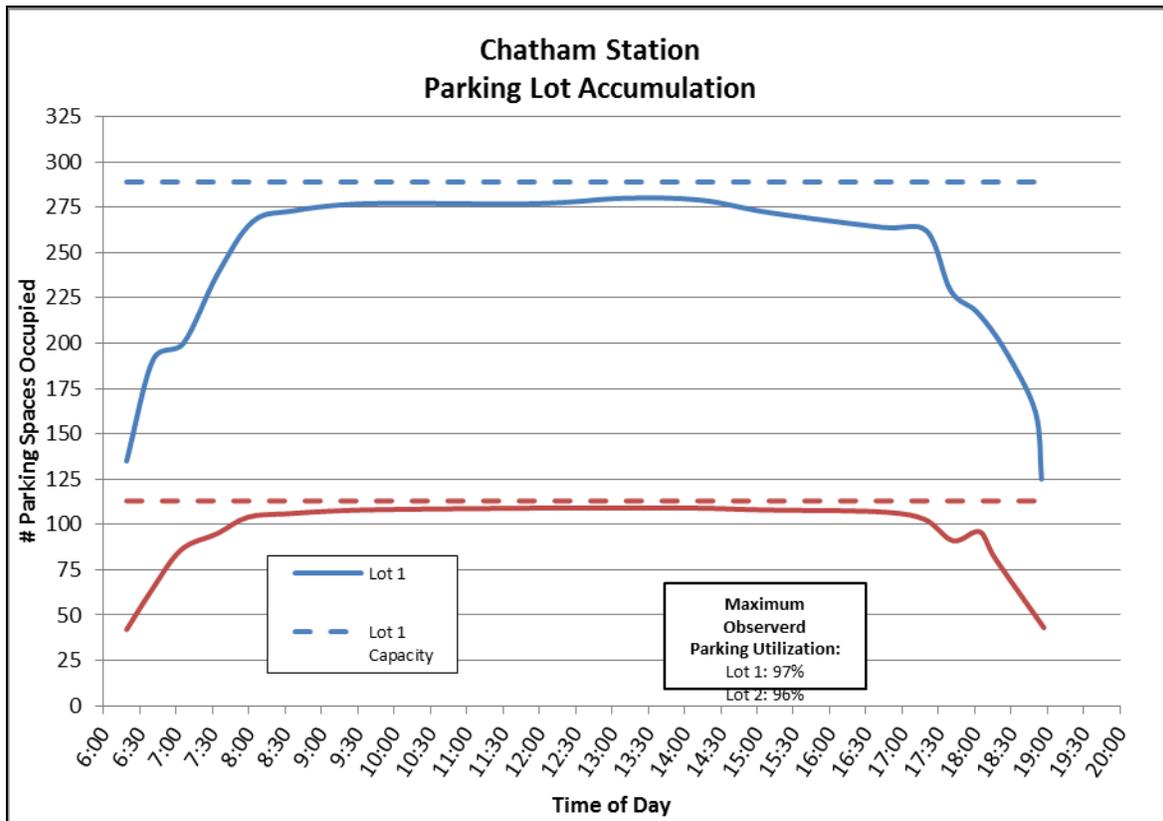


Table 2-17: Chatham Station Parking Duration by Lot (hh:mm)

Lot #	Parking Type	Minimum Duration	Average Duration	95 th Percentile Duration
1	Daily	11:44	12:10	12:23
	Permit	9:34	11:36	12:21
2	Daily	10:31	11:57	12:19
	Permit	10:25	11:31	12:08



2.4.2 Madison Train Station

The Madison train station has three parking lots that serve commuters (refer to Figure 2-34), as follows:

- Lot 1: adjacent to the train station on the south side of the rail alignment
- Lot 2: across Kings Road from Lot 1; entrance at Prospect Street
- Lot 3: east of Prospect Street on Kings Road

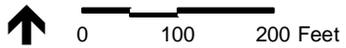
Lot 1 is a daily commuter lot with 73 parking spaces. Lot 2 has 127 spaces reserved for monthly permit customers only. Lot 3 accommodates 160 customers who either have monthly permits or pay on a day-to-day basis. It was observed that Lot 3 serves as a mixed-use parking lot for train commuters, the police and fire departments located in the adjacent public safety building, and local businesses. Vehicles for local businesses (identified with a temporary parking permit placard on their dashboards) tended to park by the eastern entrance of the lot along Kings Road (observed to occupy about 20 spaces), while vehicles for the police and fire departments tended to park by the northern entrance (observed to occupy about 10 spaces). Lot 1 is owned by NJ TRANSIT, while Lots 2 and 3 are owned by the municipality. The Madison Police Department is responsible for the oversight and enforcement of parking regulations in all three lots.

The total capacity of the three Madison train station parking lots is 401, which includes eight ADA accessible spaces in Lot 1. Table 2-18 summarizes the parking capacity of each lot along with the associated fees. Customers that pay the daily fee deposit their cash in payment boxes in the appropriate slots for the numbered spaces.

Table 2-18: Madison Station Parking Fees and Lot Capacity

Parking Lot #	Fees		Parking Spaces	
	Daily	Permit (Annual)	Daily	Permit
1	\$5.00	-	73	-
2	-	\$425.00	-	127
3	\$5.00	\$425.00	41	160

In addition to the commuter lots, there are several municipal lots located around the downtown area along Elmer Street, Cook Plaza, and Waverly Place where commuters are allowed to park. These lots are intended for use by customers and employees of local businesses, with distinctive parking regulations for each type of user (two-hour limits for customers, and municipal permits for employees). These supplemental lots were not included in the field survey.



- Daily
- Daily/Permit
- Permit



Morris County NJ 124
Transit Access Study

**Madison Train Station
Commuter Parking Lots**

FIGURE 2-34



A field survey was conducted on Tuesday, April 24, 2012 to observe the capacity utilization of each lot during the course of a typical mid-week day. To ensure consistency with a normal distribution over the course of the day, the survey was started at 6:00 AM and continued until the number of vehicles remaining in the lots was similar to the parking occupancy when the survey started.

Parking accumulation profiles for the three Madison commuter lots from 6:00 AM to 7:30 PM are shown in Figure 2-35. Lots 1 and 2 (dedicated to train commuters) were consistently close to capacity for the majority of the day, whereas the utilization of Lot 3 declined slightly after 1:00 PM. Daily spaces filled earliest, since most of them are located closest to the station and the quantity of these spaces is more limited. The peak utilization rate observed for the lots ranged from 95 percent to 100 percent. Lot 1 was not at 100 percent capacity due to vacant handicap spaces. Lot 3 shows had a high percentage of turnovers mainly due to vehicles parked for local businesses. Lots 1 and 2 had a number of spaces filled by 6:00 AM, while peak activity at Lot 3 began at around 7:00 AM. The eight ADA spaces in Lot 1 were about half full throughout the duration of the day.

A total of 19 spaces were sampled from the three lots to determine the parking duration profiles at each lot; these findings are summarized in Table 2-19. The data indicates that the average parked time duration ranges from about 9.5 to 11.5 hours, with Lot 2 affected by several outliers with relatively short parking durations of one to two hours. The 95th percentile parking duration is about 12.5 hours for all three lots. As shown in Figure 2-35, the three Madison commuter lots was at or near their capacities before 8:00 AM, and remained nearly full throughout the course of the day. The 95th percentile defines the duration of time below which 95 percent of all sample vehicles park during the day, while the average parking duration roughly represents the 50th percentile. The parking profile at Madison Station is slightly different than Chatham; the somewhat larger gap between the average and 95th percentile parking durations indicates more short-term parking utilization at Madison than at Chatham. The 95th percentile value represents a reasonable estimate of the maximum parking duration at this station for regular commuters.

Figure 2-35: Madison Train Station Parking Accumulation Profiles

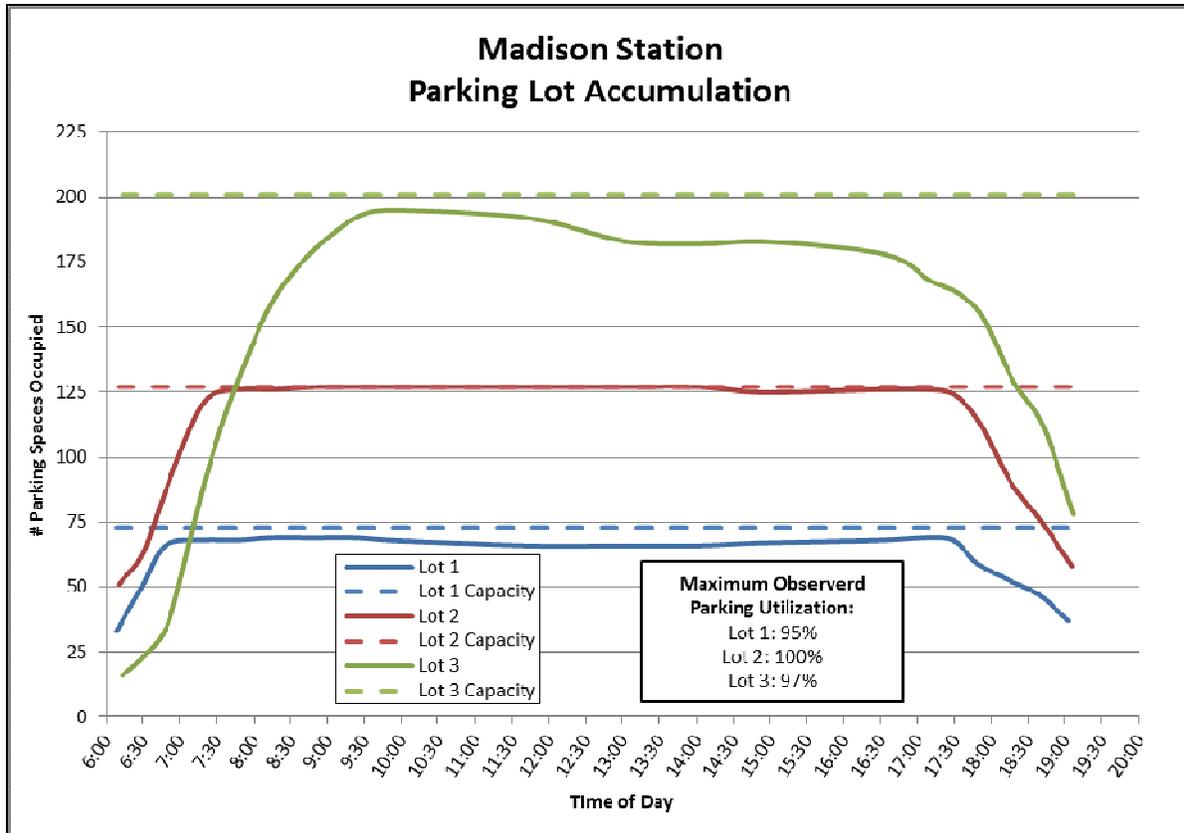


Table 2-19: Madison Station Parking Duration by Lot (hh:mm)

Lot #	Parking Type	Minimum Duration	Average Duration	95 th Percentile Duration
1	Daily	4:46	11:10	12:28
2	Permit	1:20	9:37	12:20
3	Permit	6:05	11:28	12:33

2.4.3 Convent Station

Convent Station has four parking lots that serve commuters, as shown in Figure 2-36. The lots listed here only include those parking facilities that are open to the public under the designated parking restrictions and/or permit structure for Morris Township residents and non-residents.

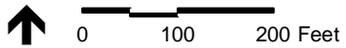


NJ 124 Corridor

Transit Access Improvement Study

Final Report

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- Daily
- Daily/Permit
- Permit



Morris County NJ 124
Transit Access Study

**Covent Train Station
Commuter Parking Lots**

FIGURE 2-36



It does not include the main Saint Thomas More Church parking lot that is used by a limited number of church parishioners who make arrangements through the church administration for permission to park in the lot.

- Lot 1: adjacent to the train station on the south side of the rail alignment
- Lot 2: angled on-street parking along Old Turnpike Road
- Lot 3: located south of the soccer field between the field and the church parking lot
- Lot 4: located west of the soccer field adjacent to the Convent Road grade crossing

All four of the parking areas are operated by Morris Township. The Township owns Lots 1, 2, and 3. Lot 4 is owned by Saint Thomas More Church and operated by the municipality through a lease or operating agreement.¹⁰ Among the three rail stations in the NJ 124 study area, Convent Station has the most complex parking regulations in terms of permit versus daily spaces, resident and non-resident users, and combinations of various users in the four lots. Spaces typically reserved for non-resident permit holders can be used by resident permit-holders if all of the resident permit-holder spaces are occupied.¹¹ Lot 1 accommodates all customers that pay on a daily (50 spaces) or monthly (190 spaces) basis, and those that require permits to park daily in specific stalls (40 spaces).¹² Lot 2 is the group of angled on-street parking spaces on Old Turnpike Road that accommodates customers who pay on a daily basis (80 spaces). Lot 3 contains 115 spaces for commuters who hold monthly permits. Lot 4 is for all customer types, including monthly (69 spaces) and daily (45 spaces). In addition, there are ten on-street parking stalls along the west (southbound) side of Convent Road just south of the Old Turnpike Road intersection; these spaces are available for commuters who pay daily.

The total capacity of the four Convent Station parking lots is 589, which includes nine ADA accessible spaces in Lot 1. Table 2-20 summarizes the parking capacity of each lot and their associated fees. The monthly parking rates differ considerably between residents and non-residents of Morris Township, with non-residents paying more than twice the annual permit fee as residents. All customers who pay the daily fee use electronic payment boxes.

¹⁰ As shown in Figure 5, the parking area delineated as Lot 4 includes about half of the paved area that also includes the adjacent church parking lot. This entire paved area is owned by St. Thomas More Church, but only about half of the area is included in Lot 4; the remainder is subject to the informal parking arrangement for parishioners described previously.

¹¹ Morris Twp. Municipal Code, §88-3.2(D)

¹² The Morris Township municipal website indicates that these spaces are primarily intended to be used by township residents who use the station infrequently and therefore would not use an annual permit.



Table 2-20: Convent Station Parking Fees and Lot Capacity

Parking Lot #	Resident Fees		Non-Resident Fees		Parking Spaces		
	Daily	Permit (Annual)	Daily	Permit (Annual)	Daily	Permit Monthly	Permit Daily
1	\$5.00	\$300.00	-	\$690.00	50	190	40
2	\$5.00	-	\$5.00	-	80	-	-
3	-	\$300.00	-	-	-	115	-
4	\$5.00	\$300.00	\$5.00	\$690.00	45	69	-

A field survey was conducted on April 25, 2012 to observe the capacity utilization of each lot during the course of a typical mid-week day. To ensure consistency with a normal distribution over the course of the day, the survey was started at 6:00 AM and continued until the number of vehicles remaining in the lots was similar to the parking occupancy when the survey started.

The parking accumulation profiles for the four Convent Station lots from 6:00 AM to 8:00 PM are shown in Figure 2-37, with detailed utilization and duration information for the 53 sample spaces shown in Table 2-21. The peak utilization observed for the lots ranged from 64 to 91 percent, with Lots 3 and 4 having the lowest and highest peak occupancy, respectively. During the survey numerous vehicles were observed entering Lots 3 and 4 around 4:00 PM. These were not rail customers but instead were parking to play on the soccer field. These vehicles parked in any open parking space, both permit and daily, and did not pay, even though regulations state that there is only free parking after 6:00 PM.

The utilization of Lot 1 averaged about 90 percent of its capacity. Based on the field observations, the remaining 10 percent of the available parking spaces were located at the northwestern corner of the parking area by Shephard Place, between the one-way exit driveways. The nine ADA spaces in Lot 1 were about half full during the course of the day.

As indicated in Table 2-21, most vehicles at Convent Station were parked for long intervals, on the sampled typical weekday. The average parking duration ranged from about 10.5 to 12 hours, with the 95th percentile at nearly 13 hours for all four lots. There was some turnover in the daily spaces in Lots 2 and 4 during the course of the day, but even the minimum observed parking durations were more than five hours in both lots. The 95th percentile defines the duration of time below which 95 percent of all sample vehicles park during the day, while the average parking duration roughly represents the 50th percentile. The parking profile at Convent Station is similar to Chatham in that the gap between the



average and 95th percentile parking durations is relatively small. This is indicative of a commuter parking facility with little turnover during the course of the day, where most or all of the users pay their parking fees on an annual, monthly, or daily basis, and therefore pay a flat rate for parking regardless of how long their cars are parked on any given day. As with Chatham and Madison, the 95th percentile value represents a reasonable estimate of the maximum parking duration at this station for regular commuters.

Figure 2-37: Convent Train Station Parking Accumulation Profiles

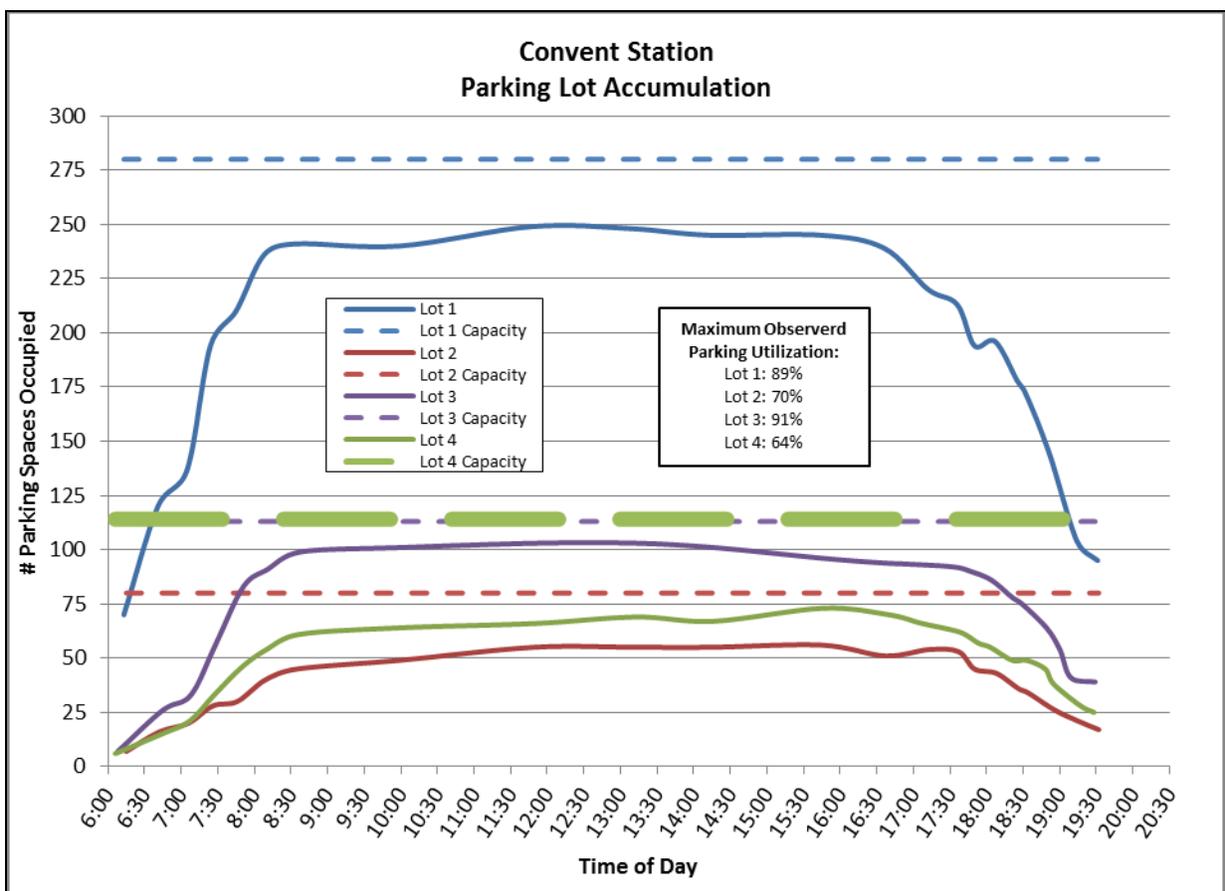




Table 2-21: Convent Station Parking Duration by Lot (hh:mm)

Lot #	Parking Type	Minimum Duration	Average Duration	95 th Percentile Duration
1	Daily	10:04	12:12	13:00
	Permit	10:09	12:08	13:03
2	Daily	7:42	11:58	12:58
3	Permit	9:10	12:01	12:53
4	Daily	5:19	10:23	12:56
	Permit	10:34	11:46	12:49

Unlike the other two stations in the study area, Convent Station has some excess parking capacity in all of these commuter lots. Anecdotal information provided by municipal officials indicates that this has been the case since the recent recession began in 2008, and Morris Township has been selling more non-resident parking permits to offset this decline in parking activity.

2.5 Bicycle/Pedestrian Infrastructure and Access

The infrastructure and information resources available to pedestrians and bicyclists regarding this corridor were reviewed with the intent of determining if improvements are required or would be effective in shifting auto users to non-motorized modes.

Pedestrian and bicyclist access to each of the three NJ TRANSIT stations was evaluated. Traditionally, it has been considered that about a quarter mile, or a five minute walk, is the longest distance most people are willing to walk to transit. However, a recent publication of the Transportation Research Board (TRB) indicates that most pedestrians are willing to walk at least a half mile to access transit stations. In the time it takes to walk a half mile (10 minutes), a bicyclist can travel more than two miles, which substantially increases the area from where potential bike riders may ride to access a station.¹³ For perspective, two miles is the approximate distance, via NJ 124 between Chatham and Madison Stations, and between Madison and Convent Stations.

The examination of existing bicycle and pedestrian access to each of the three stations in this study was performed through three primary means: review of

¹³ Kittleson & Associates, et al. *TCRP Report 153: Guidelines for Providing Access to Public Transportation Stations*. Transportation Research Board of the National Academies, Washington, D.C., 2012.



existing maps and documents, field visits, and examination of aerial photography. Existing conditions information for bicycle access is presented first for all three stations, followed by existing conditions for pedestrian access.

In addition, the information and comments provided by the general public, community organizations, and advocacy groups were invaluable in understanding the conditions and needs at and around each station. Bicycle and pedestrian related feedback was received from local organizations including TransOptions, the Morris Area Freewheelers, Friends of Madison Train Station, Marty's Reliable Cycles, Rose City Steppers, Senior Citizens Advisory Committee, Madison Senior Center Foundation, as well as from NJ TRANSIT and many different municipal departments and agencies, universities, and private individuals. Bicycle and pedestrian access issues were also attained through the web travel survey. Generally, the following bicycle and pedestrian-related feedback has been received regarding the study area:

- Many people walk or bicycle to the stations.
- There has been some reported bicycle theft at the stations.
- More bicycle lockers and bicycle racks are needed.
- Bicyclists would like the Traction Line Recreation Trail extended into Madison.
- Pedestrians are concerned about station lighting.
- Trailblazers and information signage is needed at the stations.
- Maintenance and repair of cracked and uneven sidewalks, as well as snow removal, is needed.

2.5.1 Bicycle Access

The existing conditions for bicycle access vary greatly throughout the entire corridor study area. The Borough of Madison, with an adopted bicycle plan, has implemented several bicycle routes. Within Chatham Borough, there are no designated bicycle routes except for NJ 124. Near Convent Station, the Traction Line Recreation Trail is a substantial amenity, but it is primarily a recreational trail and not connected to other bicycle or pedestrian routes. The trail extends from Morristown's Washington Headquarters to Convent Station, Academy College and Convent of St. Elizabeth, Fairleigh Dickenson University, and to Danforth Road in Madison. It does not currently connect to the center of Madison. Finally, NJ 124, although designated on maps as a bicycling facility, has intermittent signage and bicycle stencil markings.

TransOptions, a transportation-oriented non-profit organization that is one of the eight Transportation Management Associations (TMAs) in New Jersey, provides many bicycling related programs in northwestern New Jersey to improve mobility, the environment, and overall quality of life. They support biking



through a variety of programs including the Bike to Work program that includes Bike Right® Commute Route Planning where TransOptions staff work with individuals to plan the best route for that individual as well as tips on bicycle commuting, among other items. TransOptions also manages the bicycle locker rental program for the lockers located at the study area train stations, which is described in more detail below. More information is available at <http://www.transoptions.org/?p=bike-to-work>.

The primary source for information about bicycling facilities in this study area is the Morris County Bicycle & Pedestrian User Guide, 2nd Edition, which was published in 2004. This map shows existing and proposed bicycle and trail routes, however it needs to be updated to reflect current conditions. Nevertheless, this is the most complete map published for bicyclists and pedestrians in this area and the overall map provides a great deal of information about bicycle and pedestrian amenities. The full map can be found on the Morris County Division of Transportation website:

<http://www.morrisdot.org/bikeped/bikeped-general.asp>. The Morris County map uses designations for bicycle and pedestrian facilities that are atypical from other maps of this kind. Typically, maps show the type of bicycle facility and distinguish between a striped bicycle lane or only signage without a designated lane. The Morris County map groups these, which may be confusing for bicyclists. For example, one description for “Bicycle Lanes” states that the lane may be “designated by striping, pavement markings, and/ or signage for bicycle use only.” This description indicates the route may be signed only, which would not provide a lane at all. Similarly, the “Shared Roadways” designation states these are “roads without designated bicycle lanes, sidewalks or paths...but which are utilized for bicycle and pedestrian activity.” Typically, a shared roadway would indicate the use of signage to alert bicyclists and drivers that this is a bicycle route. However, this description is unclear regarding whether these routes are signed, or if they are merely appropriate for bicycle use. Finally, the description of “Multi-use Paths or Trails” describes “trails as not paved and paths as paved,” however; the Traction Line Recreation Trail is paved.

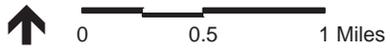
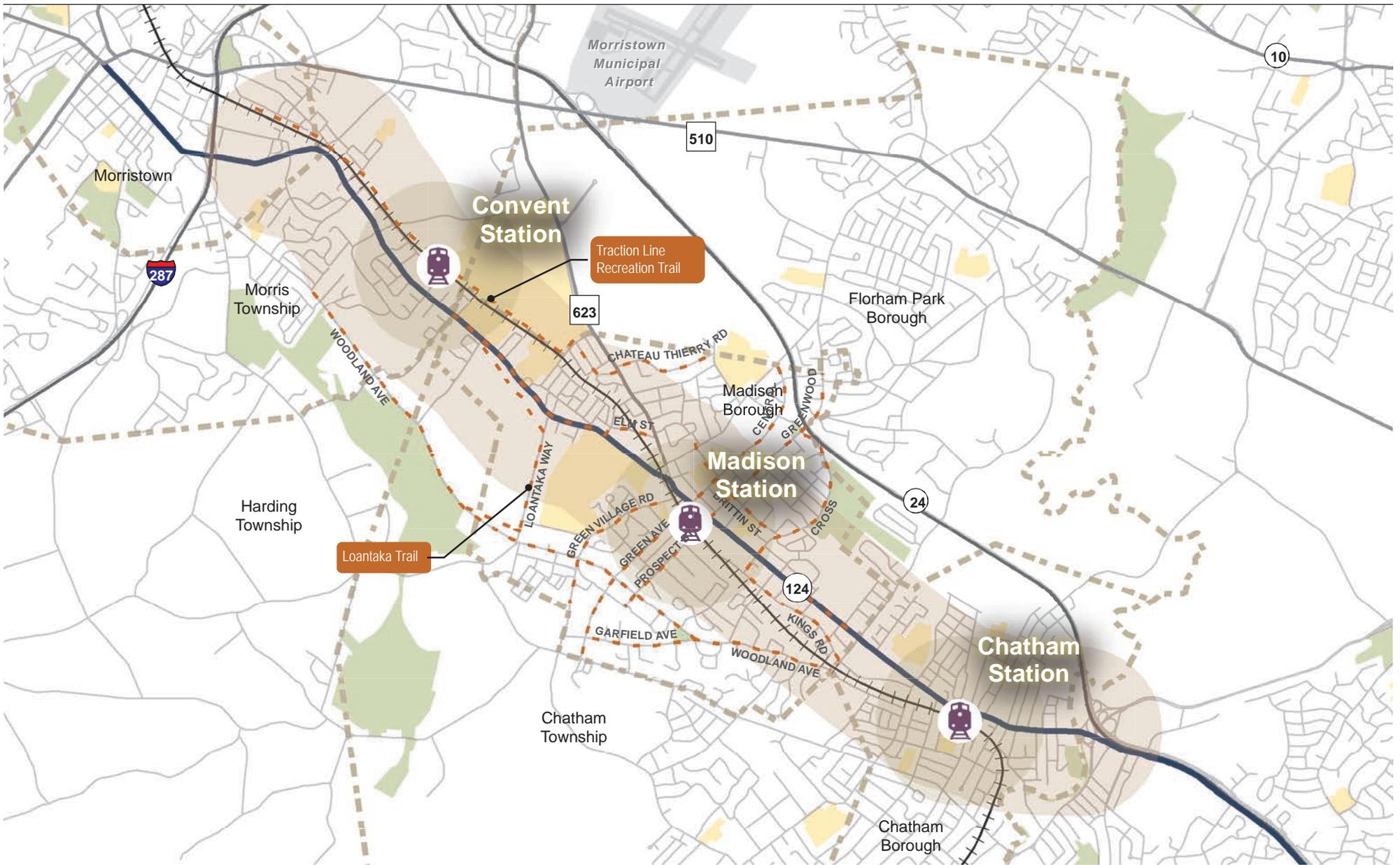
The following map, Figure 2-38 was created to show the bicycle facilities that currently exist within the study area. Most are within the borders of Madison Borough. Similar maps were created for each station area, showing the location of the routes within close proximity to the railroad station.



NJ 124 Corridor Transit Access Improvement Study

Final Report

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-  Town Line
-  1/2 Mile Radius
-  School, College or University
-  Railroad Line
-  Study Area
-  Parks
-  Train Station
-  Airports
-  Bicycle Paths



Morris County NJ 124
Transit Access Study

Bicycle Network In Study Area

FIGURE 2-38



The following provides information on bicycle racks and lockers and bicycle facilities within a ½ mile radius of the three station areas. Additional detail on specific crash locations involving bicyclists are discussed in the safety section of this report.

2.5.1.1 Chatham Station

At Chatham Station there are 22 bicycle racks which accommodate 44 bicycles and 16 single-bicycle lockers. The bicycle racks are located along the sides of the train station under the roof overhang (Figure 2-39), which provides some protection from the elements. During a site visit to the station on February 29, 2012, there were 17 bicycles and three scooters parked at the bicycle racks. In the summer, on July 30, 2012, there were 21 bicycles and five scooters parked at the racks.

The bicycle lockers are located on the inbound side of the station (Figure 2-40). According to TransOptions, as of January 2012, 10 of the 16 lockers were rented. Fees for lockers were the same as at Chatham and Convent Stations.

- Six Month Lease: Rental fee of \$45, plus key deposit of \$25 for a total of \$70
- One Year Lease: Rental fee of \$90, plus key deposit of \$25 for a total of \$115

The comments received from stakeholders and the public included requests for additional bicycles racks and lockers, suggesting that usage of these facilities in warm weather periods is higher than observed in February. It was also reported that bicycle theft is minimal.

Figure 2-39: Bicycle Racks at Chatham Station



Figure 2-40: Bicycle Lockers at Chatham Station





Figure 2-41 shows a one-half mile radius around the Chatham Station, and illustrates in green the location of nearby bicycle routes. It is notable that all bicycle routes to the west are terminated at the border of Chatham Borough.

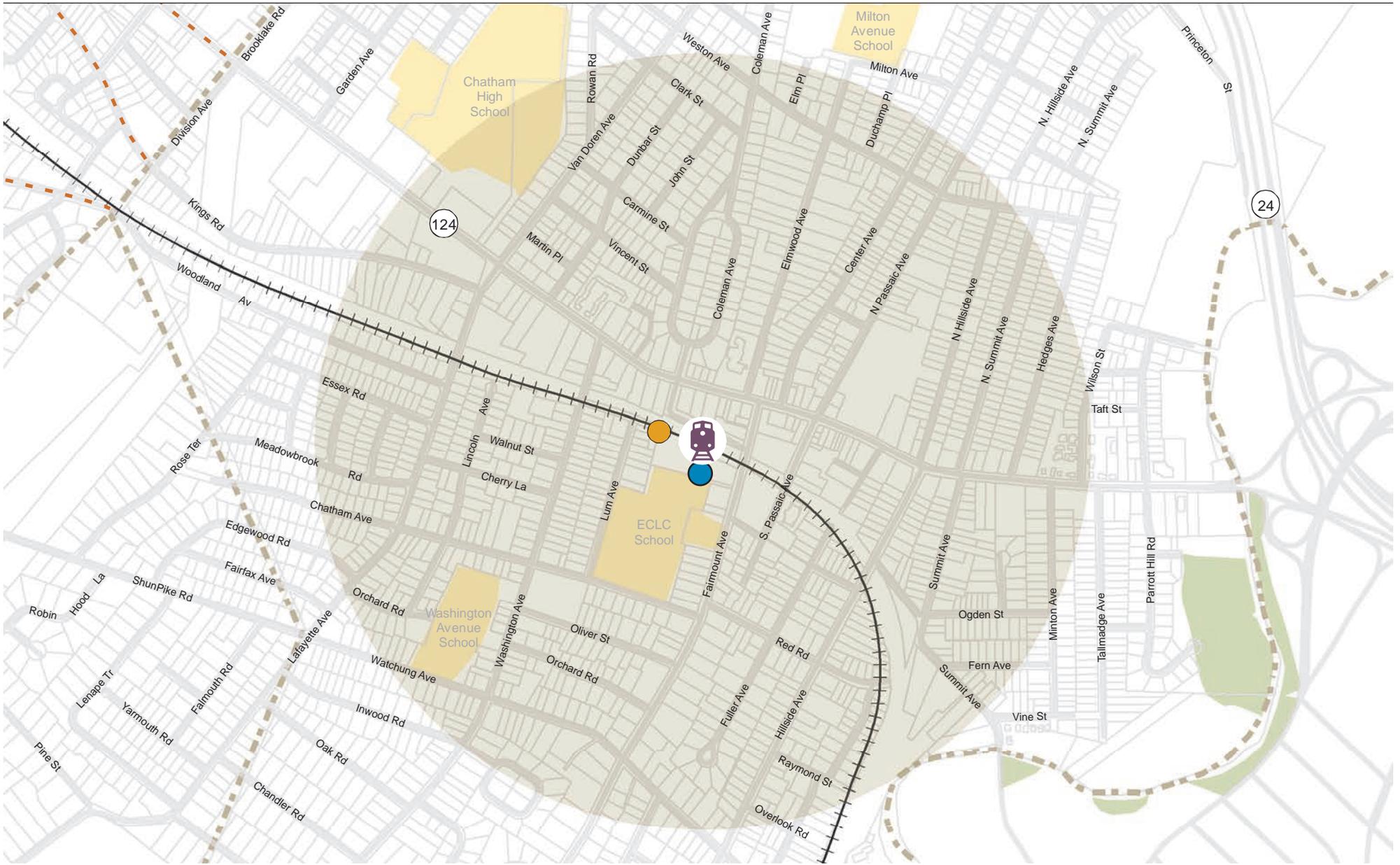
Within Chatham Borough there are no signs or markings for any bicycle routes. However, there is some signage on the border of Chatham Borough and Madison (see Figure 2-42). The *Morris County Bicycle & Pedestrian User Guide* from 2004 shows two roadways, Fairmount (CR 638) and Watchung (CR 646) Avenues, as shared bicycle/ vehicle facilities, and identifies NJ 124 as a bicycle route. However, no signage to this effect was observed along these roads. Fairmount Avenue is the primary access roadway to Chatham Station and NJ 124 has shoulders outside of the downtown area that are generally wide enough to accommodate bicyclists.

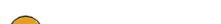
In March 2012, Chatham Borough adopted A Complete Streets Policy Plan: Final Report: An Amendment to the Chatham Borough Circulation Element/ Master Plan. Chatham's policy states:

“The New Jersey Department of Transportation's (NJDOT) Complete Streets Policy, which served as a guide for the Borough of Chatham, defines a complete street “as a means to provide safe access for all users by designing and operating a comprehensive, integrated, connected multi-modal network of transportation options”. (Chatham Borough, A Complete Streets Policy Plan, 2012, p.4)

The document does not provide a plan of bicycle facilities, but recommends the consideration of adding bicycle facilities as roadways are improved or reconstructed. It also sets the priority and intention of Chatham Borough to implement future bicycle and pedestrian amenities.

Additional comments from stakeholders included a request for improved bicycle and pedestrian access to the station to encourage those who live nearby to relinquish their parking permits.



-  Town Line
-  1/2 Mile Radius
-  Bicycle Paths
-  Railroad Line
-  School, College or University
-  Bicycle Racks
-  Train Station
-  Parks
-  Bicycle Lockers



Morris County NJ 124
Transit Access Study

Chatham Station Bicycle Access

FIGURE 2-41

Figure 2-42: Share the Road Signage on Westbound NJ 124 at Division Avenue/Brooklake Road



2.5.1.2 Madison Station

At Madison Station there are 31 bicycle racks which accommodate 62 bicycles and six single bicycle lockers. The bicycle racks under the elevated train tracks and the station underpass are well situated in avoiding inclement weather. All 31 bicycle racks are located in the following locations:

- Inside the underpass tunnel under the station building (three racks/ capacity for six bicycles).
- On both sides of Green Avenue between Kings Road and Lincoln Place (north of train station – 22 racks/ capacity for 44 bicycles). Shown in Figure 2-43.
- On Prospect Street between Kings Road and Lincoln Place (south of train station – six racks/ capacity for 12 bicycles).

During a site visit to the station on Wednesday, February 29, 2012, of the bicycle parking on Green Avenue, half of the 44 bicycle parking spaces were filled. On Monday, July 30, 2012, there were 29 bicycles parked at the station.

Figure 2-43: Bicycle Parking on Green Avenue at Madison Station



The bicycle lockers are not located at the station, but in the Kings Road parking lot south of Prospect Street (Figure 2-44). According to TransOptions, as of January 2012, three of the six lockers were rented (additional information received in June 2012 shows five of the six lockers rented). Fees for lockers are the same as at Chatham Station. The remote location may discourage use and may be the reason why Madison Station, which is much busier than Chatham Station, has 10 fewer lockers.

Figure 2-44: Remote Madison Station Bicycle Lockers in the King Street Lot



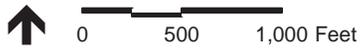
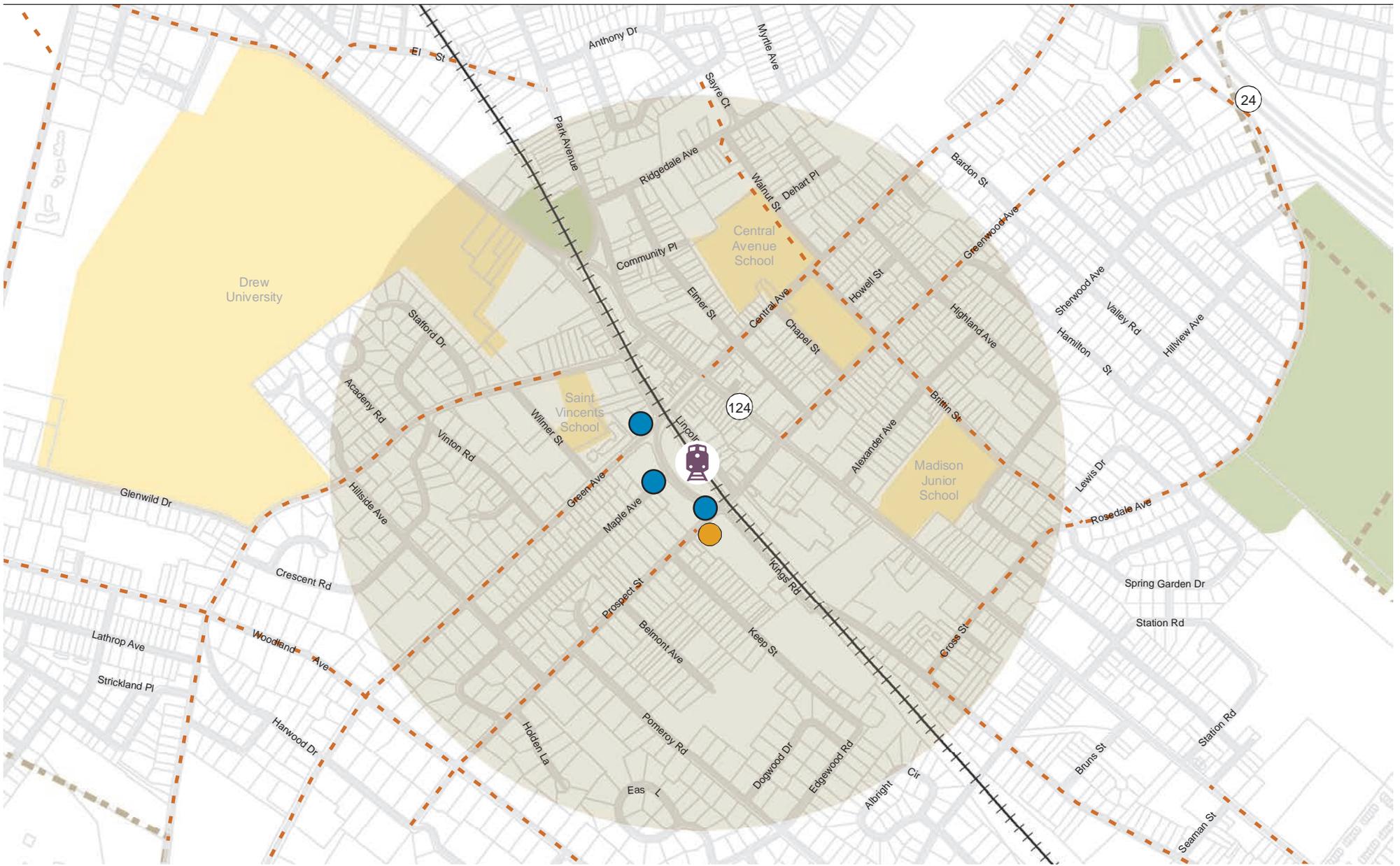


The Borough of Madison has a relatively robust bicycle facility network as compared to the two other station locations. Madison completed a bicycle route plan in 2005 and bicycle facilities have been implemented on many of the streets that are proximate to the Madison Station. Figure 2-45 shows the streets around Madison Station with bicycle route signage or bicycle lanes with “Share the Road” signage. These include the following streets:

- NJ 124/ Main Street outside of the downtown
- Green Avenue/ Central Avenue
- Prospect Street/ Greenwood Avenue
- Rosedale Avenue
- Woodland Road
- Brittin Street
- Kings Road
- Garfield Avenue
- Green Village Road
- Elm Street

The condition of the bicycle facilities and implementation vary. Signage and bicycle stencil markings are generally infrequent. The type of signage varies from a standard bicycle route sign to “Share the Road” signage. The quality of markings also varies significantly.

The Woodland Avenue bicycle lanes appear to be relatively new and provide an example of easy-to-see bicycle stencil street markings (Figure 2-46). It is important that drivers can see the markings so they are aware this is a bicycle route.



-  Town Line
-  Railroad Line
-  Train Station
-  1/2 Mile Radius
-  School, College or University
-  Parks
-  Bicycle Route or Facility
-  Racks
-  Lockers



Morris County NJ 124
Transit Access Study

Madison Station Bicycle Access

FIGURE 2-45

Figure 2-46: Visible Bicycle Stencil and Sign on Westbound Woodland Avenue at Green Avenue



Figure 2-47 shows a bicycle stencil on Rosedale Avenue. From the driver's perspective, the stencil is nearly invisible; the driver is not aware this is a bicycle route.

Figure 2-47: Southbound Rosedale Avenue Bicycle Marking is Barely Visible



The photo below (Figure 2-48) shows a Share the Road sign and a bicycle stencil, but the stencil is not visible until the car is next to the sign, and the sign is obscured by trees.

Figure 2-48: Southbound Rosedale Avenue Bicycle Facility



This example (Figure 2-49) from northbound Greenwood Avenue illustrates poor placement of a Share the Road sign immediately behind a telephone pole. It is not visible to the drivers that it intends to inform. Bicyclists share the road with vehicles, but also contend with curbside parking as shown in the photo.

Figure 2-49: Poor Placement of Share the Road Sign on Northbound Greenwood Avenue



Despite these examples of improvements that are needed within Madison Borough, the municipality’s efforts have been beneficial in encouraging bicycle use. Figure 2-50 highlights bicycle usage on Green Avenue. A mother and child riding together in an on-street bicycle lane (as faint as the bicycle stencil may be), is an excellent indicator this bicycle lane is perceived as useful and safe by area residents.

Figure 2-50: Mother and Child Bike Riding on Northbound Green Avenue



There is sparse bicycle signage or markings to guide bicyclists to or from the Madison Station. Presumably due to traffic congestion, the Bicycle Route Plan does not address the station area at all. As bicycle routes to the north and south of NJ 124 approach Madison Station, they end. On northbound Prospect Street and Green Village Road, it appears that bicycle routes end at green bicycle route signs directing riders toward “downtown”. In most cases, the bicycle routes end only a short block from Kings Road for routes south of the station, and a short block from NJ 124 for routes north of the station. Adding bicycle signage or designated bicycle routes to the station area would be beneficial.

Finally, along NJ 124 there is a great deal of inconsistency in bicycle markings and signage. Starting at the western edge of Madison, near Fairleigh Dickinson University at about Kitchell Road, the shoulders of NJ 124 are marked with bicycle stencils and Share the Road signage. This continues until just west of downtown Madison, when all stencils and signs abruptly cease, with no wayfinding or warning. East of the downtown, there are no bicycle markings or

signage. However, at Seaman Avenue, the bicycle stencils and signage resume. Continuing east on NJ 124, the shoulder bicycle markings and signage continue until reaching downtown Chatham, where they end at about Washington Avenue and NJ 124/ Main Street.

Additional comments received during the public outreach efforts regarding cycling in and around Madison Station include requests to extend the Traction Line Recreation Trail into Madison to connect with the Madison Station, make Park Avenue a complete street, and improve bicycle access from Drew University to Madison Station.

2.5.1.3 Convent Station

At Convent Station there are five bicycle racks with parking for 10 bicycles, as well as 10 single bicycle lockers. These facilities are located northwest of the station building, adjacent to the platform (Figure 2-51). According to TransOptions, as of January 2012 all 10 lockers were rented, and there were four people on a waiting list. During a site visit to the station on Wednesday, February 29, 2012, two bicycles were observed parked at the rack. On Monday, July 30, 2012, four bicycles were parked at the rack. Fees for lockers at Convent Station are the same as at Chatham and Madison Stations.

Figure 2-51: Bicycle Parking & Lockers at Convent Station



Figure 2-52 illustrates the bicycle routes near Convent Station.



NJ 124 Corridor

Transit Access Improvement Study

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-  Town Line
-  Railroad Line
-  Train Station
-  1/2 Mile Radius
-  School, College or University
-  Parks
-  Bicycle Route or Facility
-  Racks
-  Lockers



Morris County NJ 124
Transit Access Study

Convent Station Bicycle Access

FIGURE 2-52

One multi-use (bicycle and pedestrian) paved trail is located near Convent Station. The Traction Line Recreation Trail connects directly to the Convent Station and abuts the adjacent Liberty Greens townhouse residential development, and is located parallel to and north of the tracks (Figure 2-53). This 3.2 mile long path stretches from Morristown (Morris Avenue just east of I-287) to the intersection of Danforth Road and Dreyfuss Road within Madison. The trail covers about half of the distance between Convent and Madison train stations. An extension of the Traction Line Recreation Trail from Danforth Road to Elm Street (about 0.6 mile) in Madison is currently being planned by the Morris County Parks Commission.¹⁴ This extension would not reach the Madison Station, but would close a portion of the gap. Comments received from stakeholders include the need to eliminate or ease the stairway along the Traction Line at Normandy Parkway, northwest of Convent Station, because it requires riders to dismount and carry their bicycles. The addition of a channel (see Figure 5-21 in Chapter 5) that runs along the stairway allowing a bicyclist to push the bicycle up and down the stairs was suggested.

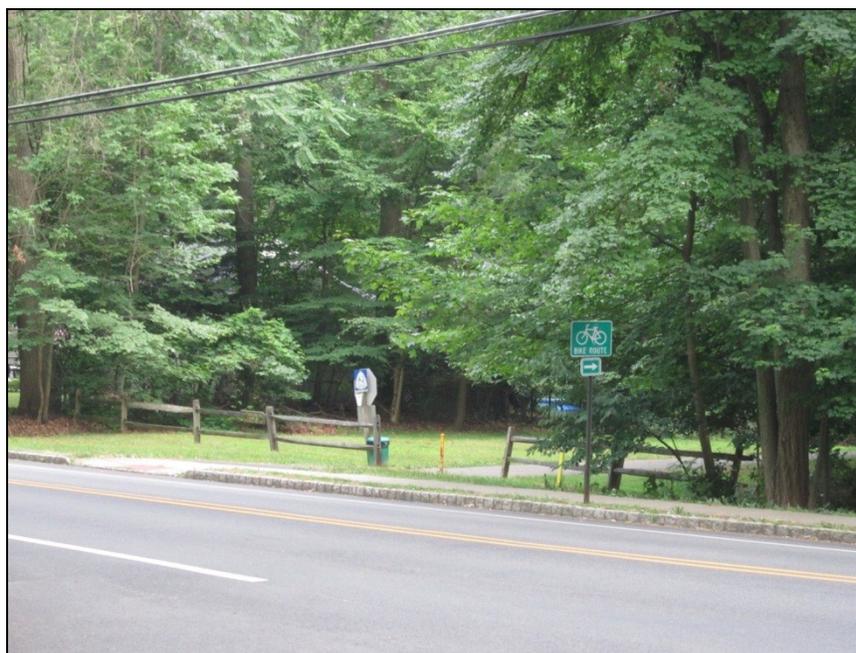
Figure 2-53: Traction Line Trail at Convent Road Grade Crossing at Convent Station



¹⁴ The NJ.com news website reports that the Madison Borough Council rejected Morris County’s request for support to submit a state grant application for the extension of the Traction Line. Citing safety and security concerns, the Borough Council further passed a resolution opposing the plan.

There is only one signed bicycle route near Convent Station. Convent Road, between the Traction Line Trail and NJ 124, has bicycle route signs posted. Presumably, the intent is to connect the Traction Line Trail with the bicycle route along NJ 124. This segment of NJ 124 is shown on the Morris County map as a bicycle route, however, there are no signs or markings/ bicycle stencils on NJ 124 near Convent Road. The map also shows a potential route along Fox Hollow Road that would connect from the station south to the Loantaka Brook Reservation, where a number of trails currently exist (entrance shown in Figure 2-54). Fox Hollow Road, however, is a steep and narrow two-lane road that would need bicycle improvements, such as the addition of shoulders, before it's designated as a bicycle route.

Figure 2-54: Loantaka Brook Reservation Trail Head at Woodland Avenue and Canfield Way



Woodland Avenue, which connects to the entrance to the Loantaka Brook Reservation, is a designated bicycle facility, with signs and occasional bicycle stencils. The Woodland Avenue bicycle facility connects to the east through the Borough of Madison and connects to routes within the Madison Station area. Refer back to Figure 2-38 for the Woodland Avenue connection through these communities. Additional bicycle facility markings and signage would be helpful to the cyclist and driver. In addition, located along the south side of NJ 124 between Convent Station and Madison Station, is a paved multi-use trail. The most westerly trailhead is located at the intersection of NJ 124 and Treadwell Avenue, a little over a half mile southeast of the Convent Station. This trail loops

around Giralda Farms, but no indication of a formal name was found. This trail heads southeast, paralleling NJ 124 (Figure 2-55), then south along Loantaka Way toward the Loantaka Brook Reservation. This path could connect residential neighborhoods to NJ 124 and the Convent and Madison Stations. The trail is located within the Borough of Madison; however it is more proximate to the Convent Station.

Figure 2-55: Multi-Use Trail along the South Side of NJ 124



2.5.1.4 All Stations

On June 11, 2012, NJ TRANSIT announced an expansion of the Bike Aboard Policy that allows bicycle boarding at all train stations. The expanded policy became effective July 1, 2012. This policy allows collapsible bicycles on all NJ TRANSIT trains at all times. Standard frame bicycles are also permitted at most times, however, there are several exceptions. Times when bicycles are not allowed include the following:

- Weekdays on trains inbound toward Hoboken, Newark, or New York from 6 AM to 10 AM, and on outbound trains that originate in those locations between 4 PM and 8 PM.
- Weekends on trains inbound toward New York between 9 AM and 12 PM, and on outbound trains from New York from 5 PM to 8 PM.
- Major holidays, and the business day before the holidays.
- Substitute bus service during rail service outages.



2.5.2 Pedestrian Access

The pedestrian conditions for transit access improvements for the three stations along NJ 124 were examined for a distance of a one-half mile radius from the station. This is the typical distance that many potential transit riders are willing to walk to access transit, however, some may be willing to walk further with appropriate connections. A detailed inventory of sidewalks, crosswalks, and pedestrian signals was prepared for each station area and are shown on maps. The following sections present a discussion of each station area, along with the pedestrian facility inventory maps. Additional detail on specific crash locations involving pedestrians are discussed in the safety chapter of this report.

2.5.2.1 Chatham Station

The area around the Chatham Station is a highly walkable, pleasant environment. Figure 2-56 shows the pedestrian amenities located within a half mile of Chatham Station. There are short block lengths which create easy connectivity from and between each major street. As shown in the figure, most streets have sidewalks, and those that do not are residential streets with low traffic volumes that are consistent with the lack of sidewalks. Chatham Borough has employed a variety of pedestrian safety measures such as flashing pedestrian-activated signals, the Safe Routes to School program, and crosswalks at all key intersections. Many of these are visible in the following photos.

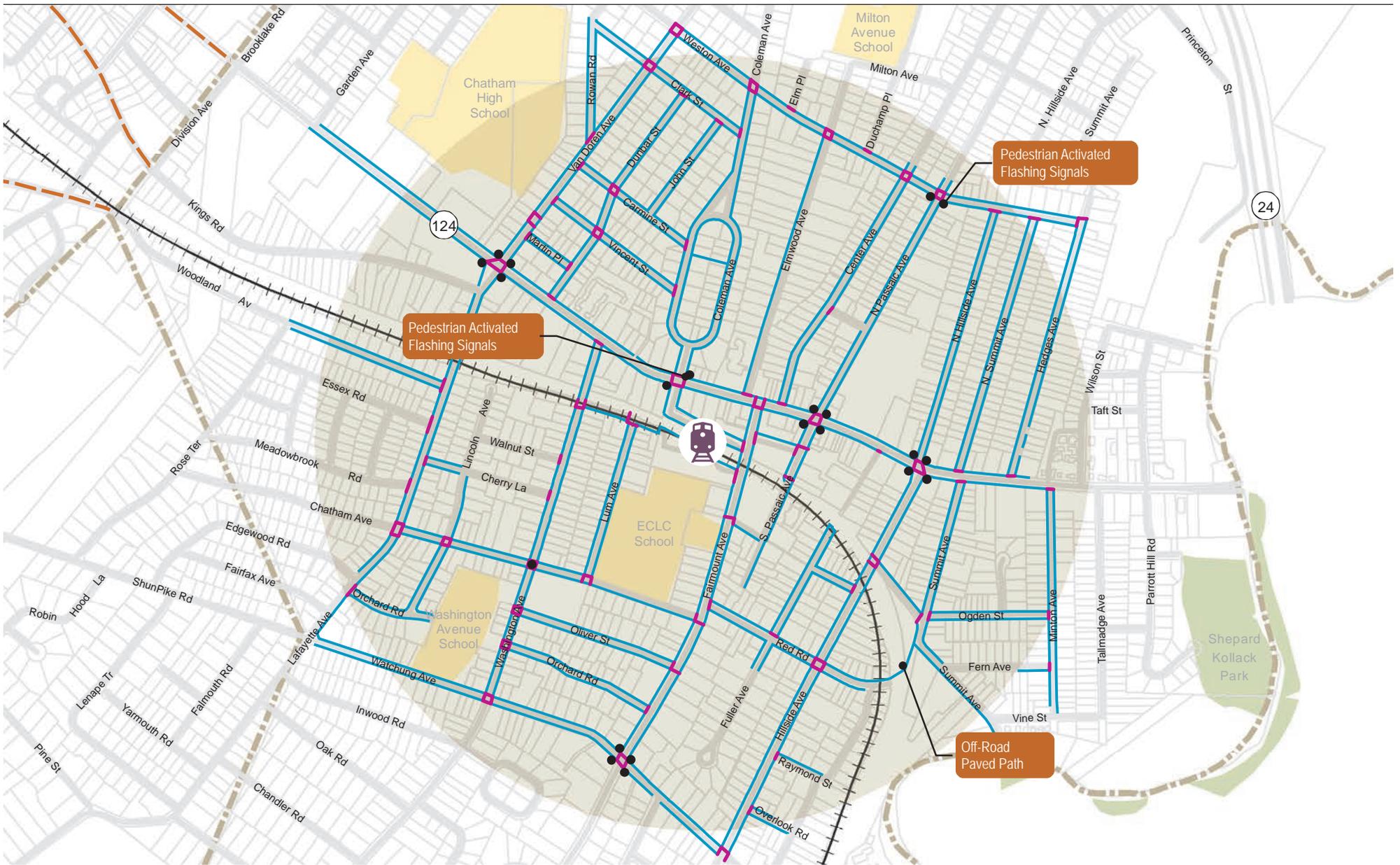
Some streets create ideal pedestrian environments, as shown in the pictures below. Coleman Avenue (Figure 2-57) is an example of a wider street with sidewalks and trees that makes for a welcoming walking environment. Essex Road (Figure 2-58), with a basketball hoop on the shoulder, does not provide sidewalks but is generally safe for play and walking due to low traffic. Nevertheless, it is important to note that many neighborhood streets are not lit, so some may find walking during early morning and evening hours difficult.



NJ 124 Corridor Transit Access Improvement Study

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-  Town Line
-  Railroad Line
-  Train Station
-  1/2 Mile Radius
-  School, College or University
-  Parks
-  Bicycle Paths
-  Crosswalks
-  Sidewalks
-  Pedestrian Signals



Morris County NJ 124
Transit Access Study

Chatham Station Pedestrian Amenities

FIGURE 2-56

Figure 2-57: Ideal Pedestrian Environment-Southbound Coleman Avenue at Weston Avenue



Figure 2-58: Westbound Essex Road, with Basketball Hoop



Although Chatham Station is generally pedestrian accessible (Figure 2-59), with sidewalks connecting to it from all sides, there are one or two exceptions. One gap in this connection is the lack of crosswalks at the intersection of NJ 124/ Main Street and Washington Avenue. This intersection provides residents of neighborhoods to the northwest of NJ 124 access to the station. The intersection of Coleman Avenue and NJ 124 is a heavy crossing point to access the station, and pedestrian activated flashing signals (Figure 2-60) have been installed to alert motorists of pedestrian crossings. Comments from stakeholders noted that there are many pedestrians that cross here in the evenings and that even the flashing signal can seem inadequate. The police department and NJDOT are evaluating if this location may meet a traffic signal warrant, which could improve pedestrian crossing safety¹⁵.

Figure 2-59: Sidewalk to Chatham Station along Front Street



¹⁵ [Sidewalk ordinances in Chatham Borough to be consolidated](http://www.nj.com/independentpress/index.ssf/2013/06/sidewalk_ordinances_in_chatham.html#incart_river)
http://www.nj.com/independentpress/index.ssf/2013/06/sidewalk_ordinances_in_chatham.html#incart_river

“Collander also let the council know that the state will install a new crosswalk light at the Main Street and Coleman Avenue intersection this summer. The old crosswalk light will then be placed at Fairmount Avenue railroad crosswalk to promote pedestrian safety.”

Figure 2-60: Flashing Pedestrian Activated Signal on Westbound NJ 124 at Coleman Avenue in Chatham

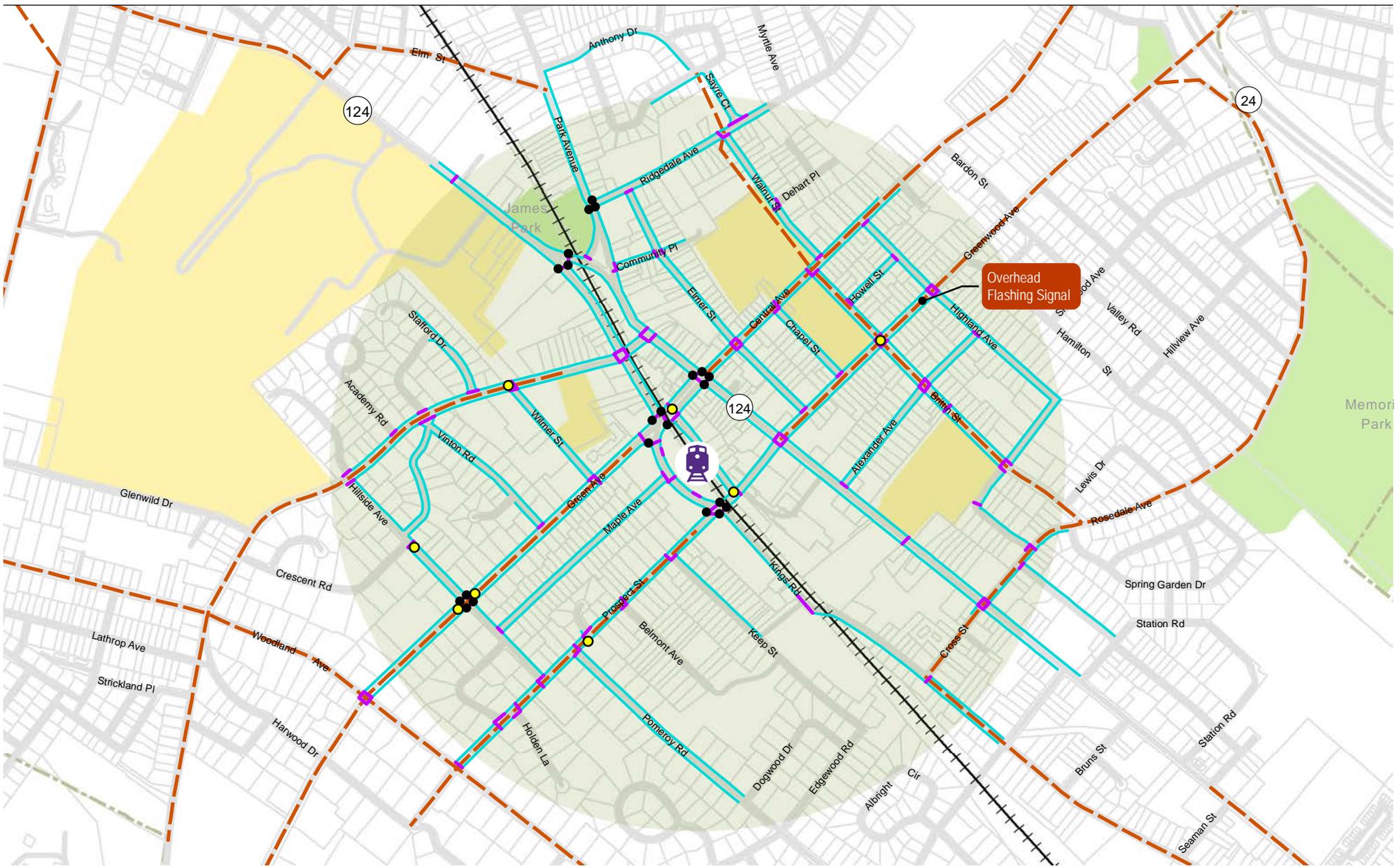


Another gap in pedestrian connectivity is the distance between the station and the residential neighborhood southwest of the station. Creating a direct connection for walkers and bicyclists through the school fields located directly south of the station could greatly reduce the time it takes to walk to and from the station.

Additional comments received include requests for lighted crosswalks under the railroad trestle.

2.5.2.2 Madison Station

The ½ mile area surrounding Madison Station is very pedestrian friendly. As shown in the Pedestrian Amenities map in Figure 2-61, almost all roadways in the area have sidewalks, with numerous crosswalks and pedestrian signals. Madison also employs a variety of traffic calming techniques to slow traffic and improve pedestrian safety. The photo in Figure 2-62 shows the use of a pedestrian bollard located in the middle of the street to alert motorists to possible pedestrians. The “Slow” marking with the chevrons also reinforces the pedestrian crossing.



- | | | | | | |
|--|---------------|--|-------------------------------|--|--------------------|
| | Town Line | | 1/2 Mile Radius | | Sidewalks |
| | Railroad Line | | School, College or University | | Crosswalks |
| | Train Station | | Parks | | Pedestrian Signal |
| | | | Bicycle Route or Facility | | Pedestrian Bollard |



Morris County NJ 124
Transit Access Study

Madison Station Pedestrian Amenities

FIGURE 2-61

Figure 2-62: Traffic Calming for Pedestrian Crossing on Green Avenue Northbound at Hillside Avenue



On Greenwood Avenue, near the Central Avenue School athletic fields and a playground, the crosswalks are illuminated by an overhead flashing signal, a bright yellow “Safe Routes to School” sign, a “stop for a pedestrian in the crosswalk” signage, and a “Slow” markings with chevrons (Figure 2-63).

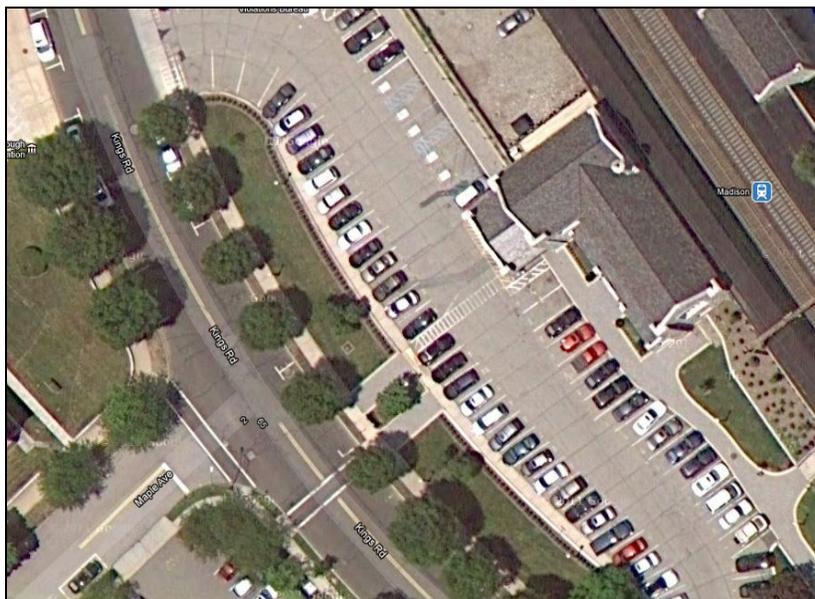
Figure 2-63: Pedestrian Crossing Safety Items at Greenwood Avenue Northbound at Brittin Street



Pedestrian access to Madison Station is generally good, however, as in the bicycle access section, more careful attention to planning connections could improve it.

For example, as shown in Figure 2-64, although there is a crosswalk from Maple Avenue across Kings Road to the station, this crosswalk leads to a pedestrian cut-through and straight into a parked car. As the aerial shows, the other pedestrian cut-through leads to a striped pedestrian path to the station. Careful planning and restriping of the parking lot can easily rectify this situation.

Figure 2-64: Kings Road Crosswalk and Pedestrian Path



Stakeholder comments have been received about Kings Road having a narrow sidewalk to provide shade, and that the walk from the Kings Road parking lot to the station is very dark at night and early morning.

2.5.2.3 Convent Station

Of the three stations in this study area along NJ 124, Convent Station is the least accessible by pedestrians. As shown in Figure 2-65, there are few connection opportunities, and very few sidewalks. The Traction Line Recreation Trail provides a major connection opportunity. A large residential development, known as Liberty Greens, is located northeast of the trail and station, and residents can use the trail to access the station. However, there are few other residents or workers located within ½ mile of the station. Access to the rail station from the Traction Line Trail is provided along the north side of the tracks. Pedestrians and bicyclists are required to cross the tracks to access the station.

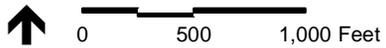
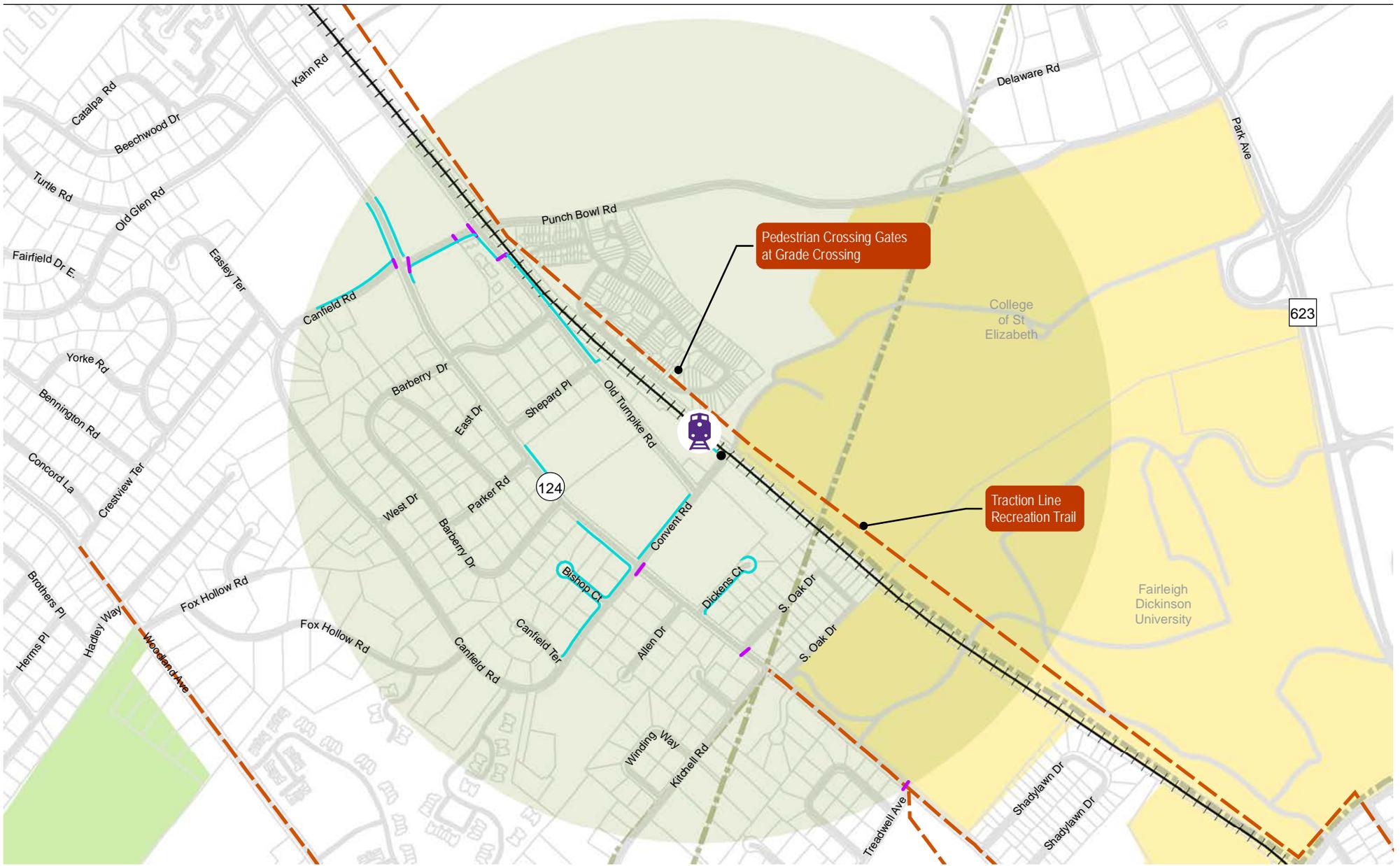


NJ 124 Corridor

Transit Access Improvement Study

Final Report

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-  Town Line
-  Railroad Line
-  Train Station
-  1/2 Mile Radius
-  School, College or University
-  Parks
-  Bicycle Route or Facility
-  Sidewalks
-  Crosswalks
-  Pedestrian Signals



Morris County NJ 124
Transit Access Study

Convent Station Pedestrian Amenities

FIGURE 2-65

There are pedestrian gates at the grade crossing (Figure 2-66) to prevent pedestrians from walking across the tracks when a train is arriving. However, pedestrians have been observed going under the pedestrian gate to access the train, and stakeholders suggested a public education effort such as Operation Lifesaver be employed.

Figure 2-66: Pedestrian Crossing Gate at Convent Station



There are generally few pedestrian amenities in the area. There are almost no sidewalks located within a half mile of the station, with the exception of around particular housing or corporate developments. In the low density residential neighborhoods south of NJ 124, sidewalks are not required. With little vehicular traffic, walking can still be safe in these neighborhoods. One exception is the sidewalk extending along Old Turnpike Road from Punch Bowl Road to the west end of the station parking lot. This sidewalk is located mostly adjacent to the rail right of way. There is a gap in the sidewalk as it crosses an unpaved driveway. Continuing the sidewalk across the driveway would enable pedestrians to connect directly to the station without being forced to walk (Figures 2-67a and 2-67b) through the parking lot to the station.

Figure 2-67a: Old Turnpike Road Sidewalk to Convent Station



Figure 2-67b: Old Turnpike Road Sidewalk to Convent Station



Old Turnpike Road near Convent Road is an unwelcoming street to pedestrians. With no sidewalk, pedestrians are required to walk behind parked cars (note the worn pedestrian path 2-67b). Public comments received suggested this roadway be improved for both pedestrians and bicyclists (Figure 2-68).

Figure 2-68: Westbound on Old Turnpike Road from Convent Road



At the intersection of NJ 124 and Convent Road/ Canfield Road there is a pedestrian crossing across NJ 124. This location, however, illustrates the lack of planning that has occurred. As shown in Figures 2-69 and 2-70, the crosswalk across NJ 124 is located on the southeast side of the intersection, whereas the sidewalk along Convent Road is located on the opposite side of the street. Although there are few walkers in the area, correction of these types of mistakes would improve pedestrian access to Convent Station.

Figure 2-69: Mismatched Crosswalk and Sidewalk at Intersection of NJ 124 and Convent Road



Figure 2-70: Crosswalk in Foreground and Sidewalk in Background at Convent Road and NJ 124



Feedback received from the public and stakeholders identified the following concerns:

- The pedestrian paths from Fairleigh Dickinson campus are not lit and make walking difficult at night.
- Additional marked crosswalks on NJ 124 are recommended.
- Old Turnpike Road should be improved for bicyclists and pedestrians.
- Frequent snow removal, as needed, on the sidewalks approaching all of the stations in the corridor is recommended.

2.6 Safety Analysis

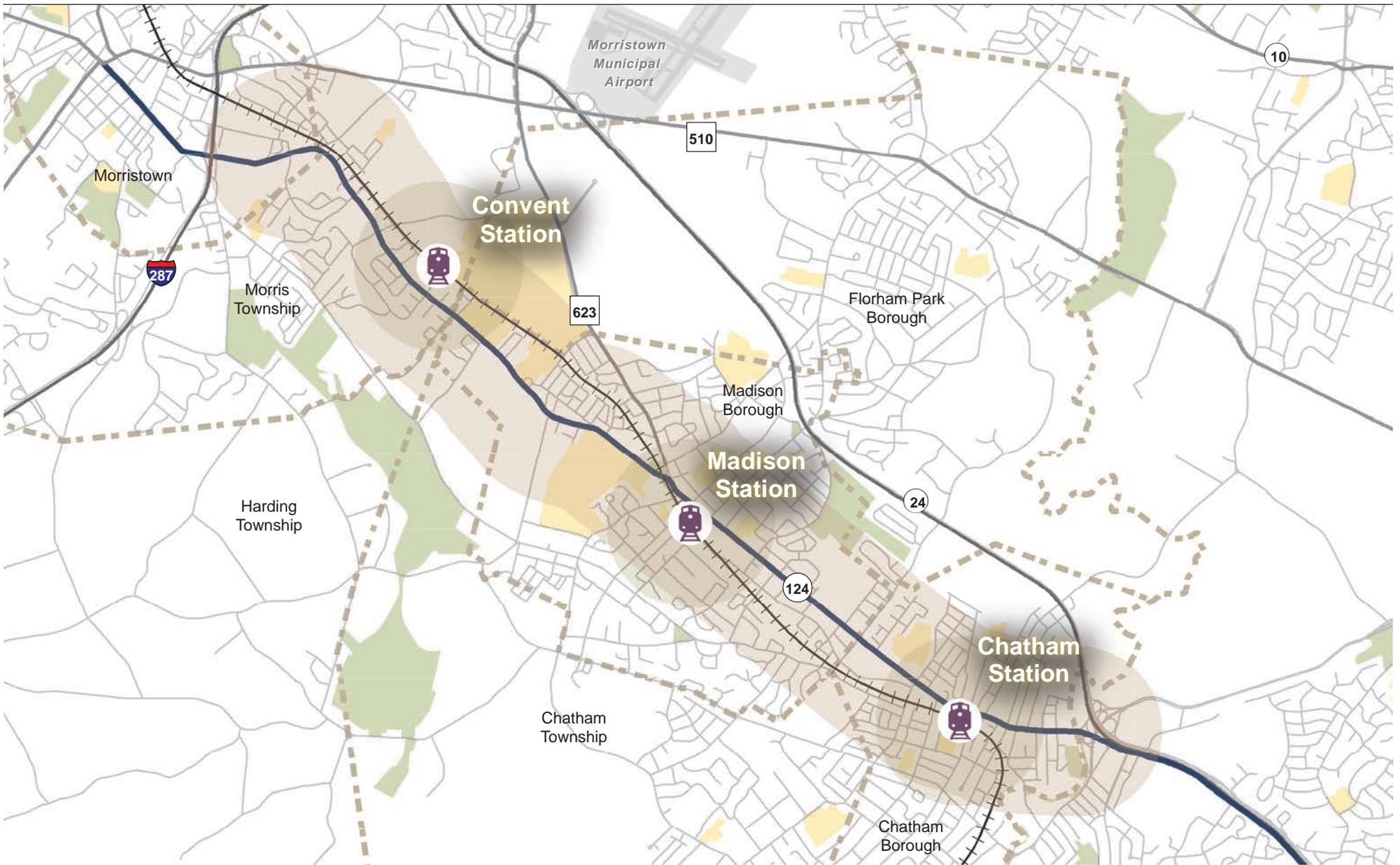
Crash analyses and field investigations were performed at Chatham, Madison, and Convent Stations and are presented below. Plan4Safety was queried for crash data over a five year period (2006-2010). Plan4Safety is a web-based data mining tool built by the Rutgers Transportation Resource Safety Center (a division of the Center for Advanced Infrastructure and Transportation) for the New Jersey Department of Transportation to assist with crash analyses. It is recommended to use three to five years of crash data to perform crash analyses. At least three years of data are needed, but five years are preferred because individual years' data is influenced by annual and seasonal variations in travel, weather, and other factors. Using three to five years of data provides average conditions and enough data to analyze trends and uncover patterns.



Crash data within a half mile of each station, along NJ 124 within the study area, and at select intersections and segments in Morris Township west of Convent Station were included as a result of stakeholder comments. The purpose of this roadway safety analysis is to determine if any safety issues exist within the study area for all modes of access to the stations, with an emphasis on pedestrian and bicycle safety.

The distance of one-half mile is generally accepted as the maximum distance from which pedestrians would typically walk to transit, so this survey area was searched for pedestrian crash locations. Bicyclists generally travel farther, so the entire Boroughs of Chatham and Madison and all of NJ 124 within the study area (extending to Convent Station) were analyzed for bicycle crash locations (See Figure 2-71: Roadway Safety Study Area Map).

The results of field investigations in these areas indicate that there are varying levels of vehicular, bicycle, and pedestrian roadway safety infrastructure, signage, and treatments along the NJ 124 corridor. However, within a half mile of each station, there is some consistency. In general, Chatham Borough has the most safety infrastructure and signage of the three municipalities in the survey area. Chatham has installed advanced pedestrian or school crosswalk warning signs at most crosswalks, and pedestrian signals at most signalized crosswalks, consistent with the Manual on Uniform Traffic Control Devices (MUTCD), although some of the signage does not conform to current standards. In Madison Borough, there are fewer adherences to the MUTCD, with many crosswalks appropriately striped, but lack pedestrian warning signs, and many signalized intersections with crosswalks are missing pedestrian signals. At several intersections in Madison, crosswalks are not striped on all legs of an intersection, forcing pedestrians to cross intersections multiple times. Both Chatham and Madison have adequate, but not complete, sidewalks and accessible pedestrian ramps connecting to striped crosswalks. West of Madison in Morris Township along NJ 124, including within the one-half mile radius around Convent Station, there are very few sidewalks and accessible pedestrian ramps (with the exception of the vicinity of I-287 and the Morristown Hospital), and most intersections do not have crosswalks. There are “Stop for Pedestrians” signs in Morris Township along NJ 124. Striped crosswalks are limited. Overall, there is some confusion over “Yield to Pedestrians” versus “Stop for Pedestrians” signage because of changes in state law. The current law requires drivers to stop for pedestrians in the crosswalks at unsignalized intersections. This signage is not necessary at signalized intersections, according to the MUTCD.



-  Town Line
-  1/2 Mile Radius
-  Airports
-  Railroad Line
-  School, College or University
-  Parks
-  Train Station



Morris County NJ 124
Transit Access Study

Roadway Safety Study Area

FIGURE 2-71



Different signage from the study area is shown in Figure 2-72. Clockwise from the top left, in Figure 2-72, are signs on northbound Fairmount Avenue at Watchung Avenue (Chatham), northbound Passaic Avenue just south of Main Street (Chatham), northbound Passaic Avenue about a block south of Main Street (Chatham), and eastbound Main Street (NJ 124) just west of Coleman Avenue (Chatham). Conversely, Madison has almost no pedestrian warning signage. It should be noted that only the signs listed below referring to “Stop for Pedestrian in the Crosswalk”, as opposed to “yield”, comply with state law. The other two signs are obsolete. Additionally, the second sign is improperly placed because it is intended for use at un-signalized crosswalks, and in this case the intersection is signalized.

The lack of consistent, standard pedestrian safety signage adjacent to Chatham Station, absence of pedestrian signals and crosswalks on all legs of NJ 124 intersections in Madison, and a void of pedestrian infrastructure near Convent Station negatively impacts pedestrian safety. The absence of bicycle infrastructure along NJ 124 is also a concern in regards to bicycle safety. Also, at signalized intersections within a half mile of Chatham and Madison Stations where pedestrian and bicycle crash locations have occurred, it was observed that the stop bars have been striped too close to crosswalks – in some cases as near as three or four feet. A general recommendation to improve pedestrian safety is to stripe advanced stop bars eight to ten feet from crosswalks in pedestrian areas. This also leaves room for bike boxes, (designated areas placed between the stop bar and crosswalk which provide left-turning bicyclists with the ability to get in front of stopped vehicles) to be added, which can increase bicyclist safety on all approaches near the stations.

The crash history adjacent to each station is discussed in the following sections, along with pedestrian and bicycle crash locations and contributing factors. When averaging the crash data over a five-year period, all locations within a ½ mile of Chatham and Madison Stations have fewer than one average pedestrian or bicycle crash per year, which is generally considered to be low. However, there are opportunities to increase pedestrian and bicycle safety, as noted in the field investigations above.

Figure 2-72: Examples of Disparate Pedestrian Signs in the Study Area





2.6.1 Chatham Station

Within a half mile of Chatham Station, there were eight pedestrian crashes and eight bicycle crashes in the five year study period (See Figure 2-73: Chatham Station Area Pedestrian and Bicycle Crash Location Map). There were no fatalities, but six of the eight pedestrian crashes and seven of the eight bicycle crashes involved injuries. Five of eight pedestrian and seven of eight bicycle crashes occurred at intersections. For reference, pedestrian and bicycle crash data were analyzed near six NJ TRANSIT stations in the FTA research paper titled “Evaluation of Pedestrian Improvements in the Vicinity of New Jersey Transit Rail Stations” by Brian N. Tobin, et al, using 2005-2008 crash data within 0.15-miles of stations, and Chatham Station had the fewest crashes. In this paper, Bay Street, Roselle Park, Chatham, Brick Church, Woodbridge, and Millburn Stations were compared, wherein Bay Street had 10 crashes, Roselle Park had one, Chatham had zero, Brick Church had 35, Woodbridge had five, and Millburn had 20. Therefore, the eight pedestrian and eight bicycle crashes within a half mile of Chatham over a period two years longer and an area much broader likely shows that crashes in and around Chatham Station appear to be fewer than at other nearby typical NJ TRANSIT stations. Pedestrian and bicycle crashes within a half mile of Chatham Station were concentrated along the NJ 124 and Fairmont Avenue corridors. Locations on NJ 124 included Lafayette/ Van Doren Avenue, Fairmont Avenue, Coleman Avenue, and Passaic Avenue. Fairmont Avenue locations included Watchung Avenue, Red Road, and Second Street. There was also one pedestrian crash at North Passaic Avenue (CR 607) and Weston Avenue.



- Town Line
- 1/2 Mile Radius
- Railroad Line
- School, College or University
- Parks
- Train Station
- (# of Ped, # of Bicycle) Crashes



Morris County NJ 124
Transit Access Study

**Chatham Station
Pedestrian and Bicycle
Crashes**
FIGURE 2-73



An analysis of these crash locations shows that the majority of pedestrian and bicycle crashes occurred during daylight conditions, on clear days and dry pavement. Individual location crash totals and the results of field observations are summarized below (crashes located at midblock are assigned to the nearest intersection):

- NJ 124 at Lafayette/ Van Doren Avenues: three pedestrian and three bike crashes in the five year study period. There are “No Turn on Red” restrictions from 7 AM to 6 PM Monday through Saturday, school crosswalk warning signage, crosswalks, pedestrian signals, sidewalks, and pedestrian ramps on all approaches. There is adequate lighting and a “Stop for Pedestrians in Crosswalk” sign on the northbound approach. There are already low-cost safety features in place, but increasing the “No Turn on Red” restrictions to all hours and days, removing the “Stop for Pedestrians in Crosswalk” sign (which is intended for unsignalized locations) and placing “Turning Vehicles Yield to Pedestrians” signs on all approaches would potentially improve safety for pedestrians. For bicyclists, unfortunately, the bikeable shoulder on NJ 124 disappears at the intersection because wider lanes are required for traffic capacity purposes. Placing “Share the Road” bicycle signs at the transition from a shoulder to no shoulder could potentially increase safety for bicyclists on NJ 124.
- NJ 124 at Coleman Avenue: one pedestrian and zero bike crashes in the five year study period. This is a two-way stop controlled intersection with adequate lighting, crosswalks, sidewalks, and pedestrian ramps. There are warning flashers to draw attention to the “Stop for Pedestrians” sign, but the flashers are not lighted in either direction on NJ 124. There are also no advanced pedestrian or school crosswalk warning signs, and occasionally, eastbound traffic queues back from the traffic signal at Fairmount Avenue which blocks the east and west crosswalks on NJ 124. Low-cost improvements may include lighting the flashers and installing “State Law: Stop for Pedestrians in Crosswalk” signs on the centerline and advanced school crosswalk signs.
- NJ 124 at Fairmount Avenue: zero pedestrian and one bike crash in the five year study period. There are “No Turn on Red” restrictions from 7 AM to 6 PM Monday through Saturday on the eastbound and northbound approaches. There are school crosswalk warning signs on the northbound, eastbound, and westbound approaches, but the eastbound and westbound signs are located too far from the intersection. There are crosswalks, pedestrian signals, sidewalks, and pedestrian ramps on all approaches. There is adequate lighting and there is a “State Law: Stop for Pedestrians in Crosswalk” sign on the northbound approach. There are already low-cost safety features in place, but increasing the “No Turn on Red” restrictions to all hours and days and



adding it to the westbound and southbound approaches, removing the “State Law: Stop for Pedestrians in Crosswalk” sign (which is intended for unsignalized locations) and placing “Turning Vehicles Yield to Pedestrians” signs on all approaches would potentially improve safety for pedestrians. For bicyclists, unfortunately, NJ 124 is narrow and there is on-street parking. Placing “Share the Road” bicycle signs approaching Fairmount Avenue would potentially increase safety for bicyclists on NJ 124.

- NJ 124 at Passaic Avenue: three pedestrian and zero bike crashes in the five year study period. There are “No Turn on Red” restrictions from 7 AM to 6 PM Monday through Saturday on the southbound and northbound approaches, and “No Turn on Red” restrictions during all hours and days on the eastbound and westbound approaches. There is no pedestrian or school crosswalk warning signage on any approach. There are crosswalks, pedestrian signals, sidewalks, and pedestrian ramps on all approaches. There is adequate lighting and there is a “State Law: Stop for Pedestrians in Crosswalk” sign on the northbound approach. There are already low-cost safety features in place with the exception of pedestrian warning signage. Increasing the “No Turn on Red” restrictions to all hours and days on the northbound and southbound approaches, removing the “State Law: Stop for Pedestrians in Crosswalk” sign (which is intended for unsignalized locations), and placing “Turning Vehicles Yield to Pedestrians” signs and advanced pedestrian or school crosswalk warning on all approaches would potentially improve safety for pedestrians. For bicyclists, unfortunately, NJ 124 is narrow and there is on-street parking. Placing “Share the Road” bicycle signs approaching Fairmount Avenue would potentially increase safety for bicyclists on NJ 124.
- Fairmont Avenue at Watchung Avenue: one pedestrian and zero bike crashes in the five year study period. There are “No Turn on Red” restrictions during all hours and days, school crosswalk warning signage, crosswalks, pedestrian signals, and pedestrian ramps on all approaches of the signalized intersection. There are sidewalks on all approaches with the exception of the east side of the south leg where there is a steep grade. There is adequate lighting and a “Yield to Pedestrians in Crosswalk” sign on the southbound approach. There are already low-cost safety features in place. Removing the “Yield to Pedestrians in Crosswalk” sign (which is not consistent with state law), and placing “Turning Vehicles Yield to Pedestrians” signs would potentially improve safety for pedestrians. For bicyclists, unfortunately, left-turn lanes on all approaches eliminate the bikeable shoulder at the intersection. Placing “Share the Road” bicycle signs on all approaches would potentially increase safety for bicyclists.



- Fairmount Avenue at Red Road: zero pedestrians and one bike crash in the five year study period. This is a two-way stop controlled intersection with no lighting. There are no crosswalks or pedestrian ramps on Fairmount Avenue, but there is a crosswalk and pedestrian ramps on Red Road. There are advanced school crosswalk warning signs on Fairmount Avenue on both approaches, even though there are no crosswalks. There are sidewalks on all approaches. More could be done to protect pedestrians and bicyclists at this location, including crosswalks on the north and south legs with pedestrian ramps, “State Law: Stop for Pedestrians in Crosswalk” signs on the centerline of Fairmount Avenue, shared lane markings/ sharrow or parking lane stripes to provide a safe riding area for bicyclists next to parked cars, and an additional streetlight.
- Fairmount Avenue at 2nd Street: zero pedestrians and one bike crash in the five year study period. This is a two-way stop controlled intersection with adequate lighting. There are crosswalks on the north and east legs, but there is only one pedestrian ramp on the southeast corner for the east crosswalk. There are no advanced pedestrian or school crosswalk warning signs on any approach. There are sidewalks on all approaches. Pedestrian and bicyclist improvements could include a crosswalk on the south leg, advanced pedestrian or school crosswalk signage on all approaches, pedestrian ramps on all corners, “State Law: Stop for Pedestrians in Crosswalk” signs on the centerline of Fairmount Avenue, and shared lane markings/ sharrow or parking lane stripes to provide a safe riding area for bicyclists next to parked cars.
- North Passaic Avenue and Weston Avenue: zero pedestrians and two bike crashes in the five year study period. This is a two-way stop controlled intersection with adequate lighting. There are advanced school crosswalk warning signs on all approaches, but the southbound approach sign is located too far from the intersection. There are crosswalks, sidewalks, and pedestrian ramps on all approaches. There is also a pushbutton-activated flashing sign on the northbound approach of the south crosswalk to draw attention to the school crosswalk warning sign, and there is a speed feedback sign on the southbound approach. The speed feedback sign was not lighted, so drivers could not see if they were driving above the posted 30 miles per hour speed limit. There are already several low-cost pedestrian safety treatments at this location. According to field observations, although North Passaic Avenue is not wide, the good sight distance and lack of on-street parking use encourages speeding. To reduce speeds and increase safety for bicyclists, recommendations may include lighting the speed feedback sign, and installing shared lane markings/ sharrow or parking lane stripes.



2.6.2 Madison Station

Within a half mile of Madison Station, there were 13 pedestrian crashes and eight bicycle crashes in the five year study period (See Figure 2-74: Madison Station Area Pedestrian and Bicycle Crash Location Map). There were no fatalities, but all 13 of the pedestrian crashes and seven of eight bicycle crashes involved injuries. Ten of the 13 pedestrian crashes occurred at intersections, but only three of the eight bicycle crashes occurred at intersections. As summarized in the discussion of Chatham, the “Evaluation of Pedestrian Improvements in the Vicinity of New Jersey Transit Rail Stations” Study concluded that Chatham has lower than average pedestrian and bicycle crash rates than other NJ TRANSIT stations. Since the number of crashes within a half mile of Madison Station is comparable, it can be concluded that Madison also has fewer than average non-motorized crashes when compared to other NJ TRANSIT station areas. Pedestrian and bicycle crashes occurred at several intersections along the NJ 124 corridor within a half mile of the station, and included Kings Road, Central Avenue/ Waverly Place, Greenwood Avenue/ Prospect Street, Alexander Avenue, and Cross Street/ Rosedale Avenue. Other locations included Central Avenue and Brittin Street, Central Avenue and Elmer Street/ Cook Avenue, Greenwood Avenue and Brittin Street, Kings Road and Waverly Place, Kings Road and Maple Avenue, and Park Avenue and Ridgedale Avenue. An analysis of these crash locations shows that the majority of pedestrian and bicycle crashes occurred during daylight conditions, on clear days, and on dry pavement. Individual location crash totals and the results of field observations are summarized below (crashes located at midblock are assigned to the nearest intersection):

- NJ 124 at Kings Road: one pedestrian and one bike crash in the five year study period. There is adequate lighting, crosswalks on the south leg (Kings Road) and east leg (NJ 124), and pedestrian signals and curb ramps at these locations. However, right turn on red is allowed, there is no crosswalk on the west leg of NJ 124, and there is no pedestrian warning signage. Potential pedestrian safety improvements could include installing a west crosswalk, pedestrian signals and ramps, advanced pedestrian or school crosswalk warning signage and “Turning Vehicles Yield to Pedestrians” signs, and “No Turn on Red” restrictions on the eastbound and northbound approaches. There are striped bike lanes on the shoulders of NJ 124 west of the intersection and adequate width to continue bike lanes on NJ 124 through the intersection and underneath the railroad bridge.

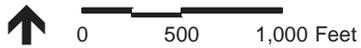
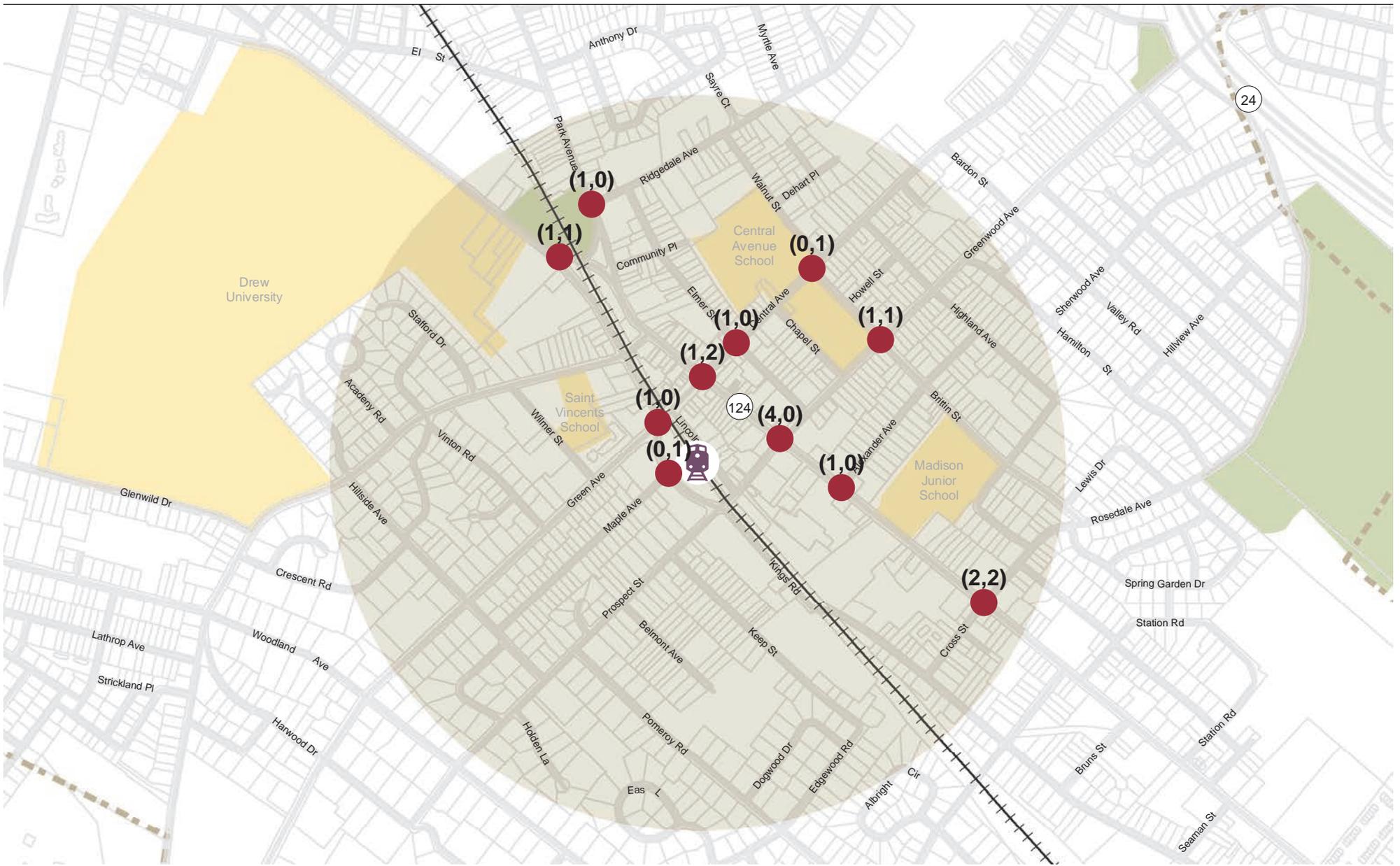


NJ 124 Corridor

Transit Access Improvement Study

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- Town Line
- Railroad Line
- Train Station
- 1/2 Mile Radius
- School, College or University
- Parks
- (# of Ped, # of Bicycle) Crashes



Morris County NJ 124
Transit Access Study

**Madison Station
Pedestrian and Bicycle
Crashes**
FIGURE 2-74



- NJ 124 at Central Avenue/ Waverly Place: one pedestrian and two bike crashes in the five year study period. There are “No Turn on Red” restrictions, crosswalks, pedestrian signals, sidewalks, and pedestrian ramps on all approaches. There is adequate decorative pedestrian scale lighting on sidewalks, but no overhead lighting to illuminate pedestrians in crosswalks. Placing “Turning Vehicles Yield to Pedestrians” and advanced pedestrian or school crosswalk warning signage on all approaches would potentially improve safety for pedestrians. For bicyclists, unfortunately, NJ 124 is narrow because of on-street parking. Placing “Share the Road” bicycle signs on all approaches would potentially increase safety for bicyclists.
- NJ 124 at Greenwood Avenue/ Prospect Street: four pedestrian and zero bike crashes in the five year study period. There is a “No Turn on Red” restriction on the westbound approach, adequate lighting, crosswalks, and pedestrian ramps on all approaches. However, there are no pedestrian signals or pedestrian warning signs. Installing pedestrian signals, placing “Turning Vehicles Yield to Pedestrians,” and advanced pedestrian or school crosswalk warning signage on all approaches would potentially improve safety for pedestrians. For bicyclists, unfortunately, NJ 124 is narrow because of on-street parking or wide lanes to increase traffic capacity. Placing “Share the Road” bicycle signs on all approaches would potentially increase safety for bicyclists.
- NJ 124 at Alexander Avenue: one pedestrian and zero bike crashes in the five year study period. NJ 124/ Alexander Avenue is a two-way stop controlled intersection with no crosswalks, pedestrian ramps, or pedestrian warning signage. However, there is adequate lighting, a crosswalk, and pedestrian ramps on the north approach, and there are sidewalks on all approaches. Pedestrian improvements could include crosswalks on the east and west legs, advanced pedestrian or school crosswalk signage on all approaches, pedestrian ramps on all corners, and “State Law: Stop for Pedestrians in Crosswalk” signs on the centerline of NJ 124. Because the shoulders are striped wide enough for bicyclists and there is “No Stopping or Standing” signs, bike lanes could be designated, which would increase safety for bicyclists.
- NJ 124 at Cross Street/ Rosedale Avenue: two pedestrians and two bike crashes in the five year study period. There is adequate lighting, crosswalks, pedestrian ramps, and sidewalks on all approaches. However, right turn on red is allowed. There are no pedestrian signals or pedestrian warning signage. Potential pedestrian safety improvements could include installing pedestrian signals, advanced pedestrian or school crosswalk warning signage, “Turning Vehicles Yield to Pedestrians” signs, and “No Turn on Red” restrictions on all approaches.



For bicyclists, unfortunately, the striped shoulders on NJ 124 are eliminated at the intersection to provide wide lanes to increase traffic capacity. Placing “Share the Road” bicycle signs on all approaches would potentially increase safety for bicyclists.

- Central Avenue at Brittin Street: zero pedestrians and one bike crash in the five year study period. This is a two-way stop controlled intersection located within a school speed zone with an advanced school crosswalk warning sign and a “State Law: Stop for Pedestrians in Crosswalk” sign on the south leg, a crosswalk and pedestrian ramp on the south leg, and crosswalks and pedestrian ramps on the east leg. There is adequate lighting at this location and sidewalks on all approaches. Additional improvements such as a crosswalk and “State Law: Stop for Pedestrians in the Crosswalk” signage on the north leg could increase pedestrian safety. For bicyclists, unfortunately, Central Avenue is narrow because of on-street parking. Placing “Share the Road” bicycle signs on all approaches could potentially increase safety for bicyclists.
- Central Avenue at Elmer Street/ Cook Avenue: one pedestrian and zero bike crashes in the five year study period. This is a two-way stop controlled intersection with crosswalks, sidewalks, and pedestrian ramps on all approaches. There is decorative pedestrian lighting on the sidewalks, but no overhead lighting to illuminate pedestrians in the crosswalks. There is also no pedestrian warning signage. On Central Avenue, the speed limit is 35 miles per hour. Pedestrian safety improvements could include reducing the speed limit to 25 miles per hour, installing advanced pedestrian or school crosswalk signage on all approaches, and providing “State Law: Stop for Pedestrians in Crosswalk” signage on the centerline of Central Avenue in both directions. For bicyclists, unfortunately, Central Avenue is narrow because of on-street parking. Placing “Share the Road” bicycle signs on all approaches would potentially increase safety for bicyclists.
- Greenwood Avenue at Brittin Street: one pedestrian and one bike crash in the five year study period. This is a two-way stop controlled intersection with adequate lighting. The speed limit on Greenwood Avenue is 25 miles per hour and there is a “Keep Kids Alive – Drive 25” sign on the southbound approach. There are crosswalks and pedestrian ramps on the east, west and south legs, “State Law: Stop for Pedestrians in Crosswalk” signs on the northbound and southbound approaches, school crosswalk warning signs on the northbound and southbound approaches, a flashing beacon to supplement the stop signs, and “Slow” stencils and chevrons on all approaches. There are bike lanes north of the intersection (although curbside parking is allowed). Additional improvements could include a crosswalk and pedestrian ramps on the north leg.



- Kings Road and Waverly Place: one pedestrian and zero bike crashes in the five year study period. There is a “No Turn on Red” restriction on the eastbound approach, and crosswalks, pedestrian signals, sidewalks, and pedestrian ramps on all approaches. There is only adequate lighting above the west crosswalk, and a “State Law: Stop for Pedestrians in Crosswalk” sign on the south leg. Removing the “State Law: Stop for Pedestrians in Crosswalk” sign (which is intended for unsignalized intersections), placing “Turning Vehicles Yield to Pedestrians” and advanced pedestrian or school crosswalk warning signage on all approaches, and adding “No Turn on Red” restrictions to the northbound, southbound and westbound approaches would potentially improve safety for pedestrians. Adding overhead lighting to the north, east, and west crosswalks will also increase pedestrian safety. For bicyclists, unfortunately, all approaches are narrow because of on-street parking or turning lanes. Placing “Share the Road” bicycle signs on all approaches could potentially increase safety for bicyclists.
- Kings Road at Maple Avenue: zero pedestrians and one bike crash in the five year study period. This is a two-way stop controlled intersection with adequate lighting, crosswalks, and pedestrian ramps on the east and south legs, and a “State Law: Stop for Pedestrians in Crosswalk” sign on the east leg. Pedestrian improvements could include installing a west crosswalk and pedestrian ramps, a “State Law: Stop for Pedestrians in Crosswalk” sign on the west leg, and advanced pedestrian warning or school crosswalk signs on all approaches. To increase bicycle safety, it may be possible to stripe bike lanes on Kings Street between Prospect Street/ Greenwood Avenue and Green Avenue/ Waverly Place if there is adequate width to accommodate two five-foot bike lanes.
- Park Avenue at Ridgedale Avenue: one pedestrian and zero bike crashes in the five year study period. There are crosswalks, pedestrian ramps and pedestrian signals on the east and north legs, sidewalks on all approaches, and adequate lighting. On the southbound approach, there is a “Yield to Pedestrians in Crosswalk” sign located too far from the intersection. Pedestrian improvements could include removing the outdated “Yield to Pedestrians in Crosswalk” sign, installing a west crosswalk, pedestrian ramps and pedestrian signals, providing “Turning Vehicles Yield to Pedestrians” signage, advanced pedestrian or school crosswalk warning signage, and adding “No Turn on Red” restrictions on all approaches. Unfortunately for bicyclists, all approaches are narrow because of turning lanes. Placing “Share the Road” bicycle signs on all approaches could potentially increase safety for bicyclists.



2.6.3 Convent Station

Within a ½-mile of Convent Station, there were no pedestrian crashes and two bicycle crashes in the five year study period, which is a very low number when compared to Chatham and Madison Stations. See Figure 2-75: Convent Station Area Pedestrian and Bicycle Crash Location Map. The bicycle crashes occurred on Old Turnpike Road at Punch Bowl Road and Convent Road, and both involved injuries. The two bicycle crashes occurred during daylight conditions on clear days and on dry pavement. According to field observations, the speed limit on Old Turnpike Road is 25 miles per hour and no traffic control device or striping on the eastbound approach of Convent Road and Old Turnpike Road to indicate a yield or stop. At Convent Road, there is only a sidewalk on the west side of the south leg, but no adequate lighting, crosswalks, pedestrian ramps, or pedestrian warning signage. Safety improvements could include crosswalks, pedestrian ramps, pedestrian warning signage, bike lanes, placing the eastbound approach under stop control, and installing sidewalks and lighting. Old Turnpike Road and Punch Bowl Road is a two-way stop controlled intersection with adequate lighting, no crosswalks, sidewalks on the southeast corner (both legs), and a pedestrian ramp on the south leg of the southeast corner. Safety improvements could include crosswalks, pedestrian ramps, pedestrian warning signage, and bike lanes.

2.6.4 NJ 124

Although crash analyses for this study focused primarily on pedestrian and bicycle crashes within a ½-mile of the stations, an overview of all crashes along NJ 124 within Morris County is included below, along with site-specific analyses at locations resulting from stakeholder interviews. See Figure 2-76: NJ 124 Stakeholder-Based Crash Investigation Map.

Along the approximately seven-mile section of NJ124 from US 202 to the west and Morris County line to the east, over 1,400 total crashes occurred in the five year study period. Crashes were clustered near the western end of NJ 124 (the 1.5 miles from US 202 near the I-287 interchange to the Morris Township line at Normandy Parkway had over 40 percent of all crashes) and the eastern end (the 2.9 miles from Kings Road in Madison through Chatham to the Morris County line had just over 40 percent of all crashes). The middle three-mile section from Normandy Parkway to Kings Road had 15 percent of all crashes.

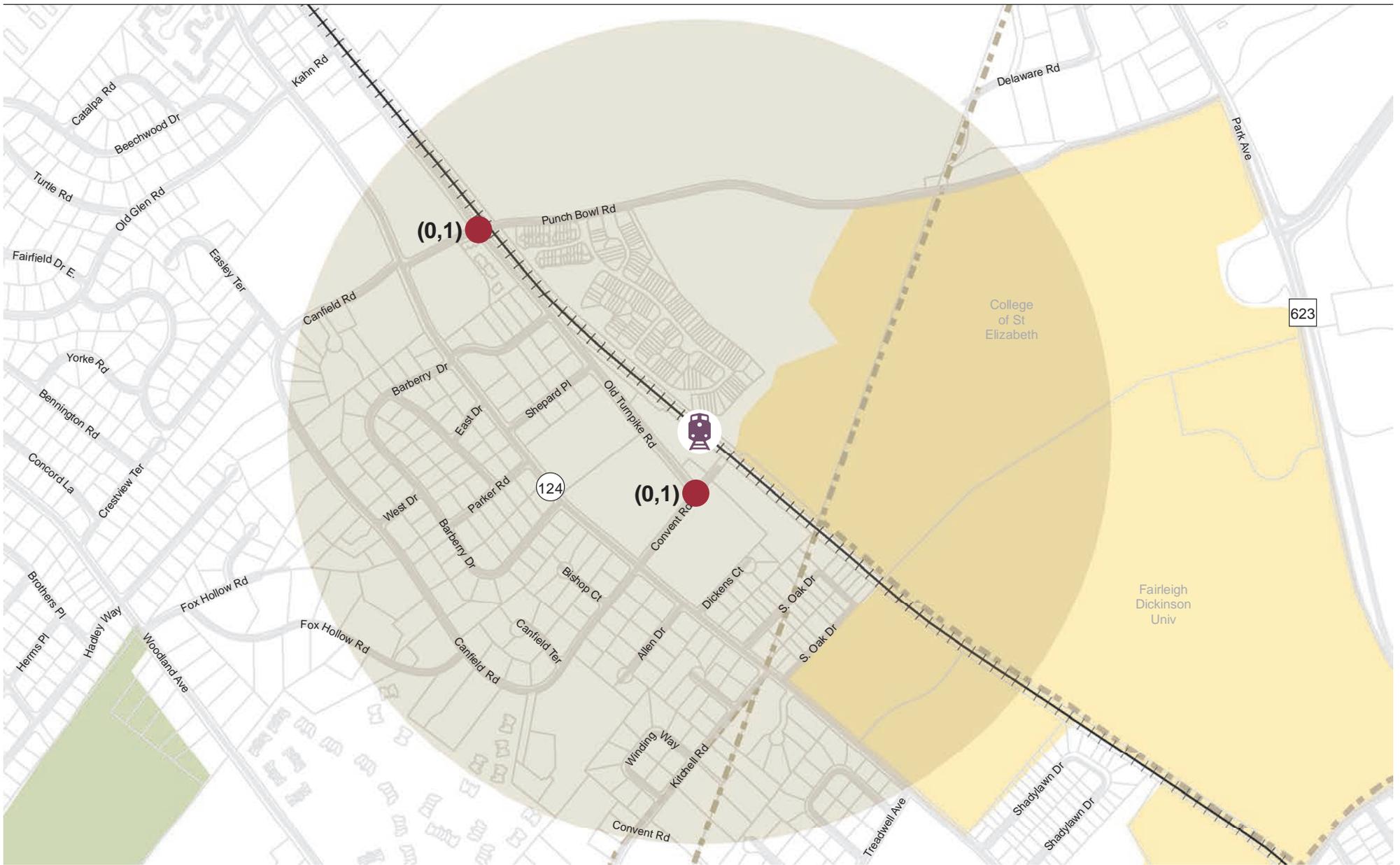


NJ 124 Corridor

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-  Town Line
-  Railroad Line
-  Train Station
-  1/2 Mile Radius
-  School, College or University
-  Parks
-  (# of Ped, # of Bicycle) Crashes



Morris County NJ 124
Transit Access Study

**Convent Station
Pedestrian and Bicycle
Crashes**
FIGURE 2-75

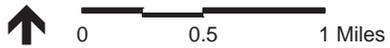
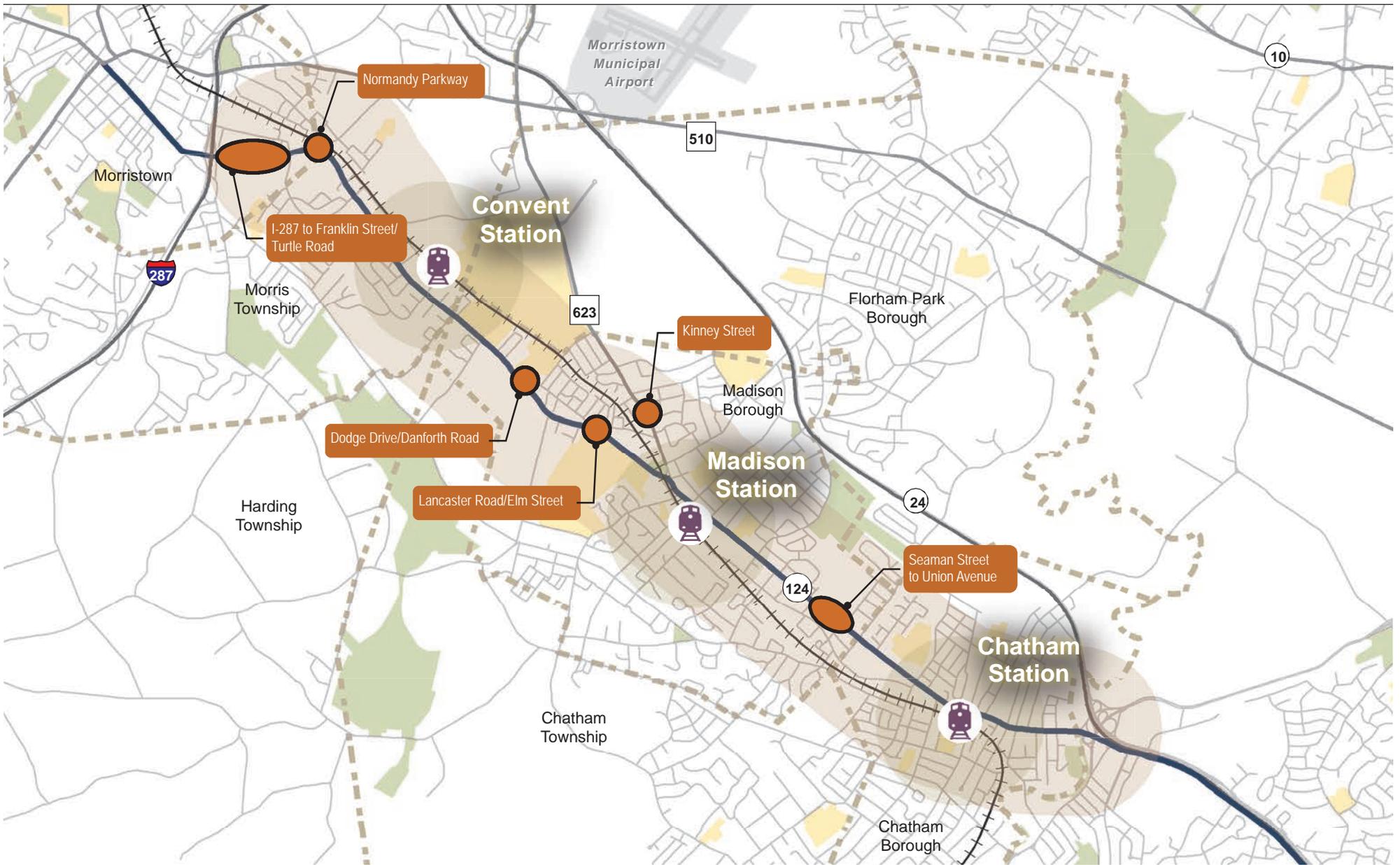


NJ 124 Corridor

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-  Town Line
-  1/2 Mile Radius
-  Airports
-  Railroad Line
-  School, College or University
-  Parks
-  Train Station
-  Stakeholder Areas of Concern/Crash Investigation Locations



Morris County NJ 124
Transit Access Study

Stakeholder Crash Locations of Concern

FIGURE 2-76



In addition to the survey areas described above, the following crash analyses were performed at areas beyond a half mile of the stations as a result of stakeholder interviews and public feedback received during various outreach events for the project:

- NJ 124 at Lancaster Road/ Elm Street was identified as a dangerous location for bicyclists. Although there were no bicycle crashes within the study period here, there were 15 vehicular crashes in the five year study period including five right-angle, four rear-end, two fixed-object, two sideswipe (opposite direction), one head-on, and one left-turn crashes.
- NJ 124 at Dodge Drive/ Danforth Road was identified as a dangerous location for bicyclists. Although there were no pedestrian or bicycle crashes within the study period here, there were 11 vehicular crashes in the five year study period which included four right-angle, four rear-end, one same direction sideswipe, one animal, and one left-turn crashes.
- NJ 124 from the I-287 interchange to Franklin Street/ Turtle Road was identified as a difficult area for crossing NJ 124 on foot to get between medical visits. Although there were no pedestrian or bicycle crashes within the study period here, there were over 100 vehicular crashes in the five year study period along this segment, which mainly included right angle, rear-end, and same direction sideswipe crashes.
- NJ 124 at Normandy Parkway was identified as a dangerous location for bicyclists. Although there were no pedestrian or bicycle crashes within the study period here, there were 34 vehicular crashes in the five year study period which included 17 rear-end, seven right-angle, five left-turn, three same direction sideswipe, and two fixed-object crashes.
- Park Avenue at Kinney Street west of Madison Station had no crashes in the five year study period, but was identified as a location in need of a crosswalk. A field visit confirmed that there are no crosswalks on any of the three legs of this two-way stop controlled intersection, nor are there pedestrian ramps or advanced pedestrian warning signs.
- NJ 124 from Seaman Street to Union Avenue was identified as a difficult area for crossing NJ 124 on foot to get between commercial establishments. There was one pedestrian crash and one bicycle crash along this segment in the five year study period. There were also 25 vehicular crashes within the study period, which included 11 rear-end, eight right-angle, two fixed-object, two same direction sideswipe, one left-turn, and one sideswipe (opposite direction) crashes.



2.6.5 Summary of Crash Analysis

Overall, within a ½-mile of the Chatham, Madison, and Convent stations, there are fewer pedestrian and bicycle crashes over the five year study period when compared to other NJ TRANSIT Stations according to the FTA research paper titled “Evaluation of Pedestrian Improvements in the Vicinity of New Jersey Transit Rail Stations” by Brian N. Tobin, et al. Furthermore, there are no locations with an average crash rate exceeding one pedestrian or bicycle crash per year which would indicate a trend of unsafe conditions. However, there are inconsistencies with signage and standards in the MUTCD and along NJ 124 from area to area. To maintain a high level of pedestrian and bicycle activity and safety along NJ 124 to and from the Chatham and Madison Stations and to grow non-motorized mode share at the Convent Station, improvements to pedestrian and bicycle signage, markings, and infrastructure are recommended.



NJ 124 Corridor

Transit Access Improvement Study

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3

Existing and Future Land Use

3.1 Introduction

In considering how to improve access to Chatham, Madison, and Convent Stations, it is important to consider the roles played by non-transportation factors such as land use and zoning. To the extent that people can live, work, and shop in locations close to these stations--i.e., within Transit-Oriented Developments--automotive access demands can be partially reduced by increasing the number of riders who can walk to the rail stations.

Two of the three stations being studied, Chatham and Madison Stations, already

“There is no single definition of **transit-oriented development**; however, research generally describes such a development **as a compact, mixed-use, walkable neighborhood located near transit facilities**. Research has highlighted that most transit-oriented developments are typically near a fixed-guideway rail station, generally encompass multiple city blocks up to a half-mile from a transit station, have pedestrian-friendly environments and streetscapes, and include high-density and mixed-use developments.”---

AFFORDABLE HOUSING IN TRANSIT-ORIENTED DEVELOPMENT, GAO-09-871, US GAO, September 2009

consist of a land use and transportation mix that is considered to be Transit-Oriented Development (TOD). Both of these station areas are comprised of somewhat compact, mixed (retail, residential, and commercial) land uses within a half mile of the stations. These two station areas are walkable environments that include sidewalks and other pedestrian supportive infrastructure. The Convent Station area is generally lower density and more automobile oriented than the other two station areas. The area does have some features typically found in transit-oriented development, such as some mixed-use development, pedestrian facilities, some higher density multi-



family housing, which, along with the presence of under-utilized land near the station, indicates potential for further development in a TOD fashion.

All three stations exist in developed and historic municipalities. Few, if any, parcels remain undeveloped within a half mile of the stations in the host towns that could result in significant new developments of any type with the exception of those already identified for redevelopment, Green Village in Madison, or those currently dedicated to parking. However, the following analyses will show:

The properties in these municipalities are not developed to their maximum land value which indicates that there is some potential for “spot” redevelopment in a transit-oriented manner [Section 3.3: Improvement to Land Value Analysis].

Though all markets have been impacted by current economic conditions, the real estate market in these municipalities shows a traditional, strong demand. This is in part due to the positioning of these municipalities with respect to the regional labor and industrial markets nearby and within reasonable commute distances [Section 3.4: Regional Market Analysis; Section 3.5: Labor and Industry Analysis].

There is evidence in New Jersey and in other states that municipalities of similar character have successfully planned for and absorbed new transit-oriented development [Section 3.6: TOD Comparables and Best Case Analysis].

3.1.1 Transit-Oriented Development Success Factors

The success of a Transit-Oriented Development (TOD) depends on a variety of factors, including a supportive economic, regulatory, and political environment, as well as physical characteristics conducive to a walkable community integrated with transit. A number of resources specify critical success factors, including the Voorhees Transportation Policy Institute’s 2003 document *Transit Villages in New Jersey: Success Factors, Obstacles and Recommendations*. The Smart Growth Energy Toolkit, issued by the Commonwealth of Massachusetts, provides an instructive, succinct, and comprehensive list of factors critical to the success of TODs, as follows:

- Supportive market conditions, namely, development potential within walking distance from the station, and a competitive market for development, as compared to a nearby corridor and surrounding region.
- Commitment to transit, as demonstrated by policy makers, including the transit agency, and state and local officials. In addition, supportive transportation infrastructure is needed, including good pedestrian and bicycle access, and park-and-ride facilities.



- Strong and respected local leadership from both the public and private sectors.
- Supportive public policies and tools that channel development into transit corridors and increase pedestrian activity. Examples of these include:
 - Station area plans which outline strategies for facilitating and implementing TOD.
 - Higher density allowances, density bonuses, and mixed-use (commercial, residential, office) zoning as appropriate to the area.
 - Design standards/ guidelines to ensure pedestrian-friendly, attractive, and low-impact development, including Complete Streets policy and implementation plans.
 - Public investment policies to spur private investment.
 - Incentives such as sharing infrastructure and remediation costs or streamlining the approval process.

Madison Borough is the only municipality that includes policies supportive of new TOD. Of course, as stated above, both Madison and Chatham Boroughs already exhibit many of the characteristics of successful TODs.

3.2 Existing Zoning, Master Plans and Redevelopment Plans

A review of local zoning, municipal master plans, and recent redevelopment trends and proposals affecting the areas around each of the three study area stations was conducted. In addition, discussions were held with representatives from the affected communities to understand public policies that would influence future development in each municipality. The public involvement process provided further input on local attitudes toward the potential for transit-oriented development to occur or be encouraged by town planners. The following section discusses existing zoning regulations in the vicinity of the three stations, and the relationship of each municipality's Master Plan to potential development around each station. It also identifies any current development projects near the stations.

3.2.1 Chatham Station Area

There are currently no developments or redevelopment projects proposed according to local officials and documents obtained, within the Chatham Station analysis area, which is the area within a half mile of the station. All of the parcels in the analysis area were located in the Borough of Chatham.



Zoning categories represented in the analysis area include:

- B-1 Business Service District: small-scale business and professional offices compatible with residential uses.
- B-2 Regional Business District: general goods and services on a regional scale.
- B-3 General Business District: business, office, and retail for local community in scale with historic buildings; more vehicular and less intensive than B-4.
- B-4 Community Business District: pedestrian-oriented shopping in the downtown with retail and personal services on ground level and offices and business services on upper levels.
- B-5 Office District: large scale office use and research laboratories.
- G-1 Residential District: garden apartments allowed.
- M-1 Industrial District: retail uses allowed.
- R-1/ R-2/ R-3 Residential Districts: single family residential districts.
- R-4 Residential District: two-family units allowed.

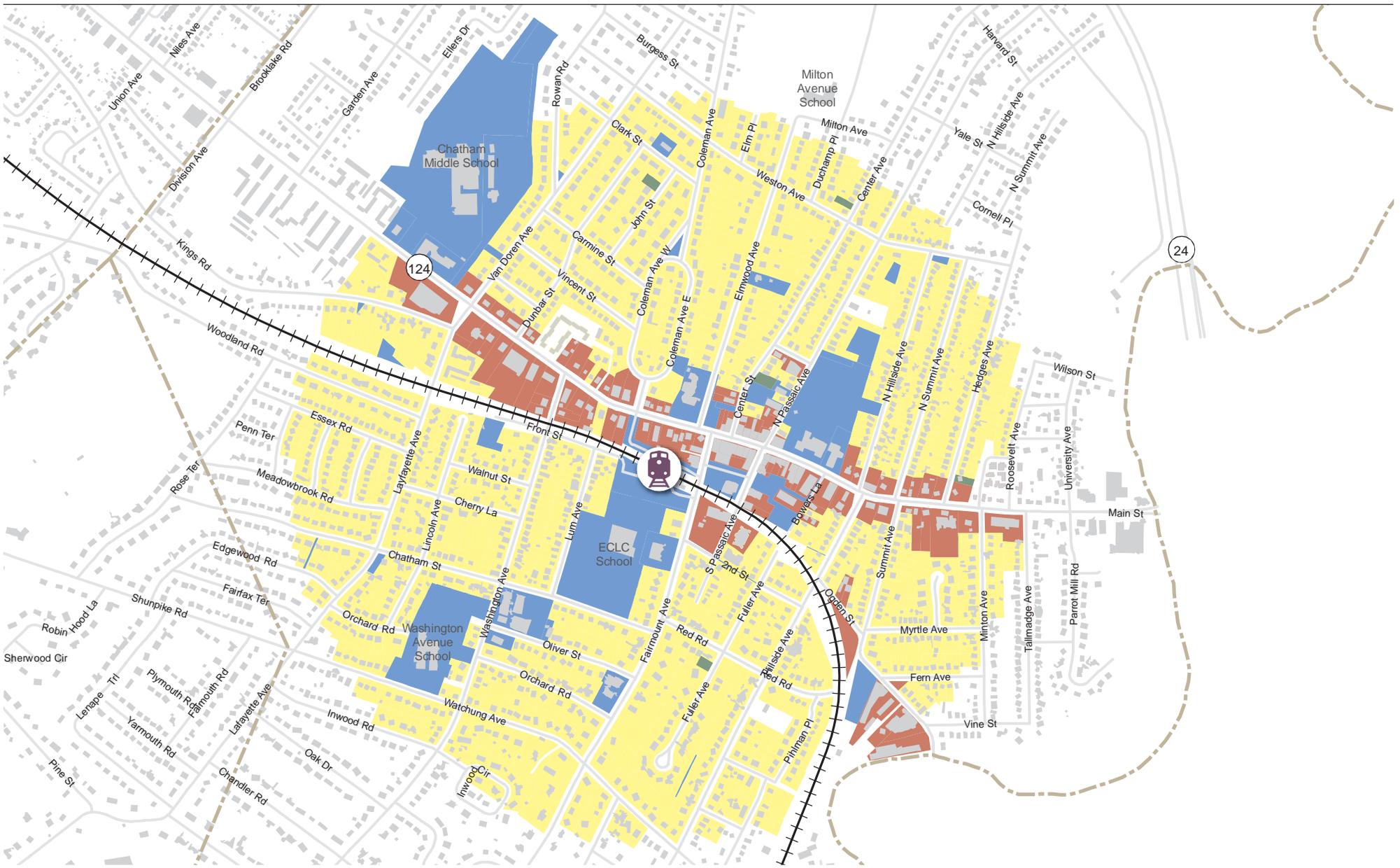
Table 3-1 summarizes the number of parcels and proportion of overall area within the analysis area by zone. Figures 3-1 and 3-2 show the general land uses and zoning designations for the Chatham Station area.

Table 3-1: Parcels & Land Area by Zone, Chatham Station Area

Zone	Zone Description	Total Area (Acres)	Total Parcels	Pct. of Total Area
R-2	Residential District	224.0	719	50.5%
R-3	Residential District	91.5	484	20.6%
R-1	Residential District	38.5	83	8.7%
G-1	Residential District	28.6	51	6.4%
B-2	Business District	15.3	26	3.4%
R-4	Residential District	13.8	62	3.1%
B-4	Business District	12.3	46	2.8%
B-3	Business District	9.1	30	2.1%
M-1	Industrial District	5.3	5	1.2%
B-1	Business District	4.7	18	1.1%
B-5	Business District	1.0	5	0.2%

Source: Morris County, NJ, GIS; 2012

Chatham Borough allows for denser (increased height) development in two categories: business district (B-4 and B-5) and affordable, residential housing. In both instances, three-story buildings are allowed.



Parcels within one-half mile of Chatham Station, Chatham Borough, NJ

-  Town Line
-  Railroad Line
-  Building Footprints
-  Residential
-  Public/Religious/Schools
-  Commercial/Industrial
-  Vacant Land
-  Train Station



Morris County NJ 124
Transit Access Study

**General Land Use
Chatham Station**

FIGURE 3-1



NJ 124 Corridor

Transit Access Improvement Study

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Parcels within one-half mile of Chatham Station, Chatham Borough, NJ

- Town Line
- Railroad Line
- Building Footprints
- Train Station
- B-1 - Business District
- B-2 - Business District
- B-3 - Business District
- B-4 - Business District
- B-5 - Business District
- G-1 - Residential District
- M-1 - Industrial District
- R-1 - Residential District
- R-2 - Residential District
- R-3 - Residential District
- R-4 - Residential District



Morris County NJ 124
Transit Access Study

Zoning Designations Chatham Station

FIGURE 3-2



Chatham Borough’s Master Plan Reexamination Report, completed in 2006, updated the 2000 Master Plan. It noted that the 2000 plan had identified “preservation and enhancement of the small-town character of the Borough” as a major objective.

In October 2009, the Borough completed a Business Zones Study which examined the B-1 through B-5 zones. The focus of the study was on potential build-out in each zone and its relationship to parking availability. The study found the current parking supply to be adequate.

Overall, the Borough’s planning objectives appear to be primarily concerned with preserving the scale and character of the business areas rather than encouraging higher density TOD, summarized in the implementation strategies as follows:

“Continue to pursue planning and zoning rules and procedures, including development incentives that will protect and enhance the historic character of the downtown and of the residential areas.”

3.2.2 Madison Station Area

All of the parcels reviewed in this analysis are (within a half mile of the station and are located in the Borough of Madison. The following redevelopment projects are ongoing in the vicinity of Madison Station:

- A mixed-use project under construction at the intersection of Greenwood Avenue and Main Street (NJ 124).
- A mixed-use redevelopment for the former school site located at Green Village Road and Main Street (NJ 124). The borough issued a Request for Qualifications in spring 2012 from developers interested in developing the Green Village Road Special Use District (GVRSU) zoned property in accordance with the Borough’s Redevelopment Plan for the GVRSU Area (see below for description).
- Residential development under construction at the intersection of Cook Avenue and Ridgedale Avenue.
- A redevelopment project located on Elmer Street that is currently seeking approval.

Zoning categories represented in the analysis area include:

- CBD-1, CBD-2 Central Business District Zones: intended to promote a vital, mixed-use downtown core that permits residential, retail, office, institutional, theaters, and customarily similar uses.



- CC Community Commercial Zone: intended to provide commercial uses to serve local residents rather than regional demand. Permits retail, office, institutional, and other uses, in addition to apartments over commercial establishments.
- OSGU Open Space/ Government Use Zone: intended to recognize and preserve open space and government uses, including the train station.
- P - Professional Office Zone/ Residential: Permits offices and single-family residences.
- R-1/ R-2/ R-3 Single-Family Residence Zones.
- R-4 Two-Family Residence Zone.
- R-5 Multiple-Family Residence Zone.
- R-SH Senior Citizen Housing Zone.

The Table 3-2 summarizes the number of parcels and proportion of overall area within the analysis area by zone. Figures 3-3 and 3-4 show the general land uses and zoning designations for the Madison Station area. It should be noted that in the figures the vacancy at the Stop and Shop parcel is only meant to indicate the parking lot portion of the parcel. Also, since the graphic was originally prepared the land use on the parcel at Greenwood Avenue and Main Street has now become occupied by a Walgreens. Neither of these changes affect the analyses presented in this report. In addition, Madison Borough is currently evaluating updated zoning designations for the Stop and Shop and Walgreens properties since their current use does not appear to be consistent with Community Commercial zoning.

Table 3-2: Parcels & Land Area by Zone, Madison Station Area

Zone	Zone Description	Total Area (Acres)	Total Parcels	Pct. of Total Area
R-3	Single-Family Residence Zone	294.4	321	47.1%
R-2	Single-Family Residence Zone	146.7	286	23.5%
R-4	Two-Family Residence Zone	66.1	198	10.6%
CBD-1	Central Business District Zone	25.4	98	4.1%
R-5	Multiple-Family Residence	22.0	16	3.5%
P	Professional Office	21.6	24	3.5%
CC	Community Commercial Zone	16.7	37	2.7%
R-1	Single-Family Residence Zone	14.2	17	2.3%
CBD-2	Central Business District Zone	8.8	46	1.4%
OSGU	Open Space/Government Use	5.0	1	0.8%
R-SH	Senior Citizen Housing Zone	4.4	4	0.7%

Source: Morris County, NJ, GIS; 2012

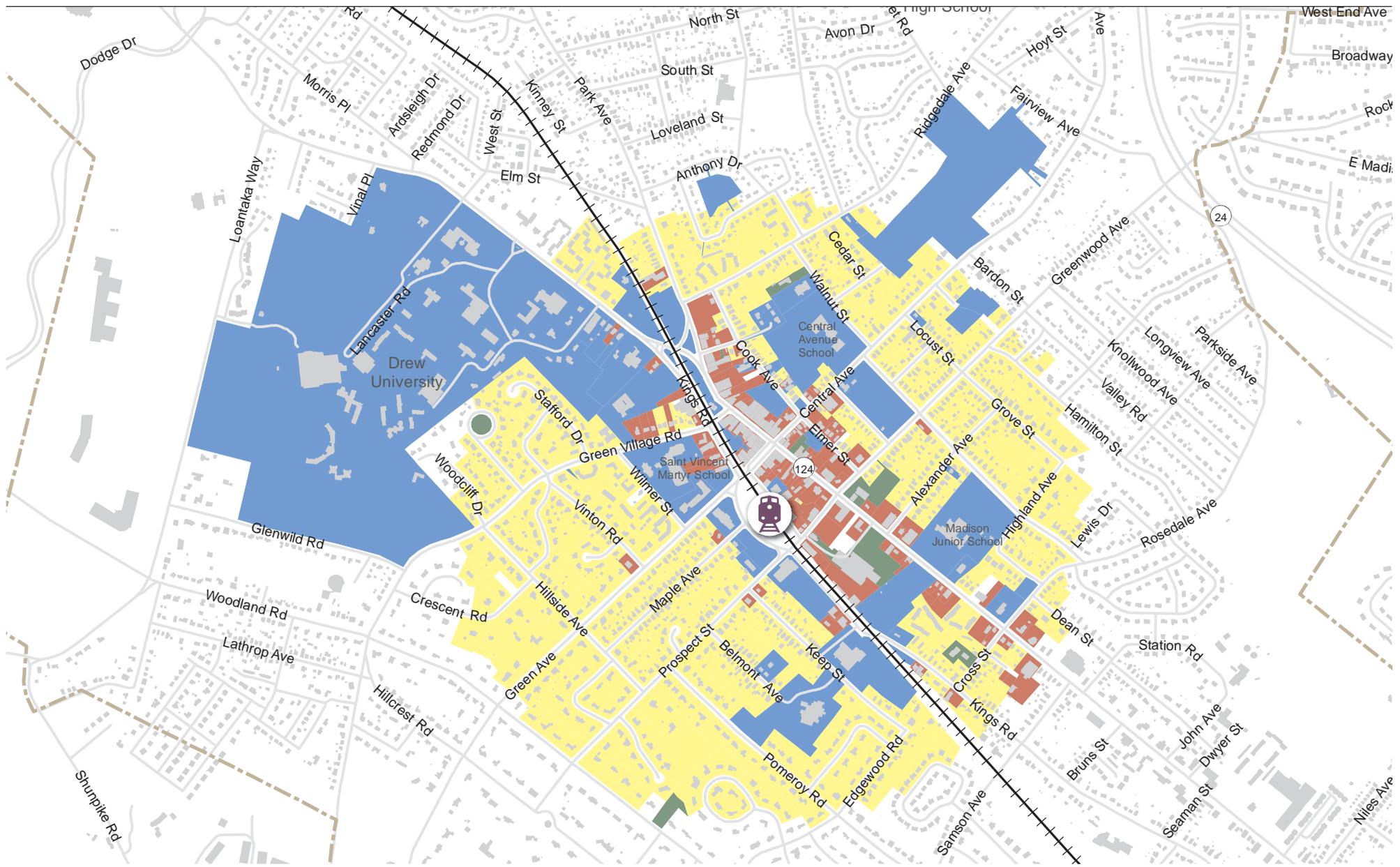


NJ 124 Corridor

Transit Access Improvement Study

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Parcels within one-half mile of Madison Station, Madison, NJ

-  Town Line
-  Railroad Line
-  Building Footprints
-  Train Station
-  Residential
-  Public/Religious/Schools
-  Commercial/Industrial
-  Vacant Land



Morris County NJ 124
Transit Access Study

General Land Use Madison Station

FIGURE 3-3

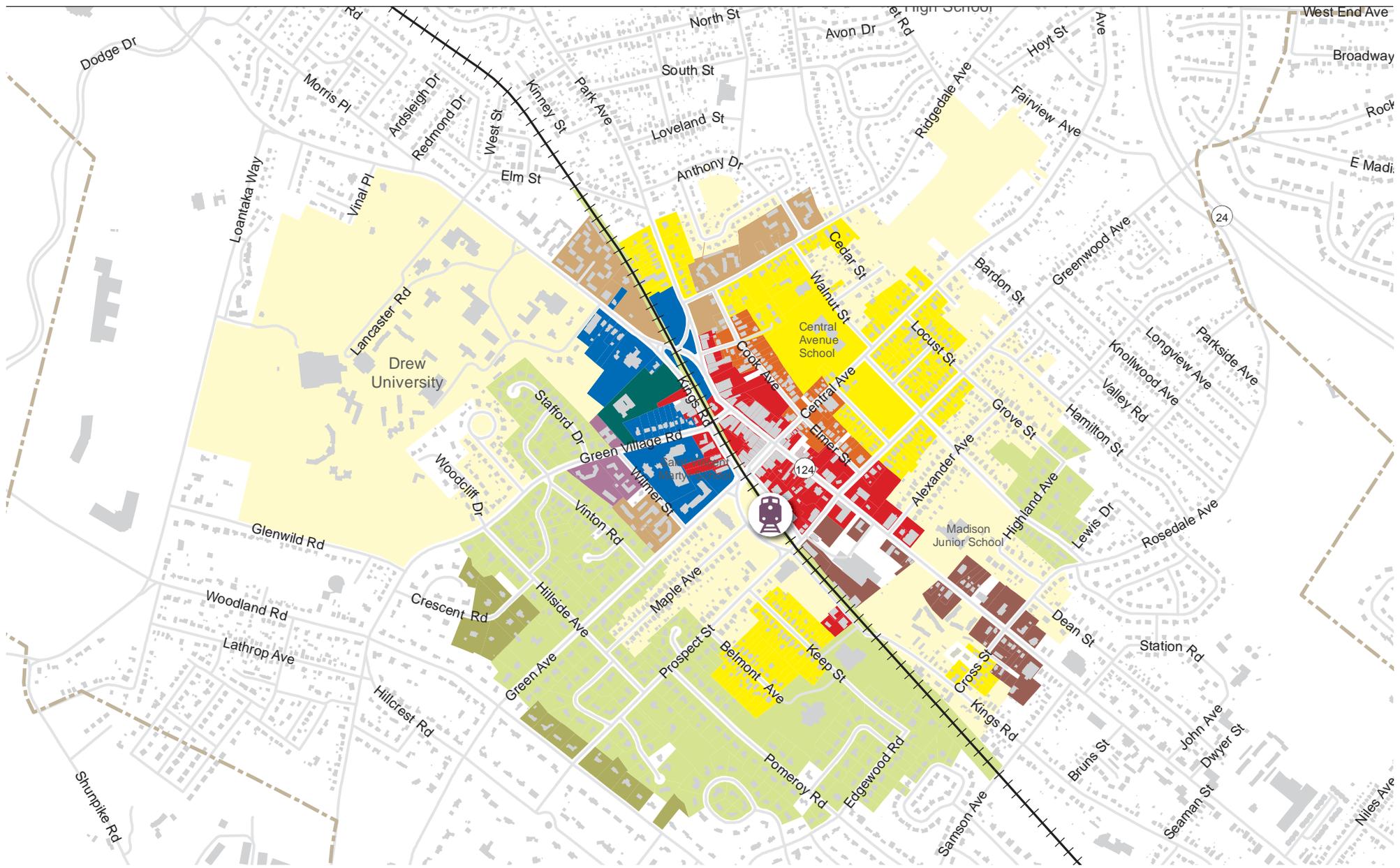


NJ 124 Corridor

Transit Access Improvement Study

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Parcels within one-half mile of Madison Station, Madison, NJ

-  Town Line
-  Railroad Line
-  Building Footprints
-  Train Station
-  CBD-1 - Central Business District
-  CBD-2 - Central Business District
-  CC - Community Commercial
-  OSGU - Open Space/Government Use
-  P - Professional Office/Residential
-  R-1 - Single-Family Residential
-  R-2 - Single-Family Residential
-  R-3 - Single-Family Residential
-  R-4 - Two-Family Residential
-  R-5 - Multi-Family Residential
-  R-SH - Senior Citizen Housing



Morris County NJ 124
Transit Access Study

Zoning Designations Madison Station

FIGURE 3-4



In December 2010, the Borough adopted regulations for the Green Village Road Special Use (GVRSU) District and mapped it on a former school site located adjacent to the downtown. The purpose of the zone is “to encourage development of the area, consistent with transit-oriented design and sustainable design principles...” The District includes two sub-zones. In Sub-Zone 1, townhouse and multi-family developments are permitted uses and a boutique hotel is a permitted conditional use. With bonuses, residential densities can go as high as 28 units per acre with maximum heights governed by ordinances regarding the sky exposure plain and topographic elevations. Sub-Zone 2’s permitted uses include a boutique hotel along with ground floor retail, restaurants, and cultural facilities. Upper levels can accommodate commercial, offices, apartments, live/ work artist lofts, and institutional/ educational uses subject to various regulations.

Madison allows for denser (higher) buildings under certain circumstances. In the Green Village Road District, up to five story structures are allowed if certain incentive measures are provided.¹⁶ Senior Citizen housing is permitted up to four stories, and businesses in CBD and office/ research uses are permitted up to three stories.

The Borough prepared their Master Plan in 1992, two Re-examination Reports prepared in accordance with State Law in 2004 and 2011, and a *Master Plan Land Use Amendment* in 2009. The following is a summary of key points in the 2011 Re-Examination report, which built on the earlier work, suggesting revisions where appropriate.

¹⁶ (8) Maximum density: 20 units per base acre with the option for the reviewing board to grant density/ height bonuses based on the following, provided that the applicant meets at least two of the following standards:

- (a) Incorporation of green building/ design techniques to achieve at least a LEED certified project under the LEED-ND Program or provision of an engineered green roof occupying at least 50 percent of rooftop area or 6,000 square feet, whichever is greater: bonus of 20 percent density over base density and 1/ 2 story of additional height.
- (b) Inclusion of an amenity or site design feature that clearly benefits the public and/ or the environment to an extent reasonably related to the density incentive offered: up to 20 percent bonus.
- (c) Provision of all parking below grade: bonus of 20 percent of the base density and 1/ 2 story of additional height.
- (d) Maximum cumulative incentives shall not exceed 40 percent over the base density nor shall additional heights exceed one story.



Relevant goals and objectives for Madison that appear to have remained consistent from 1992 through the recent updates include:

- “To permit multi-family residential use at appropriate densities in locations accessible to major highways, commercial services, and public facilities.”
- “Encourage the use of mass transportation.”

The 2004 report noted several problems that would require planning efforts in order to address them, including, “Addressing parking demand in the downtown.” In looking at those problems in 2011, the update on issues noted that the Borough had already reduced maximum downtown building heights to three stories, consistent with the existing scale, and lowered non-residential parking requirements in the downtown to reflect its “mixed-use, transit accessible nature.” The update also reiterated the 2009 report’s objectives, including:

- “To encourage development opportunities that incorporate transit-oriented design principles in locations within a quarter mile of the NJ TRANSIT train station with densities, amenities and uses reflective of the specific neighborhood context and site-related features and opportunities.”

3.2.3 Convent Station Area

Convent Station is near the boundaries of four towns. The parcels in the analysis area are located in the Boroughs of Madison and Florham Park, and the Townships of Morris and Harding. There are currently no developments or redevelopment projects proposed within the half mile analysis area around the station. Just outside the analysis area at the intersection of Columbia Road (CR 510) and Park Avenue (CR 623), Honeywell was beginning the approval process for a redevelopment of its headquarters site at the start of this study. The proposed redevelopment would be a mixed-use combination of office space, residential, and open green space on the 147-acre property.

Zoning categories represented in the analysis area are listed by municipality below:

- Borough of Madison
 - R-1/ R-2/ R-3 Single-Family Residence Zones.
 - U - University Zone: reserved for Drew University and Fairleigh Dickinson University.



- Township of Morris
 - OL-5/ OL-40 Office and Research Laboratory Zones.
 - OSGU Open Space/ Government Use Zone: intended to recognize and preserve open space and government uses, including the train station.
 - RA-11/ RA-15/ RA-35 Single Family Residential Zones.
 - RH-5 Multiple Family Zone: permits a density of five units per acre.
 - TH-8 Town House Residential Zone: permits a density of eight units per acre.

- Borough of Florham Park
 - R-44 One-Family Residence Residential Zone: the College of St. Elizabeth and Fairleigh Dickinson University properties reside in this zone.

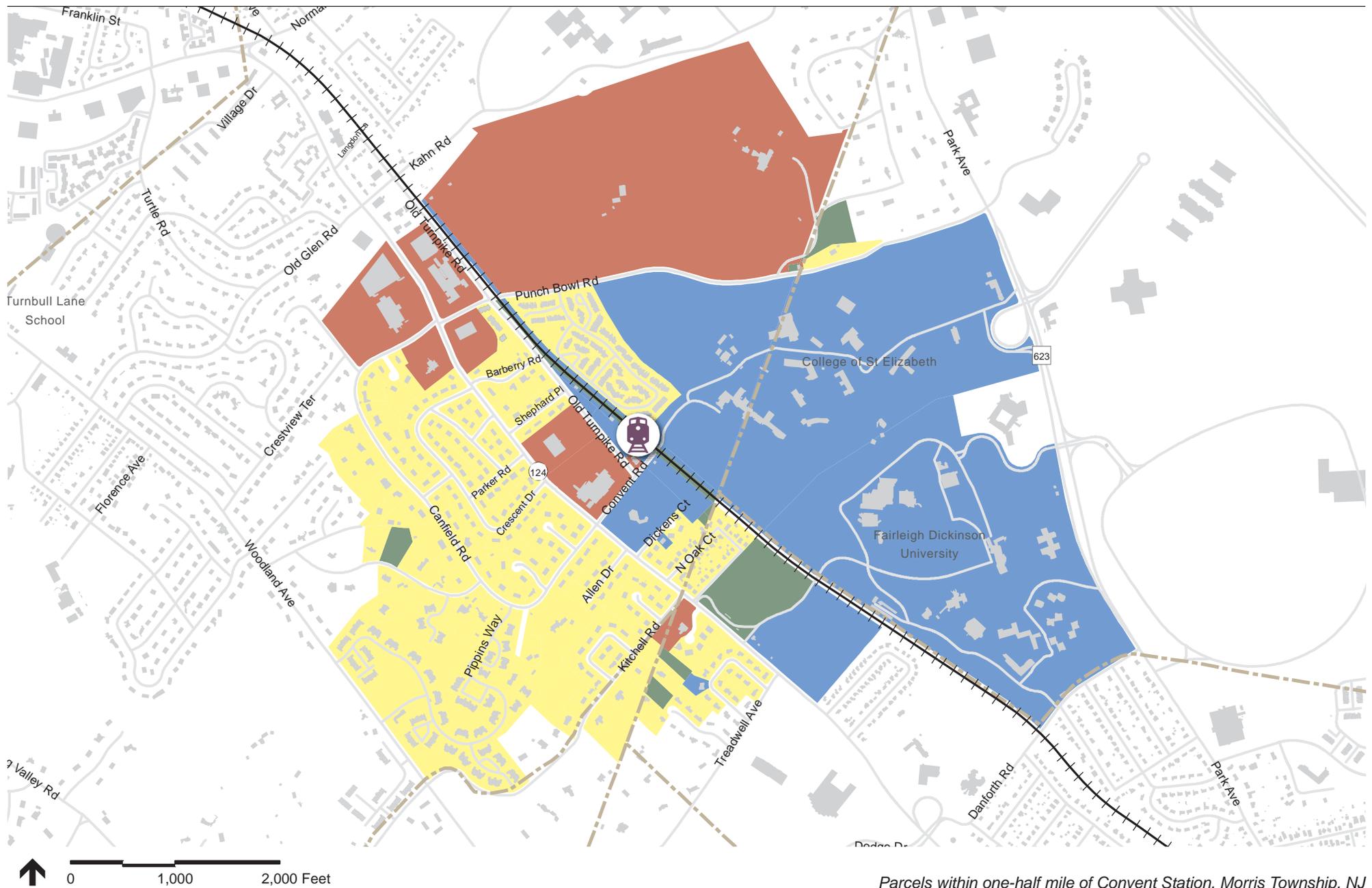
- Township of Harding
 - R-1 Single-Family Residence Residential Zone.

Table 3-3 summarizes the number of parcels and proportion of overall area within the analysis area by zone. Figures 3-5 and 3-6 show the general land uses and zoning designations for the Convent Station area.

Table 3-3: Parcels & Land Area by Zone, Convent Station Area

Zone	Zone Description	Total Area (Acres)	Total Parcels	Pct. of Total Area
R-44	One-Family Residence	239.4	4	31.7%
OS/GU	Open Space - Gov. Use	211.9	10	28.0%
RA-15	Single Family Residential	100.5	176	13.3%
RH-5	Multiple Family	52.2	12	6.9%
OL-5	Office and Research Lab.	43.8	19	5.8%
U	University Zone	29.9	2	3.9%
TH-8	Town House Residential	23.4	197	3.1%
RA-35	Single Family Residential	19.0	12	2.5%
R-1	Single-Family Residence Zone	18.5	32	2.4%
R-2	Single-Family Residence Zone	6.1	1	0.8%
R-3	Single-Family Residence Zone	5.6	25	0.7%
RA-11	Single Family Residential	5.0	17	0.7%
OL-40	Office and Research Lab.	1.0	1	0.1%

Source: Morris County, NJ, GIS; 2012



Parcels within one-half mile of Convent Station, Morris Township, NJ

-  Town Line
-  Railroad Line
-  Building Footprints
-  Residential
-  Public/Religious/Schools
-  Commercial/Industrial
-  Vacant Land
-  Train Station

 Morris County NJ 124
Transit Access Study

**General Land Use
Convent Station**

FIGURE 3-5

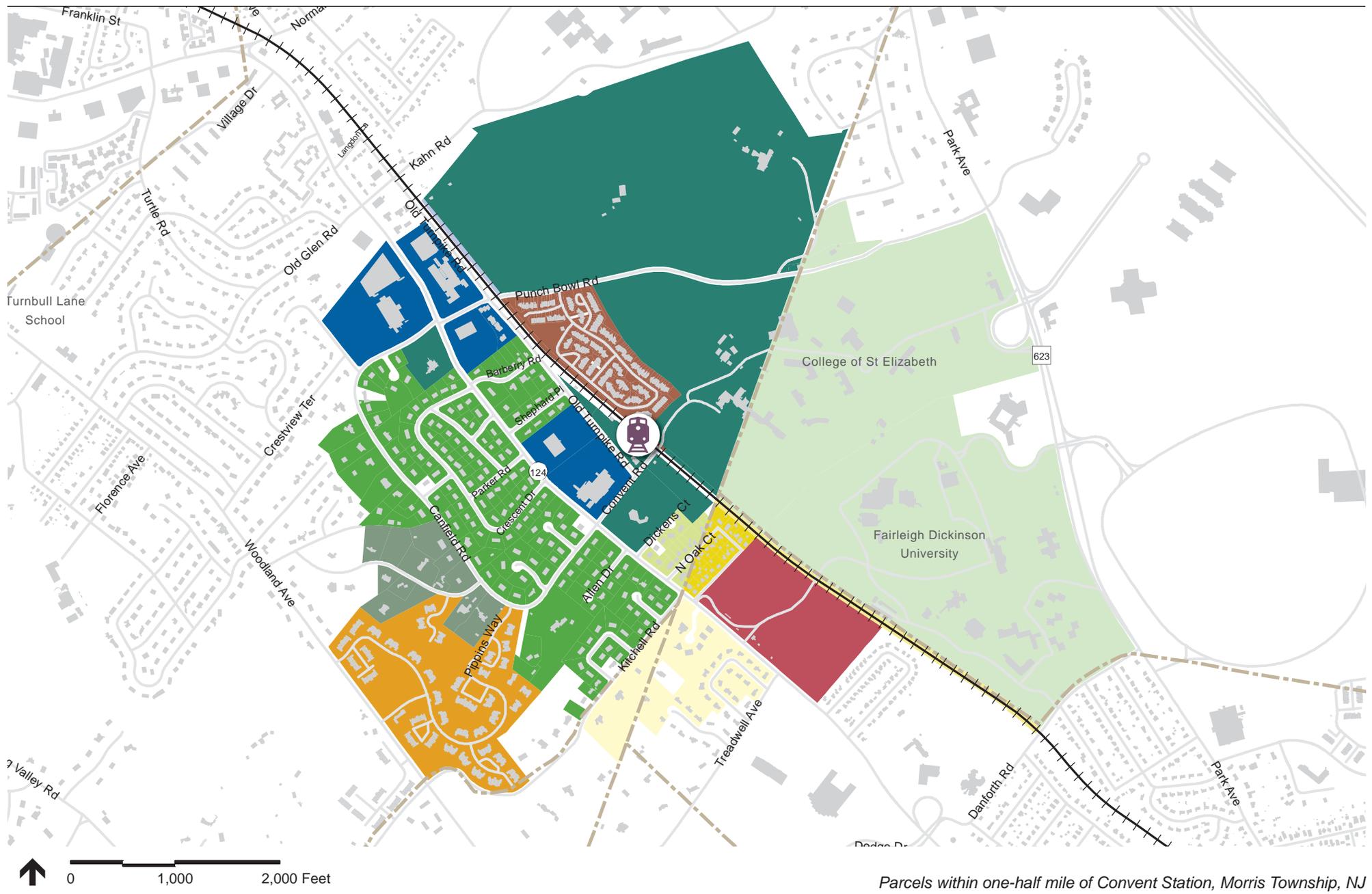


NJ 124 Corridor

Transit Access Improvement Study

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Parcels within one-half mile of Convent Station, Morris Township, NJ

-  Town Line
-  Railroad Line
-  Building Footprints
-  Train Station
-  R-1 - Single-Family Residential
-  R-2 - Single-Family Residential
-  R-3 - Single-Family Residential
-  U - University
-  OL-5 - Office and Research Laboratory
-  OL-40 - Office and Research Laboratory
- OS/GU - Open Space - Government Use
-  RA-11 - Single Family Residential
-  RA-15 - Single Family Residential
-  RA-35 - Single Family Residential
-  RH-5 - Multi-Family Residential
-  TH-8 - Town House Residential
-  R-44 - One-Family Residential



Morris County NJ 124
Transit Access Study

Zoning Destinations Convent Station

FIGURE 3-6



densities of 5, 16, and 20 units per acre. Zoning of areas in the Township around Convent Station is a mix of Open Space/ Government Use (OS/ GU), Office and Research Laboratory (OL-5), University (U), various single-family residential zones, and an area of Town House Residential (TH-8) with a maximum density of eight units per acre.

The Township most recently updated its master plan with a Reexamination in 2007. While the report does not specifically address the Convent Station area or transit service, it does contain policies that are relevant to this study, including the following goals:

- “Maintain established patterns of density both for single-family and multi-family uses...”
- “Maintenance of existing commercial areas and restriction of new commercial development”

The report also noted that the Township participated in the 2010 Exxon regional traffic study that included the intersections of Madison Avenue (NJ 124) with Punch Bowl Road, just west of Convent Station, and with Normandy Parkway further to the west. The Township suggested that the Madison/ Punch Bowl intersection be considered for signalization and that the signal at Normandy Parkway should be reviewed to reduce congestion on Madison Avenue. Madison Avenue was also listed as a priority for sidewalk construction.

3.3 Improvement to Land Value Analysis

An economic analysis of existing land improvements and their relationship to the land values was undertaken for each station area. The improvement-to-land value ratio is one metric used for identifying redevelopment opportunities since it provides an indication of general economic viability of an area. The indicator provides a snapshot based on the current valuation of properties in an area and then uses that valuation as a means of identifying underutilized properties.

For the purposes of calculating the improvement-to-land value ratio, the improvement value is equivalent to the assessed value of the structures on a property, and the land value reflects the assessed value of the land alone. Both values are determined by the tax assessor of the local municipality.

Developed properties located in economically viable areas typically have improvement-to-land-value ratios of at least 0.5 or higher; that is, the value of the buildings on the property is at least as high as one half the value of the land itself. Parcels with an improvement-to-land value ratio of less than 0.5 (that is, where the built structure was valued at less than half the value of the assessed



land) are considered to be underdeveloped. These properties are prospective opportunities for redevelopment in the sense that they present an opportunity to increase the overall value by renovating or replacing structures.

The following improvement-to-land value analysis was conducted using assessed land values and improvement value data that were obtained from the Morris County Division of GIS. The ratios of improvement-to-land value were calculated and each parcel was categorized based on its ratio. Redeveloping low-value land parcels close to a rail station could prove fiscally beneficial to the local community, based on the likelihood of generating net positive tax revenues. While the analysis may indicate the *potential* for redevelopment, other factors discussed in this chapter, such as market analysis and TOD analysis, as well as the zoning, community character, and historic nature of the community’s properties will contribute to whether underutilized properties can or will redevelop.

3.3.1 Chatham Station Area

Figure 3-7 depicts the improvement-to-land value ratios in the areas surrounding Chatham Station. As shown in Figures 3-1 and 3-2, a linear business district is located along Main Street (NJ 124) just north of the rail line, surrounded by established residential neighborhoods interspersed with educational facilities. Table 3-4 summarizes the improvement to land value ratios by parcel count and percentage. Most properties have a ratio of less than 0.5, which is consistent with older housing stock (small homes built on large parcels) that exist in the area and the municipality’s predominantly low density zoning, which may not capture the property’s full development value. These parcels have high land values but relatively low improvement values. These properties could be considered to be underutilized or as having potential for redevelopment.

Table 3-4: Improvement-to-Land Value Ratios, Chatham Station Area

Improvement to Land Value Ratio	Parcel Count	Pct. of Total Parcels
0-0.5	1,014	67%
0.5-1.0	434	28%
1.0-1.5	32	2%
1.5-2.0	14	1%
2.0+	25	2%
Total	1,519	100%

Source: Morris County, NJ, GIS; 2012

Based on the improvement-to-land value analysis, re-development or infill development in the Chatham Central Business District is likely the best opportunity to improve property densities and built assessments consistent with

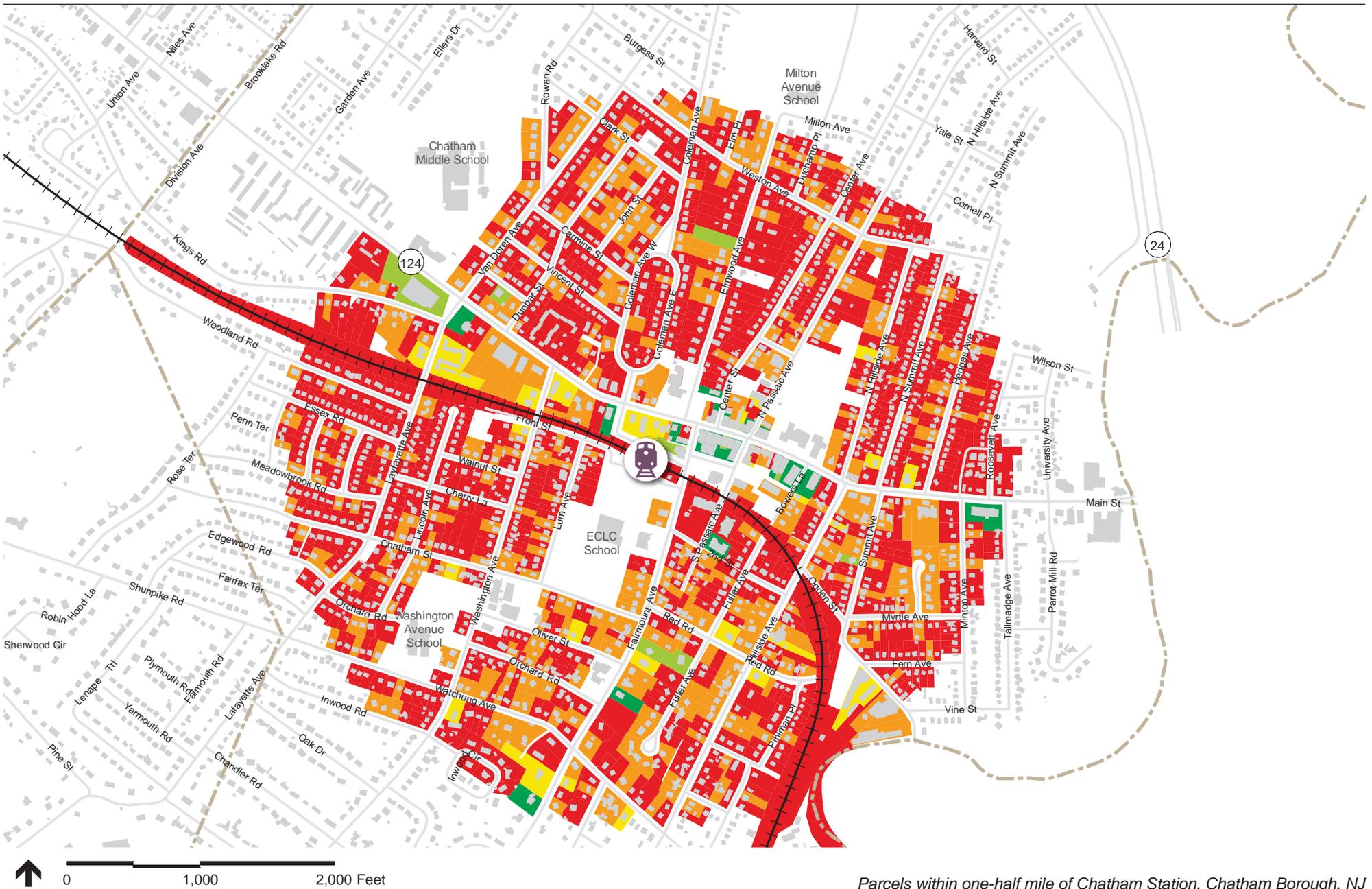


NJ 124 Corridor

Transit Access Improvement Study

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Parcels within one-half mile of Chatham Station, Chatham Borough, NJ



Morris County NJ 124
Transit Access Study

**Property Improvement Value
To Land Value Ratio
Chatham Station**

FIGURE 3-7



the TOD characteristics of the area. Again, based upon this analysis, the majority (67 percent) of the properties in the study area are underdeveloped. However, since there are no substantial vacant parcels in the Borough or large groupings of underutilized properties, there appears to be little to no opportunity to develop a large-scale master planned TOD amongst the existing properties and established residential neighborhoods in the area. As noted in the review of Chatham Borough’s planning documentation, Chatham is focused on preserving the scale and density of their town. Therefore, efforts to assemble properties for a larger-scale redevelopment would likely encounter economic, political, and physical challenges, and would not be consistent with local planning objectives.

3.3.2 Madison Station Area

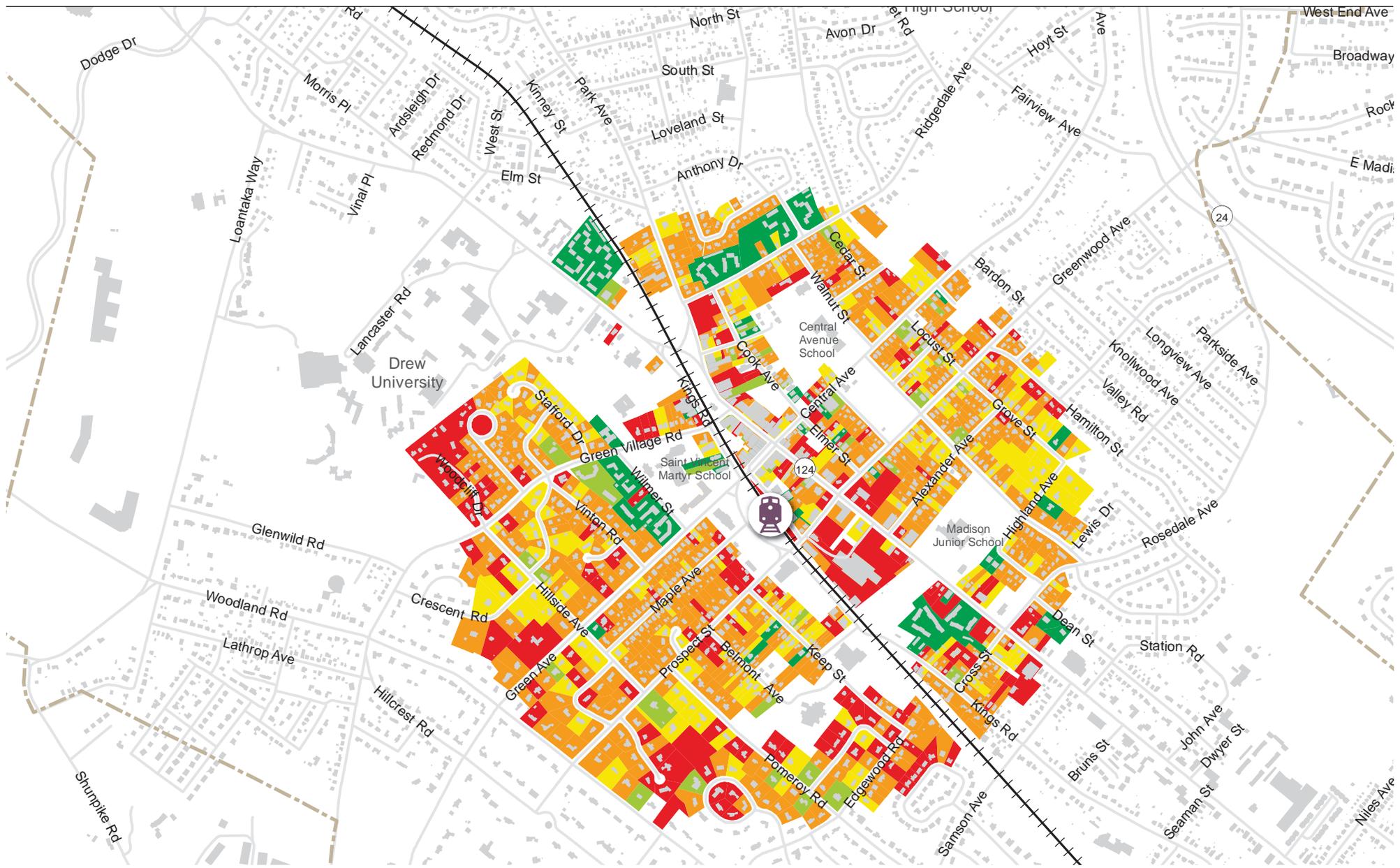
Figure 3-8 depicts the improvement-to-land value ratios in the area surrounding Madison Station. As shown in Figures 3-3 and 3-4, a number of public educational facilities are located in the area surrounding the station, with the business district running along Main Street (NJ 124) north and east of the rail line. Established and relatively dense residential neighborhoods surround the business district. Table 3-5 summarizes the improvement-to-land value ratios by parcel count and percentage. The ratio for most properties falls from 0.5 to 1.0, largely reflecting developed neighborhoods where properties are appropriately developed to capture land and improvement value, and contain few developable parcels.

Table 3-5: Improvement-to-Land Value Ratios, Madison Station Area

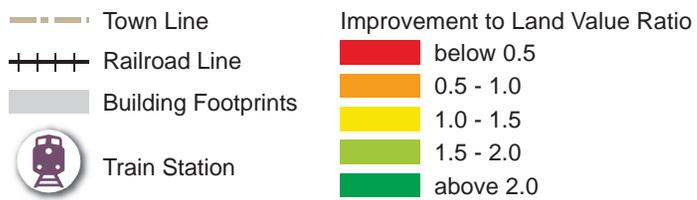
Improvement to Land Value Ratio	Parcel Count	Pct. of Total Parcels
0-0.5	165	17%
0.5-1.0	556	55%
1.0-1.5	199	20%
1.5-2.0	42	4%
2.0+	42	4%
Total	1,004	100%

Source: Morris County, NJ, GIS; 2012

Per this analysis and field observations, within a half mile of the Madison Station there are relatively few opportunities such as sizable vacant or underdeveloped properties for large-scale master-planned TOD initiatives, other than those already selected for redevelopment of this type as noted in the previous section of this report. Similar to Chatham Borough, efforts to assemble large enough parcels from these underutilized properties to create economically viable TODs would likely be difficult, although Madison is more supportive of this type of development around the station according to their planning documents. Fewer underutilized properties exist in the Madison study area as the improvement-to-



Parcels within one-half mile of Madison Station, Madison, NJ



Morris County NJ 124
Transit Access Study

**Property Improvement Value
To Land Value Ratio
Madison Station**

FIGURE 3-8



land value analysis indicates that the majority (84 percent) of properties in this area are currently developed appropriately and consistent with the existing TOD characteristics of the station area.

3.3.3 Convent Station Area

Figure 3-9 depicts the improvement-to-land value ratios in the Convent Station area. As shown in Figures 3-5 and 3-6, a number of educational facilities are located near the station, with office uses in the northwest corner of the analysis area and an established residential neighborhood located southwest from the rail line. Table 3-6 summarizes the ratios by parcel count and percentage. The improvement-to-land value ratios for the residential properties range from 0.5 to greater than 2.0, with the exception of the multi-family development in the southwest corner of the analysis area. As a general rule, improvement-to-land-value ratios for multi-family residential developments are subject to fluctuation as influenced by local market conditions and rental rates.

Table 3-6: Improvement-to-Land Value Ratios, Convent Station Area

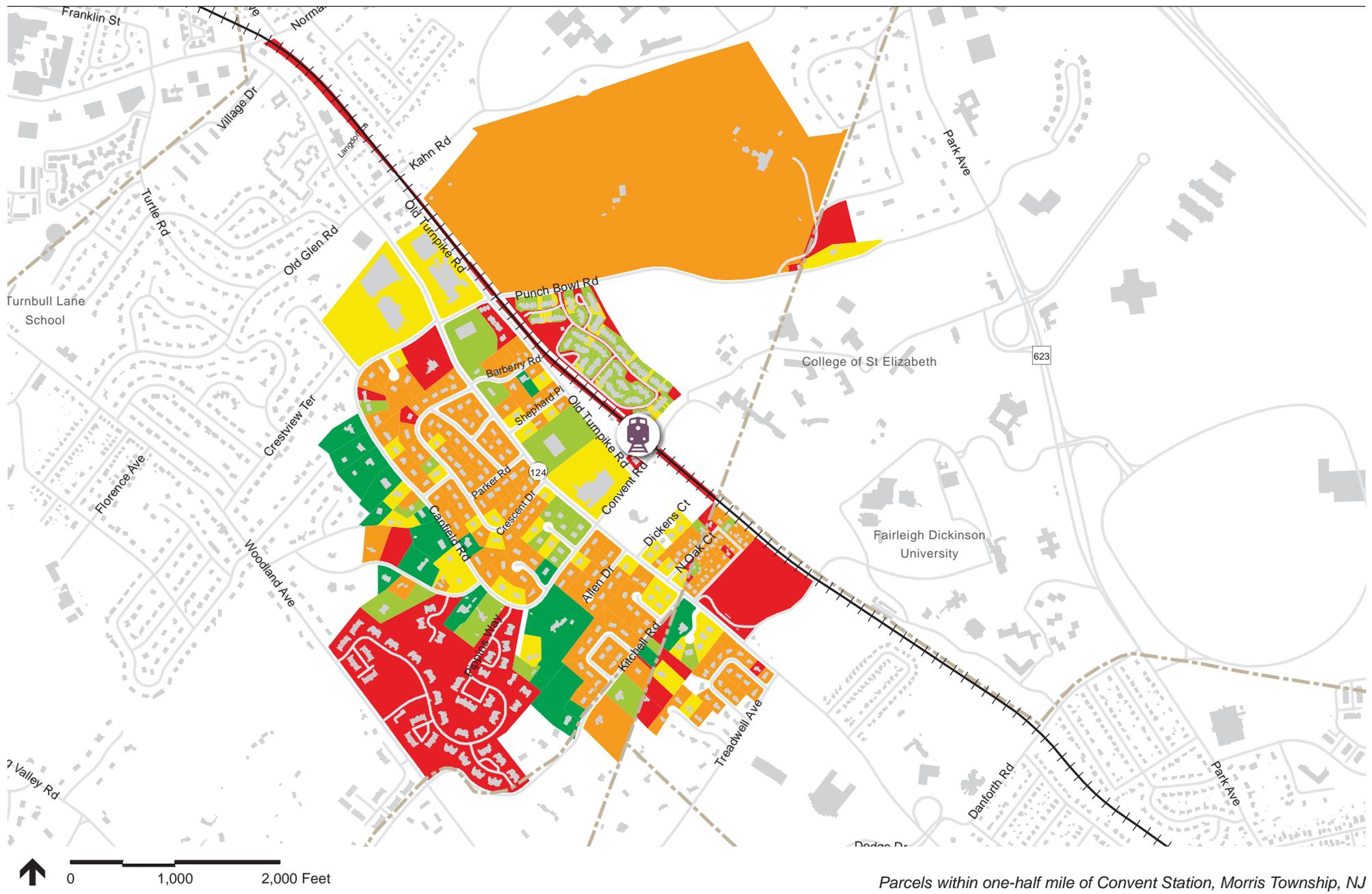
Improvement to Land Value Ratio	Parcel Count	Pct. of Total Parcels
0.0-0.5	32	6%
0.5-1.0	176	36%
1.0-1.5	78	16%
1.5-2.0	182	36%
2.0+	29	6%
Total	497	

Source: Morris County, NJ, GIS; 2012

The improvement-to-land value analysis for properties within a half mile of Convent Station indicates that the majority (94 percent) are appropriately developed and that a small number of land parcels are redevelopment candidates.

3.3.4 Summary

The improvement-to-land value analysis supports the local knowledge that the areas surrounding three stations range from under-developed (Chatham Station) to appropriately developed (Madison and Convent Stations). This analysis indicates that aside from the substantial parking fields at each station area, and already planned development, there is little opportunity for significant development in the station areas. Infill development, re-development, and higher development, with support of revised zoning codes, all offer the potential to increase densities around the stations with land uses that would support non-automobile-dependent lifestyles. However, the general sense from planning



Morris County NJ 124
Transit Access Study

**Property Improvement Value
To Land Value Ratio
Convent Station**

FIGURE 3-9



documents, zoning codes, and discussions with community representatives is that Chatham Borough are unwilling to embrace denser and mixed-use development that may result in a departure from the existing community character.

3.4 Regional Market Analysis

The potential success of any TOD is tied to the characteristics of the surrounding real estate market. For each of the three station areas, market analyses were performed to identify the extent and characteristics of demand that could be expected to be captured by residential development within a TOD. Estimated and projected socio-economic trends that were examined include: population, household size and growth, family and non-family households,¹⁷ household income (data unavailable for year 2010), educational attainment, and age cohort characteristics. A glossary of terms is provided in Appendix D of this report.

Each of these metrics gives some indication of the viability of a TOD in each community:

- Positive population and household growth trends increase demand for housing, which is critical to the success of a TOD.
- Housing tenure, or a comparison of the percentage of residences that are owned versus rented, can indicate the type of housing that will be in demand in the coming years.
- The current and projected age distribution of the population of a community will indicate the types of housing that will be in future demand. Growth in the young professionals' age group (25-34 years old) indicates an increased demand for smaller housing units in compact, urban settings with good access to transit. Growth in the empty-nesters demographic (ages 55-74) projects an increased demand for higher-end housing in compact settings with amenities such as transit and shopping nearby.
- High levels of household income indicate a propensity for upper-scale housing as well as high levels of disposable income. Both of these metrics are favorable for TOD that includes high-end housing combined with specialty retail.

The regional market analysis for the NJ 124 Corridor Transit Access Improvement Study included analysis years 2010, 2012 (estimated), and 2017 (projected). Quantitative demographic trend analyses were underpinned by a combination of public and proprietary data sources, including U.S. Census-based data and ESRI Community Analyst Online (CAO) software. Three market areas

¹⁷ Does not include students living in college dormitories.



were analyzed at each station: a Base Area, a Primary Market Area, and a Secondary Market Area. These market areas represent the full market area that would be attracted to each individual station and the surrounding development.

3.4.1 Chatham Station Area

This section discusses the market analysis performed for the Chatham Station area.

3.4.1.1 Geographies Analyzed

The designated market areas that were assessed include a one-half mile radius Base Area, a 7.5 mile radius Primary Market Area (PMA), approximating a 15-minute drive contour, and a 7.5- to 15-mile radius Secondary Market Area (SMA) surrounding Chatham Station. Collectively, the Base Area, PMA, and SMA are referred as “geographies.” Figures 3-10 and 3-11 depict these areas. The base area is the geography from which the most TOD activity would be generated should market conditions in Chatham Borough bring about a favorable change in housing or mixed development around the train station. The PMA is the next area that would generate activity and be affected by a change in Chatham’s development mix. Together with the Base Area, the PMA encompasses 70 percent of likely commuter rail patrons for Chatham Station. The SMA is an area further from the train station and the outer limits from which residents may be attracted to the station and to possibly relocate to Chatham for housing should the market conditions be favorable. The SMA is assumed to approximate nearly 30 percent of likely patrons for Chatham Station. Residents from the SMA may also be attracted to travel to Chatham Borough for goods and services if market conditions in Chatham were favorable and those goods and services were available. Transit Oriented Developments are successful when robust demographics exist in all three market analysis zones.

3.4.1.2 Population and Households

Although the half mile Chatham Station Base Area experienced weak positive population growth over the 2010 to 2012 period, household population growth is projected to remain effectively, flat, across all three geographies, with relatively minor gains in household population by 2017. While estimated and projected population change across all geographies examined is relatively small, the greatest change is concentrated among persons living in non-family households—a demographic group consistently identified with TOD residential profiles.

Table 3-7 summarizes the population data for the Chatham geographies.

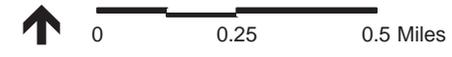
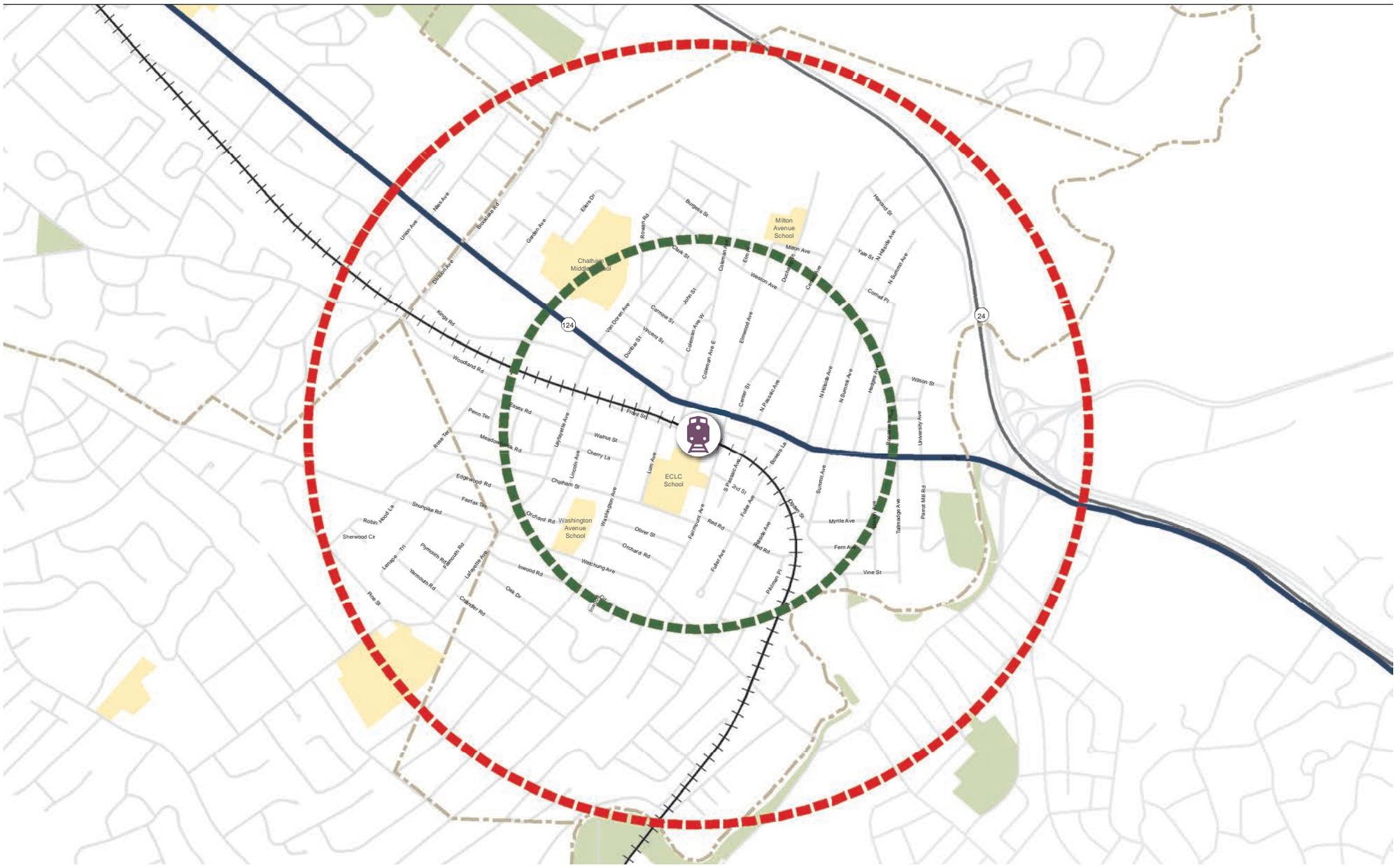


NJ 124 Corridor

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-  Town Line
-  Base Area (0.5-mile radius)
-  Railroad Line
-  Base Area (1-mile radius)
-  Train Station



Morris County NJ 124
Transit Access Study

Geographies
Chatham Station

FIGURE 3-10

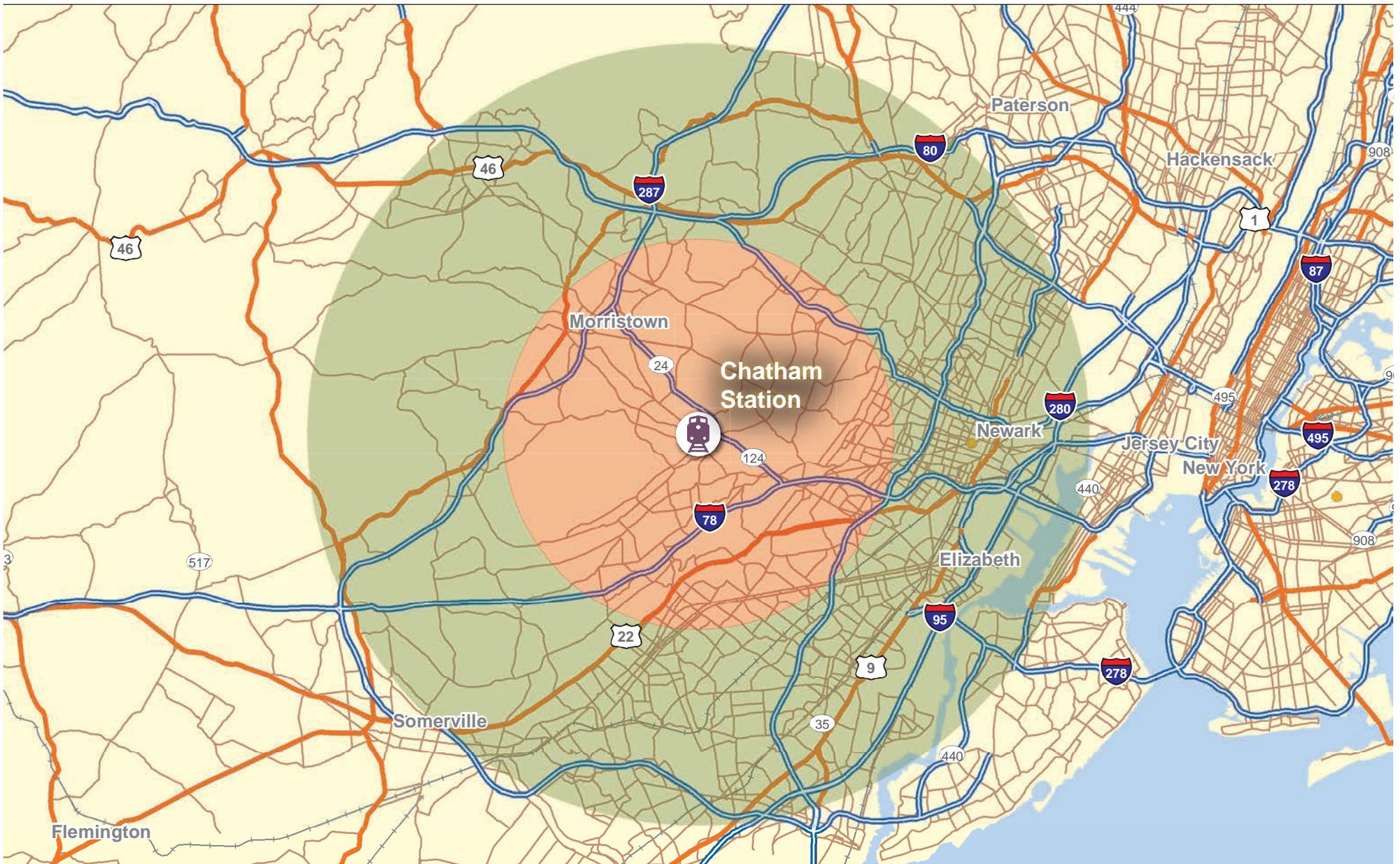


NJ 124 Corridor

Transit Access Improvement Study

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Train Station



Primary Market Area (0-7.5 mile radius)



Secondary Market Area (7.5-15 mile radius)



Morris County NJ 124
Transit Access Study

Geographies
Chatham Station

FIGURE 3-11



NJ 124 Corridor Transit Access Improvement Study

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Table 3-7: Population Trends

Chatham Station Base Area							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	3,985	100.0%	4,047	100.0%	4,121	100.0%	1.6%	1.8%
In Households	3,959	99.3%	4,021	99.4%	4,100	99.5%	1.6%	2.0%
In Families	3,599	90.3%	3,648	90.1%	3,712	90.1%	1.4%	1.8%
In Non-family Households	386	9.7%	399	9.9%	409	9.9%	3.3%	2.4%
Chatham Station PMA							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	452,165	100.0%	453,977	100.0%	459,311	100.0%	0.4%	1.2%
In Households	443,746	98.1%	445,656	98.2%	450,628	98.1%	0.4%	1.1%
In Families	381,812	84.4%	382,319	84.2%	386,934	84.2%	0.1%	1.2%
In Non-family Households	70,353	15.6%	71,658	15.8%	72,377	15.8%	1.9%	1.0%
Chatham Station SMA							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	1,906,051	100.0%	1,911,034	100.0%	1,925,139	100.0%	0.3%	0.7%
In Households	1,859,968	97.6%	1,864,497	97.6%	1,884,720	97.9%	0.2%	1.1%
In Families	1,557,364	81.7%	1,556,657	81.5%	1,565,027	81.3%	-0.1%	0.5%
In Non-family Households	348,687	18.3%	354,377	18.5%	360,112	18.7%	1.6%	1.6%

Source: US Census Bureau, ESRI Community Analyst; 2013



Household formation trends closely followed the flat population trend patterns in all three geographies examined—that is, over the 2010 to 2012 period, relatively small changes in the total number of households within the Station Base Area, PMA, and SMA were observed. Consistent with regional and national trends, non-family household formation grew (albeit slowly) at a rate faster than family households across all three geographies examined (this was particularly the case for the Station Base Area). Household size across geographies, from 2010 to 2012, was fairly typical, ranging from 2.72 to 2.92.

Overall household formation trends through 2017 for all three geographies are projected to remain relatively flat, with non-family households continuing to grow at a slightly faster rate. This cohort is likely to be seeking housing in downtown settings with transit accessibility and thus reflects positively for potential TOD in Chatham Borough.

Table 3-8 summarizes the household formation data.



NJ 124 Corridor Transit Access Improvement Study

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Table 3-8: Household Formation Trends

Chatham Station Base Area							Percentage Change	
	2010		2012		2017		2010-2012	2010-2017
Total Households	1,365	100.0%	1,377	100.0%	1,404	100.0%	0.9%	2.0%
Families	1,071	78.5%	1,076	78.1%	1,095	78.0%	0.5%	1.8%
Non-Families	294	21.5%	301	21.9%	309	22.0%	2.4%	2.7%
Average Household Size	2.90		2.92		2.92		0.7%	0.0%
Chatham Station PMA							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Households	163,142	100.0%	163,844	100.0%	165,672	100.0%	0.4%	1.1%
Families	118,208	72.5%	118,365	72.2%	119,424	72.1%	0.1%	0.9%
Non-Families	44,934	27.5%	45,479	27.8%	46,248	27.9%	1.2%	1.7%
Average Household Size	2.72		2.72		2.72		0.0%	0.0%
Chatham Station SMA							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Households	681,307	100.0%	682,966	100.0%	687,854	100.0%	0.2%	0.7%
Families	473,363	69.5%	473,148	69.3%	475,692	69.2%	-0.1%	0.5%
Non-Families	207,944	30.5%	209,818	30.7%	212,162	30.8%	0.9%	1.1%
Average Household Size	2.73		2.73		2.74		0.0%	0.4%

Source: US Census Bureau, ESRI Community Analyst; 2013



3.4.1.3 Age

2012 US Census data was used to assess age characteristics in the three Chatham geographies. Data is presented for the following age ranges:

- Pre-School-Age Children (<5 years)
- Grade School-Age Children (5-14 years)
- High School and College-Age (15-24 years)
- Young Workforce and Grads (25-34 years)
- Early Stage Families (35-44 years)
- Late Stage Families (45-54 years)
- Young Empty Nesters (55-64 years)
- Older Empty Nesters (65-74 years)
- Mostly Retired (>74 years)

The 2012 median age in the Station Base Area and SMA was approximately 38 years, as compared to 41 in the PMA. Notable percentage changes occurred within the young workforce and grad population group (a gain of 4.1 percent in the Station Base Area), the late stage families population group (a loss of three percent within the SMA), the young empty nesters population group (gains of 5.7, 5.4, and 4.6 percent in the Station Base Area, PMA and SMA, respectively), and older empty nesters population group (gains of 7.4, 7.7, and 8.2 percent in the Station Base Area, PMA and SMA, respectively).

The greatest projected percentage changes among age cohorts through 2017 will, principally, occur within the older empty nesters population group age 65 to 75 years. Research suggests that persons within the young workforce and grad and older age groups represent growing demand for the types of small housing units typically found within TODs. These age demographics show that there would be a market for this type of housing in the Chatham geographies.

Table 3-9 summarizes the Chatham Station area age demographics.



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Table 3-9: Population Age Trends

Chatham Station Base Area							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	3,985	100.0%	4,047	100.0%	4,121	100.0%	1.6%	1.8%
Pre-School-Age Children	410	10.3%	417	10.3%	424	10.3%	1.6%	1.8%
Grade School-Age Children	769	19.3%	777	19.2%	795	19.3%	1.0%	2.4%
High School and College-Age	311	7.8%	312	7.7%	297	7.2%	0.3%	-4.8%
Young Workforce and Grads	323	8.1%	336	8.3%	346	8.4%	4.1%	3.1%
Early Stage Families	733	18.4%	733	18.1%	725	17.6%	-0.1%	-1.0%
Late Stage Families	658	16.5%	648	16.0%	614	14.9%	-1.5%	-5.2%
Young Empty Nesters	391	9.8%	413	10.2%	441	10.7%	5.7%	6.8%
Older Empty Nesters	207	5.2%	223	5.5%	272	6.6%	7.4%	22.2%
Mostly Retired	187	4.7%	190	4.7%	206	5.0%	1.6%	8.3%
Median age	38 years		38 years		38 years		0.3%	-0.3%

Chatham Station PMA							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	452,165	100.0%	453,977	100.0%	459,311	100.0%	0.4%	1.2%
Pre-School-Age Children	28,034	6.2%	28,147	6.2%	28,477	6.2%	0.4%	1.2%
Grade School-Age Children	65,564	14.5%	64,919	14.3%	66,141	14.4%	-1.0%	1.9%
High School and College-Age	51,999	11.5%	50,845	11.2%	48,687	10.6%	-2.2%	-4.3%
Young Workforce and Grads	45,217	10.0%	45,852	10.1%	46,850	10.2%	1.4%	2.2%
Early Stage Families	67,373	14.9%	65,827	14.5%	64,763	14.1%	-2.3%	-1.6%
Late Stage Families	74,607	16.5%	72,636	16.0%	67,978	14.8%	-2.6%	-6.4%
Young Empty Nesters	54,712	12.1%	57,655	12.7%	60,629	13.2%	5.4%	5.2%
Older Empty Nesters	31,199	6.9%	33,594	7.4%	40,419	8.8%	7.7%	20.3%
Mostly Retired	33,912	7.5%	34,048	7.5%	35,826	7.8%	0.4%	5.2%
Median age	41 years		41 years		41 years		1.0%	0.7%

Chatham Station SMA							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	1,906,051	100.0%	1,911,034	100.0%	1,925,139	100.0%	0.3%	0.7%
Pre-School-Age Children	121,987	6.4%	122,306	6.4%	123,209	6.4%	0.3%	0.7%
Grade School-Age Children	249,693	13.1%	246,523	12.9%	248,343	12.9%	-1.3%	0.7%
High School and College-Age	251,599	13.2%	248,434	13.0%	234,867	12.2%	-1.3%	-5.5%
Young Workforce and Grads	263,035	13.8%	269,456	14.1%	273,370	14.2%	2.4%	1.5%
Early Stage Families	278,283	14.6%	271,367	14.2%	267,594	13.9%	-2.5%	-1.4%
Late Stage Families	291,626	15.3%	282,833	14.8%	263,744	13.7%	-3.0%	-6.8%
Young Empty Nesters	219,196	11.5%	229,324	12.0%	240,642	12.5%	4.6%	4.9%
Older Empty Nesters	120,081	6.3%	129,950	6.8%	155,936	8.1%	8.2%	20.0%
Mostly Retired	110,551	5.8%	110,840	5.8%	115,508	6.0%	0.3%	4.2%
Median age	37 years		38 years		38 years		0.5%	0.8%

Source: US Census Bureau, ESRICommunity Analyst; 2013

3.4.1.4 Housing Tenure

Housing tenure trends within the Chatham Base Station Area, over the 2010 to 2012 period, show that approximately 80 percent of all occupied housing stock was owner-occupied, as compared to approximately 70 percent in the PMA and approximately 50 percent in the SMA. This relatively high ownership rate within the Base Station Area indicates a likely pent-up demand for rental units – a housing type which is prominently featured in successful TODs, which are attractive to young professionals and empty nesters.

Figure 3-12 depicts the rented housing units in the Chatham Station geographies. Table 3-10 presents housing tenure statistics.

Figure 3-12: Rented Housing Unit Comparison

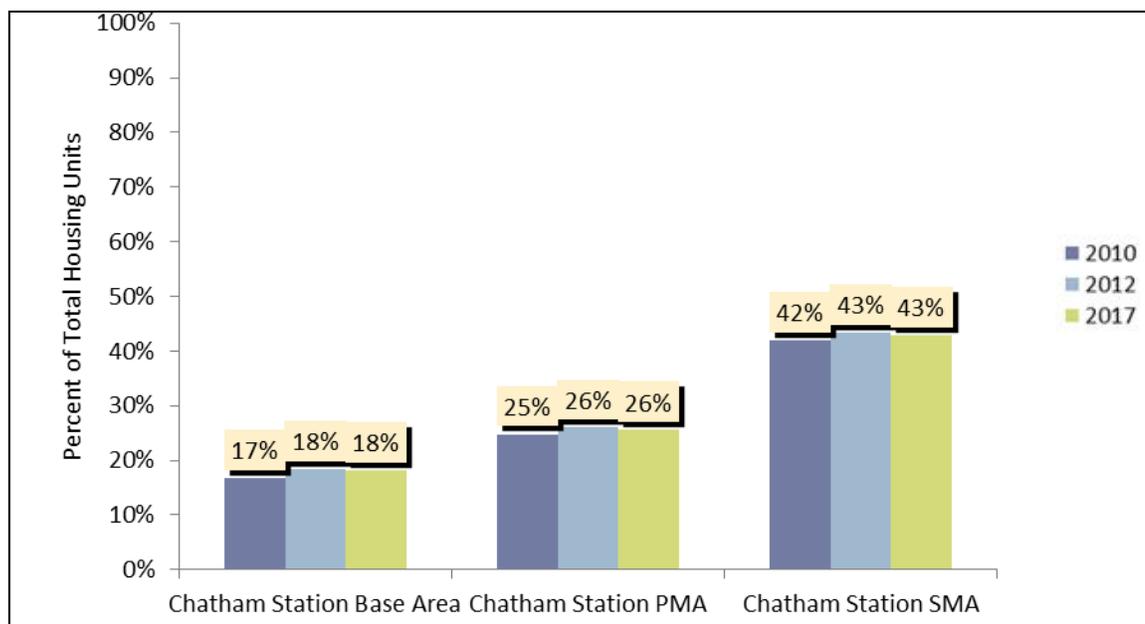




Table 3-10: Housing Tenure Trends

Chatham Station Base Area								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Housing Units	1,429	100.0%	1,432	100.0%	1,449	100.0%	0.2%	1.2%	
Vacant Housing Units	64	4.5%	55	3.8%	45	3.1%	-14.1%	-18.2%	
Owned Housing Units	1,126	78.8%	1,114	77.8%	1,142	78.8%	-1.1%	2.5%	
Rented Housing Units	239	16.7%	263	18.4%	262	18.1%	10.0%	-0.4%	
Chatham Station PMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Housing Units	171,298	100.0%	172,318	100.0%	174,515	100.0%	0.6%	1.3%	
Vacant Housing Units	8,156	4.8%	8,474	4.9%	8,843	5.1%	3.9%	4.4%	
Owned Housing Units	120,759	70.5%	119,100	69.1%	121,129	69.4%	-1.4%	1.7%	
Rented Housing Units	42,383	24.7%	44,745	26.0%	44,543	25.5%	5.6%	-0.5%	
Chatham Station SMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Housing Units	731,643	100.0%	733,897	100.0%	740,226	100.0%	0.3%	0.9%	
Vacant Housing Units	50,336	6.9%	50,931	6.9%	52,372	7.1%	1.2%	2.8%	
Owned Housing Units	374,152	51.1%	364,704	49.7%	370,602	50.1%	-2.5%	1.6%	
Rented Housing Units	307,155	42.0%	318,262	43.4%	317,252	42.9%	3.6%	-0.3%	

Source: US Census Bureau, ESRI Community Analyst; 2013



3.4.1.5 Household Income

Households within the Chatham Base Station Area are relatively affluent, exhibiting a 2012 median household income of nearly \$151,200—compared to approximately \$98,300 in the PMA and \$60,200 in the SMA. Indeed, more than 80 percent of households within the Chatham Base Station Area in 2012 had annual incomes greater than \$75,000. By comparison, the share of households earning more than \$75,000 annually was 61 percent in the PMA and 42 percent in the SMA—substantially lower than the share identified in the Station Base Area.

However, the percentage growth in households earning more than \$75,000 per annum, over the 2010 to 2012 period is projected to be greater within the PMA and SMA. For example, the number of households earning more than \$75,000 per annum within the Station Base Area is estimated to grow at a rate of 1.73 percent per year from 2012 to 2017, compared to 2.71 and 3.81 percent in the PMA and SMA, respectively, over the same period. These upper income household trends are favorable for prospective TOD activity.

Table 3-11 summarizes the Household Income trends across the analyzed Chatham geographies.



Table 3-11: Household Income Trends

Chatham Station Base Area						% Change
	2012		2017		2012-2017	
Total Households	1,377	100.0%	1,404	100.0%	2.0%	
< \$35,000	85	6.2%	63	4.5%	-25.9%	
\$35K to \$74.9K	185	13.4%	137	9.8%	-26.0%	
\$75K to \$99.9K	127	9.2%	148	10.5%	16.5%	
\$100K to \$149.9K	283	20.6%	292	20.8%	3.2%	
>\$149.9K	699	50.8%	765	54.5%	9.4%	
Median household income	\$151,175		\$157,155		4.0%	
Chatham Station PMA						% Change
	2012		2017		2012-2017	
Total Households	163,844	100.0%	165,672	100.0%	1.1%	
< \$35,000	25,270	15.4%	20,464	12.4%	-19.0%	
\$35K to \$74.9K	37,653	23.0%	30,595	18.5%	-18.7%	
\$75K to \$99.9K	20,074	12.3%	24,695	14.9%	23.0%	
\$100K to \$149.9K	32,342	19.7%	34,718	21.0%	7.4%	
>\$149.9K	48,504	29.6%	55,198	33.3%	13.8%	
Median household income	\$98,300		\$107,054		8.9%	
Chatham Station SMA						% Change
	2012		2017		2012-2017	
Total Households	682,966	100.0%	687,854	100.0%	0.7%	
< \$35,000	200,248	29.3%	178,283	25.9%	-11.0%	
\$35K to \$74.9K	198,616	29.1%	171,390	24.9%	-13.7%	
\$75K to \$99.9K	81,888	12.0%	105,669	15.4%	29.0%	
\$100K to \$149.9K	105,037	15.4%	118,785	17.3%	13.1%	
>\$149.9K	97,160	14.2%	113,710	16.5%	17.0%	
Median household income	\$60,207		\$73,048		21.3%	

Source: US Census Bureau, ESRI Community Analyst; 2013



3.4.2 Madison Station Area

This section discusses the market analysis performed for the Madison Station area.

3.4.2.1 Geographies Analyzed

The designated market areas that were assessed include a one-half mile radius Base Area, a 7.5 mile radius Primary Market Area (PMA) approximating a 15-minute drive contour, and a 7.5- to 15-mile radius Secondary Market Area (SMA) surrounding Madison Station. Collectively, the Base Area, PMA, and SMA are referred as “geographies.” Figures 3-13 and 3-14 depict these areas. The base area is the geography from which the most TOD activity would be generated should market conditions in Madison bring about a favorable change in housing or mixed development around the train station. Together with the Base Area, the PMA encompasses 70 percent of likely commuter rail patrons for Madison Station. The PMA is the next area that would generate activity and be affected by a change in Madison’s development mix. The SMA is an area further from the train station and the outer limits from which residents may be attracted to relocate to Madison for housing should the market conditions be favorable. The SMA is assumed to approximate nearly 30 percent of likely patrons for Madison Station. Residents from the SMA may also be attracted to travel to Madison for goods and services if market conditions were favorable. TODs are successful when robust demographics exist in all three market analysis zones.

3.4.2.2 Population and Households

The rate of household population growth from 2010 to 2012 within the Madison Station Base Area (1.97 percent per year) was the strongest for all geographies examined. In contrast with the Chatham and Convent Station geographies, population increase within the Madison Station Base Area over the same period was, principally, concentrated among persons living in family households. Although the rate of household growth is projected to decline slightly, it is expected to continue growing at a rate of 1.20 percent per year through 2017. Similarly, and consistent with population trends, household formation (especially among family households) experienced strong positive growth within the Station Base Area but flat growth within the PMA and SMA, over the 2010 to 2012 period. The rate of household formation is projected to decline slightly, but to continue growing at a rate of 1.02 percent per year through 2017. Average household size increases with distance from the station area – consistent with patterns observed for more established TODs.

Tables 3-12 and 3-13 depict population and household trends for the Madison Station geographies.

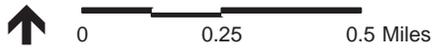


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-  Town Line
-  Base Area (0.5-mile radius)
-  Base Area (1-mile radius)
-  Railroad Line
-  Train Station



Morris County NJ 124
Transit Access Study

Geographies
Madison Station

FIGURE 3-13

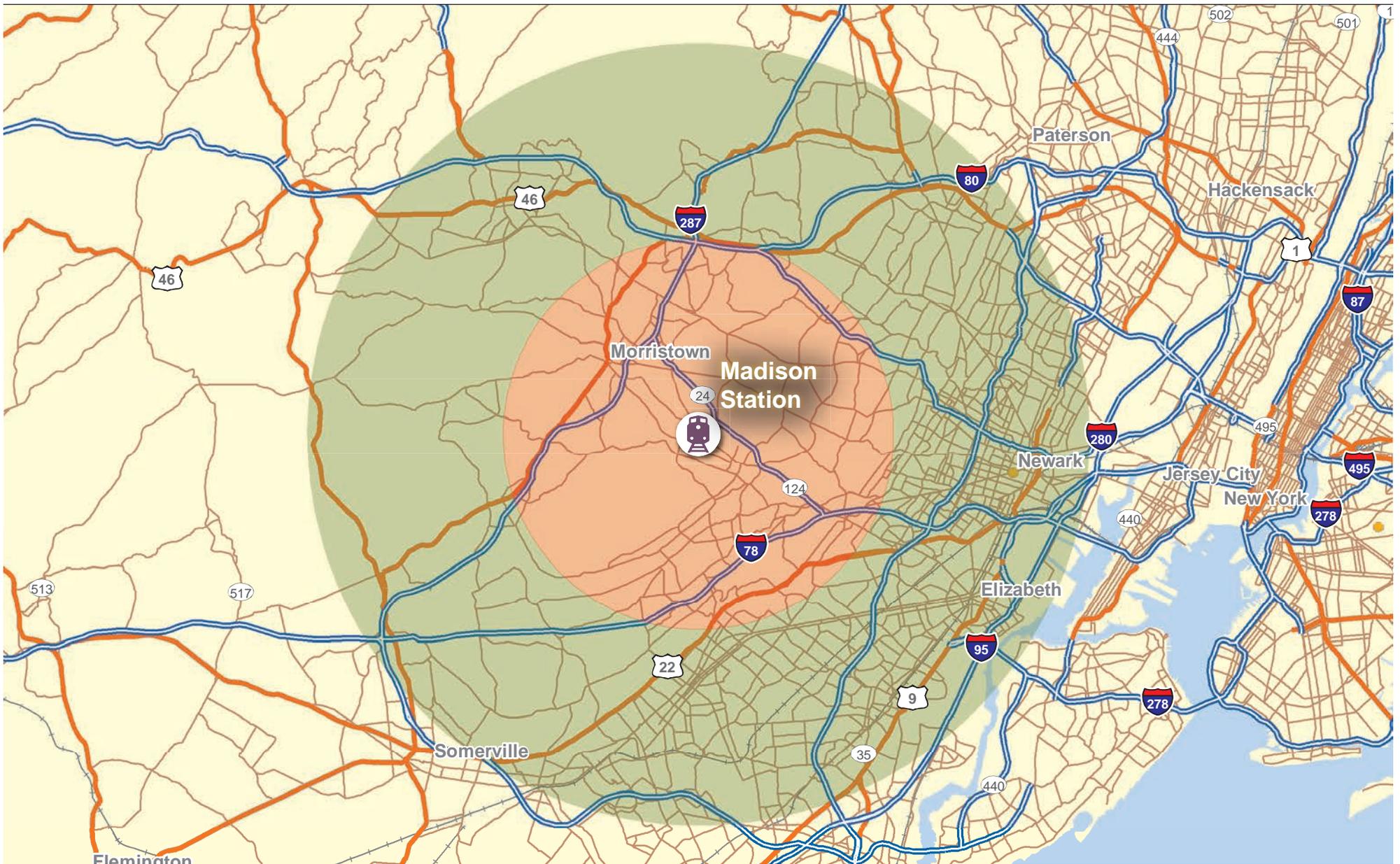


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Train Station



Primary Market Area (0-7.5 mile radius)

Secondary Market Area (7.5-15 mile radius)



Morris County NJ 124
Transit Access Study

Geographies
Madison Station

FIGURE 3-14



Table 3-12: Population Trends

Madison Station Base Area								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Population	3,403	100.0%	3,536	100.0%	3,740	100.0%	3.9%	5.8%	
Household Population	3,306	97.1%	3,436	97.2%	3,641	97.3%	3.9%	6.0%	
Family Population	2,672	78.5%	2,788	78.8%	2,959	79.1%	4.3%	6.2%	
Non-Family Population	731	21.5%	748	21.2%	781	20.9%	2.4%	4.3%	
Madison Station PMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Population	307,321	100.0%	309,559	100.0%	314,661	100.0%	0.7%	1.7%	
Household Population	299,201	97.4%	301,283	97.3%	306,632	97.4%	0.7%	1.8%	
Family Population	258,508	84.1%	259,510	83.8%	263,516	83.7%	0.4%	1.5%	
Non-Family Population	48,813	15.9%	50,049	16.2%	51,145	16.3%	2.5%	2.2%	
Madison Station SMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Population	1,820,717	100.0%	1,825,826	100.0%	1,838,323	100.0%	0.3%	0.7%	
Household Population	1,783,384	97.9%	1,788,160	97.9%	1,800,268	97.9%	0.3%	0.7%	
Family Population	1,488,310	81.7%	1,488,084	81.5%	1,500,276	81.6%	0.0%	0.8%	
Non-Family Population	332,407	18.3%	337,742	18.5%	338,047	18.4%	1.6%	0.1%	

Source: US Census Bureau, ESRI Community Analyst; 2013



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Table 3-13: Household Formation Trends

Madison Station Base Area								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Households	1,366	100.0%	1,408	100.0%	1,480	100.0%	3.1%	5.1%	
Family Households	882	64.6%	911	64.7%	964	65.1%	3.3%	5.8%	
Non-Family Households	484	35.4%	497	35.3%	516	34.9%	2.7%	3.8%	
Average households size	2.42		2.44		2.46		0.8%	0.8%	
Madison Station PMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Households	111,642	100.0%	112,419	100.0%	114,415	100.0%	0.7%	1.8%	
Family Households	81,037	72.6%	81,351	72.4%	82,607	72.2%	0.4%	1.5%	
Non-Family Households	30,605	27.4%	31,068	27.6%	31,808	27.8%	1.5%	2.4%	
Average households size	2.68		2.68		2.68		0.0%	0.0%	
Madison Station SMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Households	650,870	100.0%	652,613	100.0%	657,032	100.0%	0.3%	0.7%	
Family Households	453,753	69.7%	453,684	69.5%	456,011	69.4%	0.0%	0.5%	
Non-Family Households	197,117	30.3%	198,929	30.5%	201,021	30.6%	0.9%	1.1%	
Average households size	2.74		2.74		2.74		0.0%	0.0%	

Source: US Census Bureau, ESRI Community Analyst; 2013



3.4.2.3 Age

The 2012 median age in the Madison Station geographies ranged from 38 to 42 years, with the median age projected to remain relatively stable through 2017. Growth is fairly concentrated within age groups 55 and older, across all three geographies examined. Indeed, by 2017, more than 25 percent of all geographies will be 55 or older. Notwithstanding the relatively flat population growth in the PMA and SMA, growth has been particularly robust for persons between the ages of 55 and 74 for all three geographies, which is consistent with regional trends. This age cohort is also strongly correlated with empty nesters – a demographic group often identified within TOD projects.

Table 3-14 summarizes age demographics across the three geographies.

3.4.2.4 Housing Tenure

The 2010 to 2012 annual growth in total housing units within the Madison Station Base Area (0.82 percent) fell below the growth in household formation in the same geography over the same period. As a consequence, the Station Base Area experienced a strong decline (8.34 percent) in the number of available vacant units. Although this trend is expected to slow, markedly, through 2017, it will remain strong as the household population continues to grow along with housing demand.

Figure 3-15 depicts the comparison and projection of rented units in the Madison Station geographies. Table 3-15 presents housing tenure statistics.



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Table 3-14: Population Age Trends

Madison Station Base Area							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	3,403	100.0%	3,536	100.0%	3,740	100.0%	3.9%	5.8%
Pre-School-Age Children	228	6.7%	233	6.6%	251	6.7%	2.4%	7.4%
Grade School-Age Children	524	15.4%	548	15.5%	591	15.8%	4.6%	7.8%
High School and College-Age	415	12.2%	424	12.0%	423	11.3%	2.2%	-0.4%
Young Workers and Grads	361	10.6%	378	10.7%	396	10.6%	4.9%	4.8%
Early Stage Families	544	16.0%	552	15.6%	565	15.1%	1.3%	2.4%
Late Stage Families	558	16.4%	562	15.9%	554	14.8%	0.7%	-1.6%
Young Empty Nesters	330	9.7%	361	10.2%	400	10.7%	9.3%	11.0%
Older Empty Nesters	201	5.9%	223	6.3%	284	7.6%	11.0%	27.6%
Mostly Retired	242	7.1%	251	7.1%	277	7.4%	3.9%	10.2%
Median age	38.7 years		39.0 years		39.1 years		0.8%	0.3%

Madison Station 7.5 Mile Radius							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	307,321	100.0%	309,559	100.0%	314,661	100.0%	0.7%	1.7%
Pre-School-Age Children	18,439	6.0%	18,574	6.0%	18,565	5.9%	0.7%	-0.1%
Grade School-Age Children	45,176	14.7%	44,576	14.4%	45,626	14.5%	-1.3%	2.4%
High School and College-Age	32,883	10.7%	32,504	10.5%	31,151	9.9%	-1.2%	-4.2%
Young Workers and Grads	28,888	9.4%	29,718	9.6%	30,522	9.7%	2.9%	2.7%
Early Stage Families	45,176	14.7%	44,267	14.3%	43,738	13.9%	-2.0%	-1.2%
Late Stage Families	51,323	16.7%	50,149	16.2%	46,884	14.9%	-2.3%	-6.5%
Young Empty Nesters	38,108	12.4%	39,933	12.9%	42,165	13.4%	4.8%	5.6%
Older Empty Nesters	23,049	7.5%	24,765	8.0%	29,893	9.5%	7.4%	20.7%
Mostly Retired	24,586	8.0%	25,074	8.1%	26,117	8.3%	2.0%	4.2%
Median age	41.6 years		42.0 years		42.4 years		1.0%	1.0%

Madison Station 7.5-15 Mile Donut							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	1,820,717	100.0%	1,825,826	100.0%	1,838,323	100.0%	0.3%	0.7%
Pre-School-Age Children	116,526	6.4%	116,853	6.4%	117,653	6.4%	0.3%	0.7%
Grade School-Age Children	242,155	13.3%	239,183	13.1%	240,820	13.1%	-1.2%	0.7%
High School and College-Age	240,335	13.2%	237,357	13.0%	224,275	12.2%	-1.2%	-5.5%
Young Workers and Grads	243,976	13.4%	248,312	13.6%	251,850	13.7%	1.8%	1.4%
Early Stage Families	267,645	14.7%	261,093	14.3%	255,527	13.9%	-2.5%	-2.1%
Late Stage Families	282,211	15.5%	275,700	15.1%	255,527	13.9%	-2.3%	-7.3%
Young Empty Nesters	209,382	11.5%	219,099	12.0%	229,790	12.5%	4.6%	4.9%
Older Empty Nesters	116,526	6.4%	124,156	6.8%	148,904	8.1%	6.6%	19.9%
Mostly Retired	105,602	5.8%	105,898	5.8%	112,138	6.1%	0.3%	5.9%
Median age	38 years		38 years		38 years		0.5%	0.8%

Source: US Census Bureau, ESRI Community Analyst; 2013



Figure 3-15: Rented Housing Unit Comparison

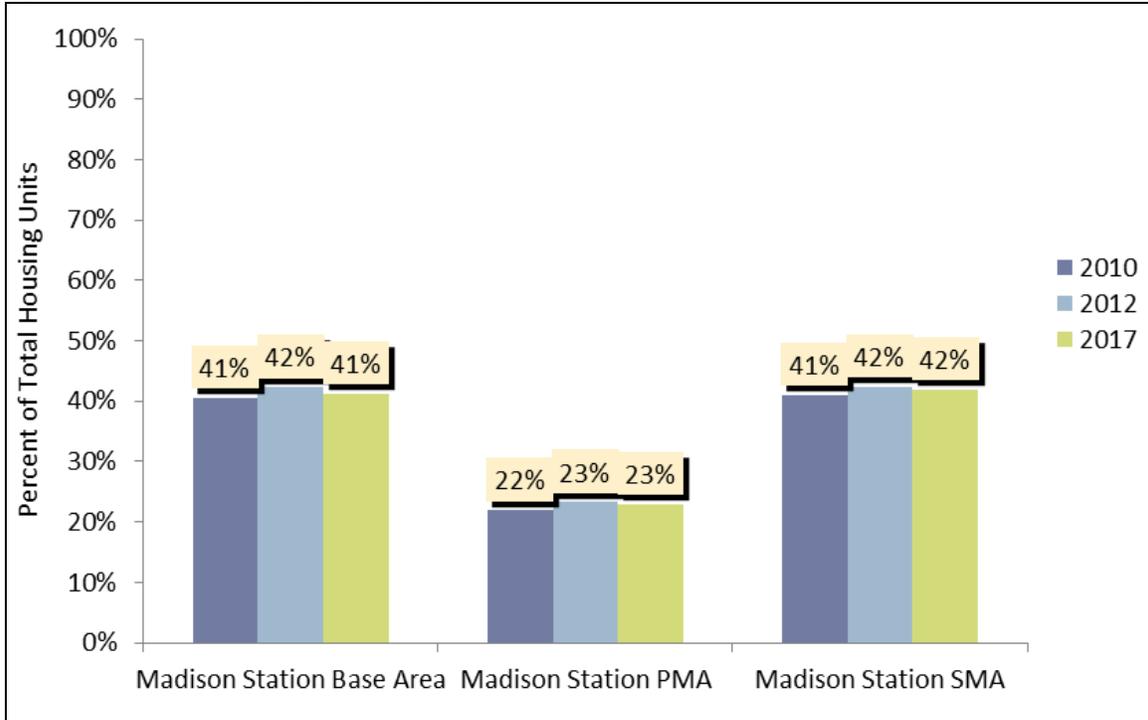




Table 3-15: Housing Tenure Trends

Madison Station Base Area									Percentage Change	
	2010		2012		2017		2010-2012	2012-2017		
Total Housing Units	1,474	100.0%	1,498	100.0%	1,555	100.0%	1.6%	3.8%		
Vacant Housing Units	108	7.3%	90	6.0%	75	4.8%	-16.7%	-16.7%		
Owned Housing Units	768	52.1%	773	51.6%	838	53.9%	0.7%	8.4%		
Rented Housing Units	598	40.6%	635	42.4%	642	41.3%	6.2%	1.1%		
Madison Station PMA										
	2010		2012		2017		2010-2012	2012-2017		
Total Housing Units	116,871	100.0%	117,656	100.0%	119,574	100.0%	0.7%	1.6%		
Vacant Housing Units	5,229	4.5%	5,237	4.5%	5,159	4.3%	0.2%	-1.5%		
Owned Housing Units	85,978	73.6%	85,027	72.3%	86,936	72.7%	-1.1%	2.3%		
Rented Housing Units	25,664	22.0%	27,392	23.3%	27,478	23.0%	6.7%	0.3%		
Madison Station SMA										
	2010		2012		2017		2010-2012	2012-2017		
Total Housing Units	699,350	100.0%	701,601	100.0%	707,485	100.0%	0.3%	0.8%		
Vacant Housing Units	48,480	6.9%	48,988	7.0%	50,453	7.1%	1.1%	3.0%		
Owned Housing Units	363,563	52.0%	354,899	50.6%	360,081	50.9%	-2.4%	1.5%		
Rented Housing Units	287,307	41.1%	297,714	42.4%	296,951	42.0%	3.6%	-0.3%		

Source: US Census Bureau, ESRI Community Analyst; 2013



3.4.2.1 Household Income

Median household income is significantly higher in the Station Base Area than in the PMA or SMA (\$124,000 in the Station Base Area in 2012, as compared to \$111,600 in the PMA and \$61,000 in the SMA for the same year). Nonetheless, from 2010 to 2012 the percentage increase in median household income was dramatic, across all three geographies: Station Base Area (9.2 percent); PMA (8.4 percent); and SMA (22.0 percent). While high income households are concentrated near the Madison Station, the fastest growth among upper income households is occurring within the SMA, where households earning more than \$75,000 annually are projected to increase by 3.72 percent per year from 2012 through 2017.

Table 3-16 depicts the Household Incomes in the Madison Station geographies.



Table 3-16: Household Income Trends

Madison Station Base Area						Percentage Change
	2012		2017		2012-2017	
Total Households	1,408	99.9%	1,480	99.9%	5.1%	
< \$35,000	184	13.1%	147	9.9%	-20.1%	
\$35K to \$74.9K	248	17.6%	208	14.1%	-16.1%	
\$75K to \$99.9K	111	7.9%	155	10.5%	39.6%	
\$100K to \$149.9K	277	19.7%	294	19.9%	6.1%	
>\$149.9K	587	41.7%	675	45.6%	15.0%	
Median household income	\$124,056		\$135,408		9.2%	
Madison Station PMA						Percentage Change
	2012		2017		2012-2017	
Total Households	112,419	100.0%	114,415	100.0%	1.8%	
< \$35,000	13,411	11.9%	10,528	9.2%	-21.5%	
\$35K to \$74.9K	22,114	19.7%	17,456	15.3%	-21.1%	
\$75K to \$99.9K	13,070	11.6%	15,879	13.9%	21.5%	
\$100K to \$149.9K	23,931	21.3%	25,455	22.2%	6.4%	
>\$149.9K	39,893	35.5%	45,096	39.4%	13.0%	
Median household income	\$111,585		\$120,919		8.4%	
Madison Station SMA						Percentage Change
	2012		2017		2012-2017	
Total Households	652,613	100.0%	657,032	100.0%	0.7%	
< \$35,000	188,524	28.9%	167,914	25.6%	-10.9%	
\$35K to \$74.9K	188,432	28.9%	162,131	24.7%	-14.0%	
\$75K to \$99.9K	76,633	11.7%	98,866	15.0%	29.0%	
\$100K to \$149.9K	99,623	15.3%	112,322	17.1%	12.8%	
>\$149.9K	99,387	15.2%	115,785	17.6%	16.5%	
Median household income	\$61,013		\$74,439		22.0%	

Source: US Census Bureau, ESRI Community Analyst; 2013

3.4.3 Convent Station Area

This section discusses the market analysis performed for the Convent Station area.



3.4.3.1 Geographies Analyzed

The designated market areas that were assessed include a one-half mile radius Base Area, a 7.5 mile radius Primary Market Area (PMA) approximating a 15-minute drive contour, and a 7.5- to 15-mile radius Secondary Market Area (SMA) surrounding Convent Station. Collectively, the Base Area, PMA, and SMA are referred as “geographies.” Figures 3-16 and 3-17 depict these areas. The base area is the geography from which the most activity would be generated should market conditions in Morris Township bring about a favorable change in housing or mixed development around Convent Station. The PMA is the next area that would generate activity and be affected by a change in Morris Township’s development mix. Together with the Base Area, the PMA encompasses 70 percent of likely commuter rail patrons for Convent Station. The SMA is an area further from the train station and the outer limits from which residents may be attracted to relocate to Morris Township for housing should the market conditions be favorable. The SMA is assumed to approximate nearly 30 percent of likely patrons for Convent Station. Residents from the SMA may also be attracted to travel to Morris Township for goods and services if market conditions were favorable and those goods and services were available. Transit Oriented Developments (TODs) are successful when robust demographics exist in all three market analysis zones.

3.4.3.2 Population and Households

Like the Chatham Station geographies examined, while the half mile Convent Station Base Area experienced weak positive population growth over the 2010 to 2012 period, household population growth within the PMA and SMA remain effectively, flat. It should be noted that the 2010 to 2012 annualized household population growth rate within the Station Base Area (0.96 percent) was more than twice the annual population growth rate in the PMA (0.40 percent) and eight times the annual population growth rate in the SMA (0.12 percent), over the same period. Given Convent Station’s proximity to three institutions of higher education, it is likely that a substantial portion of the Station Base Area’s larger rate of growth was influenced by persons moving into the half mile area who have some affiliation with one or more of the schools (e.g., off-campus students, faculty, and staff).

Similarly, and consistent with population trends, household formation experienced weak positive growth within the Station Base Area but flat growth within the PMA and SMA, over the 2010 to 2012 period. Annualized population and household growth is projected to slow slightly through 2017 across all three geographies.

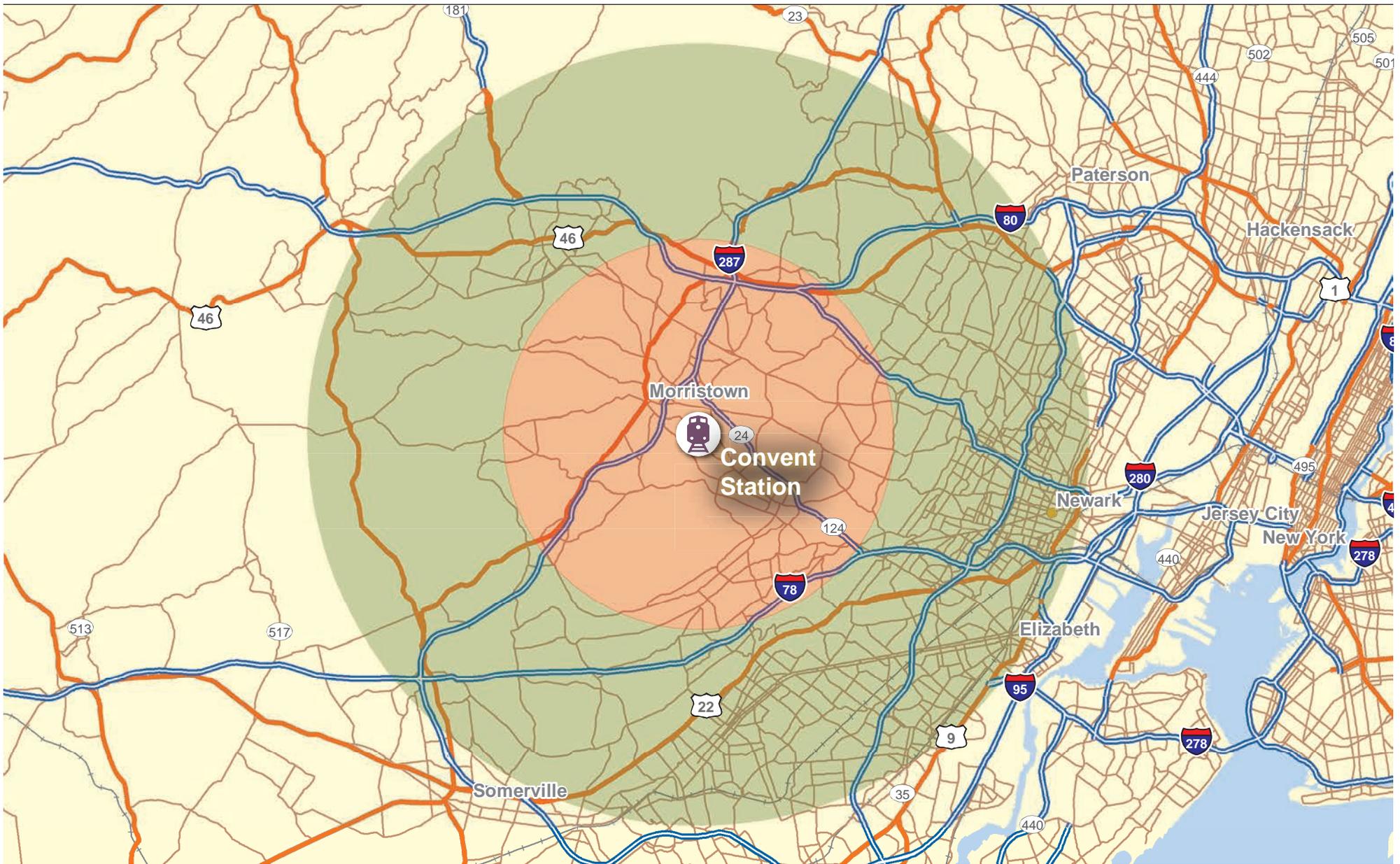
Tables 3-17 and 3-18 summarize the population and household demographics for the Convent Station geographies.



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Train Station



Primary Market Area (0-7.5 mile radius)



Secondary Market Area (7.5-15 mile radius)



Morris County NJ 124
Transit Access Study

Geographies
Convent Station

FIGURE 3-17



NJ 124 Corridor Transit Access Improvement Study

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Table 3-17: Population Trends

Convent Station Base Area								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Population	1,552	100.0%	1,579	100.0%	1,615	100.0%	1.7%	2.3%	
Household Population	1,318	84.9%	1,343	85.1%	1,381	85.5%	1.9%	2.8%	
Family Population	1,097	70.7%	1,117	70.8%	1,146	70.9%	1.9%	2.5%	
Non-Family Population	455	29.3%	462	29.2%	469	29.1%	1.4%	1.7%	
Convent Station PMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Population	276,621	100.0%	279,173	100.0%	283,984	100.0%	0.9%	1.7%	
Household Population	269,152	97.3%	271,278	97.2%	276,579	97.4%	0.8%	2.0%	
Family Population	231,702	83.8%	232,841	83.4%	236,921	83.4%	0.5%	1.8%	
Non-Family Population	44,919	16.2%	46,332	16.6%	47,063	16.6%	3.2%	1.6%	
Convent Station SMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Population	1,606,164	100.0%	1,609,946	100.0%	1,620,055	100.0%	0.2%	0.6%	
Household Population	1,574,320	98.0%	1,578,082	98.0%	1,588,246	98.0%	0.2%	0.6%	
Family Population	1,314,644	81.8%	1,313,919	81.6%	1,324,028	81.7%	-0.1%	0.8%	
Non-Family Population	291,520	18.2%	296,027	18.4%	296,027	18.3%	1.6%	0.0%	

Source: US Census Bureau, ESRI Community Analyst; 2013



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Table 3-18: Household Formation Trends

Convent Station Base Area								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Households	469	100.0%	478	100.0%	495	100.0%	1.9%	3.6%	
Family Households	317	67.6%	322	67.4%	333	67.3%	1.6%	3.4%	
Non-Family Households	152	32.4%	156	32.6%	162	32.7%	2.6%	3.9%	
Average households size	2.81		2.81		2.79		0.0%	-0.7%	

Convent Station PMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Households	100,430	100.0%	101,223	100.0%	103,201	100.0%	0.8%	2.0%	
Family Households	72,634	72.3%	72,991	72.1%	74,270	72.0%	0.5%	1.8%	
Non-Family Households	27,796	27.7%	28,232	27.9%	28,931	28.0%	1.6%	2.5%	
Average households size	2.68		2.68		2.68		0.0%	0.0%	

Convent Station SMA								Percentage Change	
	2010		2012		2017		2010-2012	2012-2017	
Total Households	576,674	100.0%	578,052	100.0%	581,775	100.0%	0.2%	0.6%	
Family Households	400,806	69.5%	400,585	69.3%	402,440	69.2%	-0.1%	0.5%	
Non-Family Households	175,868	30.5%	177,467	30.7%	179,335	30.8%	0.9%	1.1%	
Average households size	2.73		2.73		2.73		0.0%	0.0%	

Source: US Census Bureau, ESRI Community Analyst; 2013



3.4.3.3 Age

The 2010 median age in the Convent Station geographies ranged from 38 to 43 years, and is anticipated to increase slightly by 2017. Similar to the Chatham Station geographies examined, there is aging trend across all three geographies with the older empty nester population cohort (65 to 75 years of age) anticipated to see strongest positive growth between 2012 and 2017. The 55-64 and 65-74 age cohorts exhibited the greatest percentage growth of all age groups in all Convent Station Geographies, by far exceeding all others. The population between 55 and 74 years of age is expected to continue this trend between 2012 and 2017.

Specifically, within the Station Base Area and PMA, the number of persons between 65 and 75 years of age is projected to increase by approximately 21 percent by 2017. These trends suggest likely burgeoning demand for small residential dwelling units within proximity to one or more modes of public transit.

Table 3-19 summarizes age demographics across the three geographies.

3.4.3.4 Housing Tenure

The percentage of rented units within the Convent Station Base Area is much lower than that of the PMA or SMA; 12 percent of all units in the Station Base Area are renter occupied, compared to approximately 25 percent in the PMA and 40 percent in the SMA. The presence of nearby colleges and universities (St. Elizabeth College, Fairleigh Dickinson University, and Drew University), where students and some faculty have a higher propensity to rent than own their dwelling unit suggests demand for more rental units than are available in the Base Area.

Figure 3-18 depicts the rented units for the Convent Station geographies. Table 3-20 presents housing tenure data.



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Table 3-19: Population Age Trends

Convent Station Base Area							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	1,552	100.0%	1,579	100.0%	1,615	100.0%	1.7%	2.3%
Pre-School-Age Children	85	5.5%	87	5.5%	87	5.4%	1.7%	0.4%
Grade School-Age Children	166	10.7%	167	10.6%	168	10.4%	0.8%	0.4%
High School and College-Age	289	18.6%	287	18.2%	283	17.5%	-0.5%	-1.7%
Young Workers and Grads	104	6.7%	106	6.7%	108	6.7%	1.7%	2.3%
Early Stage Families	188	12.1%	185	11.7%	181	11.2%	-1.6%	-2.1%
Late Stage Families	213	13.7%	210	13.3%	197	12.2%	-1.2%	-6.2%
Young Empty Nesters	192	12.4%	204	12.9%	215	13.3%	5.8%	5.5%
Older Empty Nesters	151	9.7%	164	10.4%	199	12.3%	9.1%	21.0%
Mostly Retired	166	10.7%	169	10.7%	176	10.9%	1.7%	4.2%
Median age	42.5 years		43.1 years		44.0 years		1.4%	2.1%
Convent Station PMA							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	276,621	100.0%	279,173	100.0%	283,984	100.0%	0.9%	1.7%
Pre-School-Age Children	16,044	5.8%	16,192	5.8%	16,471	5.8%	0.9%	1.7%
Grade School-Age Children	40,663	14.7%	40,759	14.6%	41,178	14.5%	0.2%	1.0%
High School and College-Age	30,152	10.9%	29,872	10.7%	28,682	10.1%	-0.9%	-4.0%
Young Workers and Grads	27,109	9.8%	27,638	9.9%	28,398	10.0%	2.0%	2.8%
Early Stage Families	40,940	14.8%	40,201	14.4%	39,758	14.0%	-1.8%	-1.1%
Late Stage Families	46,472	16.8%	45,505	16.3%	42,598	15.0%	-2.1%	-6.4%
Young Empty Nesters	34,301	12.4%	36,013	12.9%	38,054	13.4%	5.0%	5.7%
Older Empty Nesters	20,747	7.5%	22,334	8.0%	26,978	9.5%	7.7%	20.8%
Mostly Retired	20,470	7.4%	20,938	7.5%	21,867	7.7%	2.3%	4.4%
Median age	41.4 years		41.7 years		42.0 years		0.7%	0.7%
Convent Station SMA							Percentage Change	
	2010		2012		2017		2010-2012	2012-2017
Total Population	1,606,164	100.0%	1,609,946	100.0%	1,620,055	100.0%	0.2%	0.6%
Pre-School-Age Children	102,794	6.4%	101,427	6.3%	102,063	6.3%	-1.3%	0.6%
Grade School-Age Children	218,438	13.6%	215,733	13.4%	217,087	13.4%	-1.2%	0.6%
High School and College-Age	212,014	13.2%	207,683	12.9%	197,647	12.2%	-2.0%	-4.8%
Young Workers and Grads	200,771	12.5%	204,463	12.7%	207,367	12.8%	1.8%	1.4%
Early Stage Families	232,894	14.5%	227,002	14.1%	223,568	13.8%	-2.5%	-1.5%
Late Stage Families	253,774	15.8%	246,322	15.3%	228,428	14.1%	-2.9%	-7.3%
Young Empty Nesters	186,315	11.6%	194,803	12.1%	205,747	12.7%	4.6%	5.6%
Older Empty Nesters	104,401	6.5%	111,086	6.9%	132,845	8.2%	6.4%	19.6%
Mostly Retired	96,370	6.0%	98,207	6.1%	103,684	6.4%	1.9%	5.6%
Median age	38 years		39 years		39 years		0.8%	0.8%

Source: US Census Bureau, ESRICommunity Analyst; 2013



Figure 3-18: Rented Housing Unit Comparison

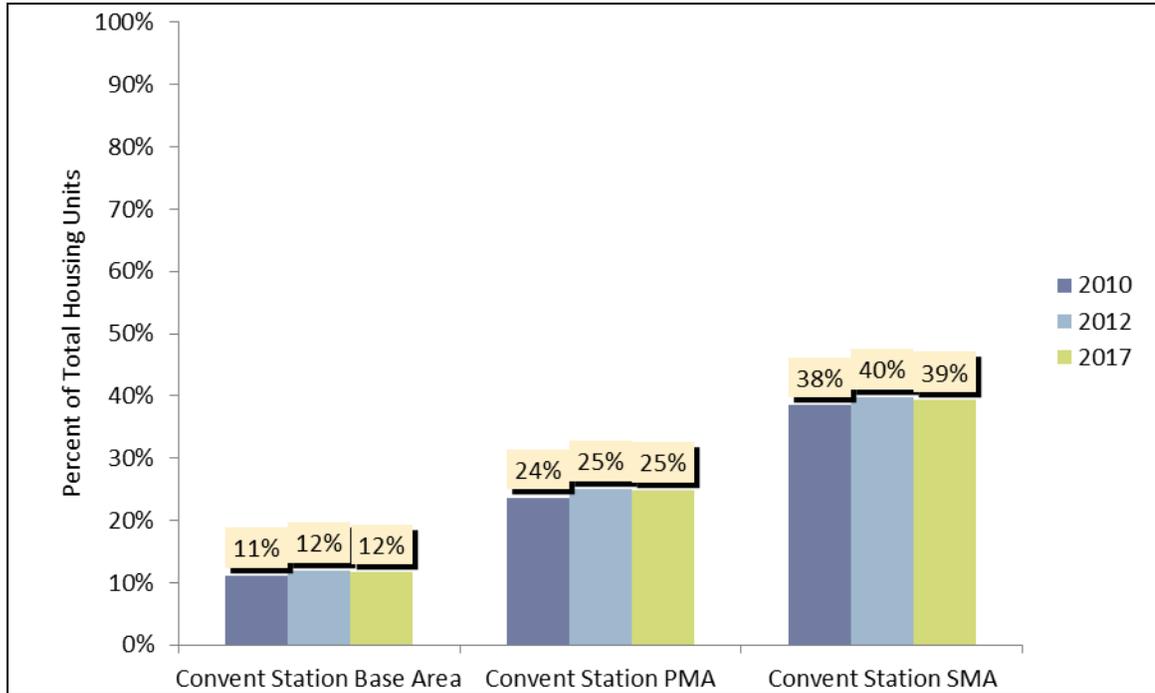




Table 3-20: Housing Tenure Trends

Convent Station Base Area								Percentage Change			
	2010		2012		2017			2010-2012		2012-2017	
Total Housing Units	513	100.0%	519	100.0%	534	100.0%		1.2%		2.9%	
Vacant Housing Units	44	8.6%	41	7.9%	39	7.3%		-6.8%		-4.9%	
Owned Housing Units	412	80.3%	416	80.2%	434	81.3%		1.0%		4.3%	
Rented Housing Units	57	11.1%	62	11.9%	62	11.6%		8.8%		0.0%	
Convent Station SMA								Percentage Change			
	2010		2012		2017			2010-2012		2012-2017	
Total Housing Units	105,203	100.0%	105,886	100.0%	107,681	100.0%		0.7%		1.7%	
Vacant Housing Units	4,773	4.5%	4,663	4.4%	4,480	4.2%		-2.3%		-3.9%	
Owned Housing Units	75,552	71.8%	74,752	70.6%	76,540	71.1%		-1.1%		2.4%	
Rented Housing Units	24,877	23.6%	26,471	25.0%	26,661	24.8%		6.4%		0.7%	
Convent Station PMA								Percentage Change			
	2010		2012		2017			2010-2012		2012-2017	
Total Housing Units	618,680	100.0%	620,658	100.0%	625,734	100.0%		0.3%		0.8%	
Vacant Housing Units	43,373	7.0%	43,993	7.1%	45,368	7.3%		1.4%		3.1%	
Owned Housing Units	337,450	54.5%	329,914	53.2%	334,501	53.5%		-2.2%		1.4%	
Rented Housing Units	237,857	38.4%	246,751	39.8%	245,865	39.3%		3.7%		-0.4%	

Source: US Census Bureau, ESRI Community Analyst; 2013



3.4.3.5 Household Income

Households within the Convent Base Station Area are relatively affluent, exhibiting a 2012 median household income of nearly \$134,900—compared to approximately \$113,400 in the PMA and \$63,200 in the SMA. Like Chatham, the majority of households (80 percent) within the Convent Base Station Area had annual incomes greater than \$75,000 in 2012—compared to 70 percent within the PMA and 43 percent within the SMA. Table 3-21 presents the Household Income data for the Convent Station geographies.

Table 3-21: Household Income Trends

Convent Station Base Area					Percentage Change
	2012		2017		2012-2017
Total Households	478	100.0%	495	100.0%	3.6%
< \$35,000	43	9.0%	33	6.7%	-23.3%
\$35K to \$74.9K	56	11.7%	41	8.3%	-26.8%
\$75K to \$99.9K	53	11.1%	62	12.5%	17.0%
\$100K to \$149.9K	112	23.4%	116	23.4%	3.6%
>\$149.9K	214	44.8%	243	49.1%	13.6%
Median household income	\$134,856		\$147,167		9.1%
Convent Station PMA					Percentage Change
	2012		2017		2012-2017
Total Households	101,223	100.0%	103,201	100.0%	2.0%
< \$35,000	11,813	11.7%	9,335	9.0%	-21.0%
\$35K to \$74.9K	19,384	19.1%	15,293	14.8%	-21.1%
\$75K to \$99.9K	11,428	11.3%	13,907	13.5%	21.7%
\$100K to \$149.9K	22,064	21.8%	23,526	22.8%	6.6%
>\$149.9K	36,534	36.1%	41,141	39.9%	12.6%
Median household income	\$113,399		\$122,429		8.0%
Convent Station SMA					Percentage Change
	2012		2017		2012-2017
Total Households	578,052	99.8%	581,775	99.8%	0.6%
< \$35,000	161,549	27.9%	143,489	24.7%	-11.2%
\$35K to \$74.9K	162,879	28.2%	139,400	24.0%	-14.4%
\$75K to \$99.9K	67,242	11.6%	86,353	14.8%	28.4%
\$100K to \$149.9K	90,085	15.6%	100,855	17.3%	12.0%
>\$149.9K	94,904	16.4%	110,263	19.0%	16.2%
Median household income	\$63,204		\$76,578		21.2%

Source: US Census Bureau, Esri Community Analyst; 2013



3.4.4 Summary

The above findings suggests each rail station's surrounding areas – to greater and lesser extents – have key attributes most often associated with successful TOD projects: large and growing percentage of upper income households; a growing population base at or near retirement; relatively strong growth in non-family households.

Population age and household trend findings also suggest that there will be growing demand for greater housing choice (smaller units conducive to one- and two-person households and designed for persons of retirement age). Field observations suggest such housing is in relative short supply in the areas immediately surrounding each of the three rail stations.

3.5 Labor and Industry Analysis

The location of employment concentrations relative to a Transit-Oriented Development (TOD) is an important contributor to demand for both commercial and residential space within such developments. Demand for housing will be higher when easily-accessible transit systems provide convenient service to employment centers, giving residents multiple options for their daily commute. In addition, positive trends in employment levels in and around TOD developments bodes well for the retail and service businesses in the vicinity. In particular, professional workers near TOD developments can be expected to patronize restaurants and retail stores nearby both during and after the workday. Finally, higher employment levels near a TOD development will also lead to higher local housing demand as some workers will desire to live closer to their place of employment.

An analysis of Labor and Industry was conducted for the areas around Chatham, Madison, and Convent Stations using the U.S. Census Bureau 'On the Map' program, which analyzes the employment profile within given geographic areas, as well as top industries and worker commutation patterns (inflow/ outflow analysis). The Labor and Industry analysis was applied to the Base Area, PMA, and SMA for each station as described in the Market Analysis section of this report. This data was analyzed to determine if positive economic trends exist in the study area, if there is a strong inflow of jobs (with some outflow), and the level of income growth in the study area. These components are all necessary to support the existing TODs (Chatham and Madison) as well as any new potential development (infill in Chatham Borough and Madison, and new TOD in Morris Township).



Labor and industry data were collected for data years 2005, 2007, and 2009, the most recently available years. Labor shed data (work destinations for residents and sources of commuting workers) is not consistent over time and therefore, only referenced for year 2009. This data is the most recently available for these topic areas and is therefore a bit older than the demographic data provided in the preceding sections of this report. The following sections detail notable labor market trends in the station areas.

3.5.1 Chatham Station Area

Table 3-22 presents a summary of the Chatham Station geographies worker flow demographics and Table 3-23 presents details. The Chatham Station area has seen a net worker inflow in the Work Area, PMA, and SMA (though less than 30 percent of residents and workers both live and work in the same geography). This indicates that workers are attracted to the Chatham area for jobs. New York City and Newark are the largest single sources of incoming workers which indicates the importance of the rail line and the fact that Chatham could continue to grow in and around the train station. New York and Newark are also among the most common work destinations for residents in the Chatham Station area.

Table 3-22: Chatham Station Area Worker Inflow-Outflow, 2009

	% Live and Work	Net Job Inflow/Outflow	Primary Outflow Destination	Primary Inflow Source
Chatham Station Work Area	2.6%	2,143	New York, NY	Chatham Borough, NJ
Chatham Station PMA	15.2%	78,360	New York, NY	Newark, NJ
Chatham Station SMA	27.8%	10,264	New York, NY	Newark, NJ

Table 3-24 presents a summary of the Chatham Station geographies' labor and industry demographics. Given the economic environment, the Chatham Station geographies exhibited a decline in primary jobs between 2007 and 2009 – the three geographies saw annualized declines in primary jobs ranging from -1.6 to -5.7 percent. However, prior to the national recession, these geographies were exhibiting overall growth and especially growth in the service sectors while manufacturing sectors were declining. Figure 3-19 depicts the Chatham Station Area labor by industry trends. It is expected that once the economy recovers, the Chatham geographies would be positioned for growth. High incomes were more stable than lower incomes in the 2005 to 2009 period.



Table 3-23: Chatham Station Area Worker Flow

Top 10 Places of Worker Residence		
For workers within Chatham Station Work Area		
	2009	
Chatham Borough, NJ	230	3.8%
Newark City, NJ	210	3.4%
New York City, NY	176	2.9%
Summit City, NJ	165	2.7%
Madison Borough, NJ	157	2.6%
Elizabeth City, NJ	99	1.6%
Florham Park Borough, NJ	88	1.4%
New Providence Borough, NJ	83	1.4%
East Orange City, NJ	59	1.0%
Morristown Town, NJ	56	0.9%
All Other Locations	4,805	78.4%
For workers within Chatham Station PMA		
	2009	
Newark City, NJ	8,639	3.3%
New York City, NY	6,463	2.4%
Elizabeth City, NJ	4,733	1.8%
Westfield Town, NJ	3,517	1.3%
East Orange City, NJ	3,254	1.2%
Jersey City, NJ	3,075	1.2%
Morristown Town, NJ	3,075	1.2%
Madison Borough, NJ	2,767	1.0%
Summit City, NJ	2,759	1.0%
Linden City, NJ	2,404	0.9%
All Other Locations	223,743	84.6%
For workers within Chatham Station SMA		
	2009	
Newark City, NJ	46,871	5.9%
New York City, NY	34,202	4.3%
Elizabeth City, NJ	22,516	2.9%
Jersey City, NJ	15,731	2.0%
Paterson City, NJ	11,663	1.5%
East Orange City, NJ	11,394	1.4%
Clifton City, NJ	10,776	1.4%
Linden City, NJ	9,559	1.2%
Kearny Town, NJ	7,840	1.0%
Bayonne City, NJ	7,758	1.0%
All Other Locations	609,604	77.4%

Top 10 Work Destinations for Residents		
For residents within Chatham Station Work Area		
	2009	
New York City, NY	449	11.3%
Chatham Borough, NJ	230	5.8%
Summit City, NJ	174	4.4%
Morristown Town, NJ	159	4.0%
Newark City, NJ	146	3.7%
Madison Borough, NJ	126	3.2%
Florham Park Borough, NJ	110	2.8%
Jersey City, NJ	75	1.9%
Short Hills CDP, NJ	59	1.5%
New Providence Borough, NJ	45	1.1%
All Other Locations	2,412	60.5%
For residents within Chatham Station PMA		
	2009	
New York City, NY	22,318	12.0%
Newark City, NJ	11,867	6.4%
Morristown Town, NJ	5,365	2.9%
Summit City, NJ	4,386	2.4%
Jersey City, NJ	3,600	1.9%
Florham Park Borough, NJ	3,294	1.8%
Elizabeth City, NJ	3,039	1.6%
Westfield Town, NJ	2,725	1.5%
Madison Borough, NJ	2,104	1.1%
Kenilworth Borough, NJ	2,060	1.1%
All Other Locations	125,311	67.3%
For residents within Chatham Station SMA		
	2009	
New York City, NY	88,226	11.3%
Newark City, NJ	69,830	9.0%
Elizabeth City, NJ	20,575	2.6%
Jersey City, NJ	17,177	2.2%
Morristown Town, NJ	8,672	1.1%
Linden City, NJ	8,599	1.1%
Clifton City, NJ	8,567	1.1%
South Plainfield Borough, NJ	8,181	1.1%
Secaucus Town, NJ	8,028	1.0%
East Orange City, NJ	7,637	1.0%
All Other Locations	532,158	68.4%

Source: US Census Bureau, OnTheMap

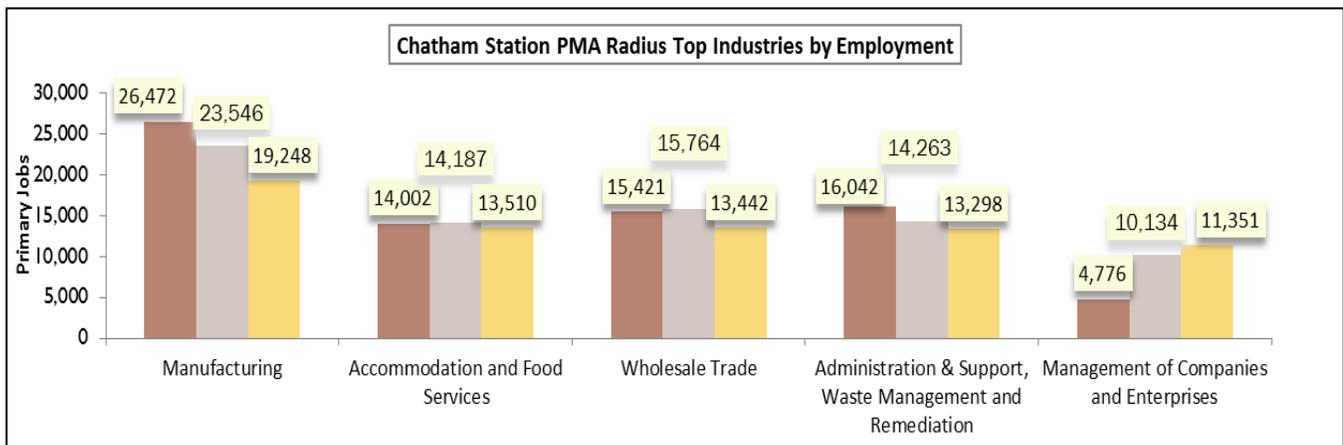
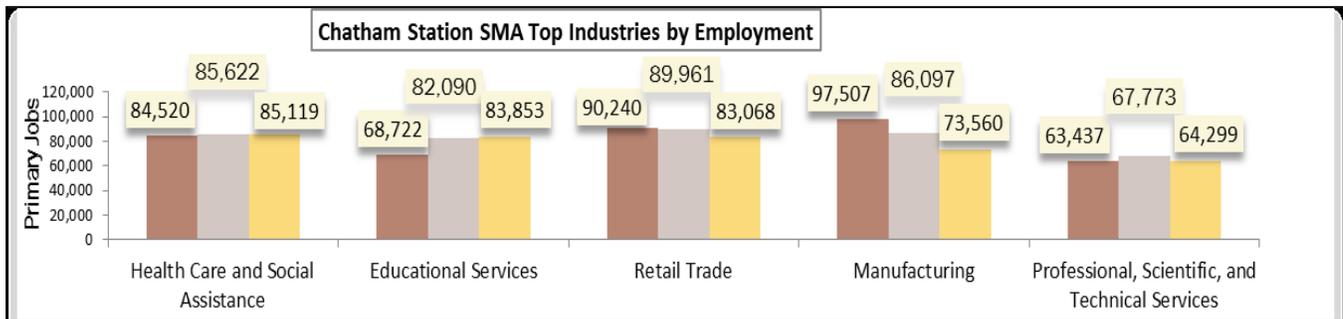
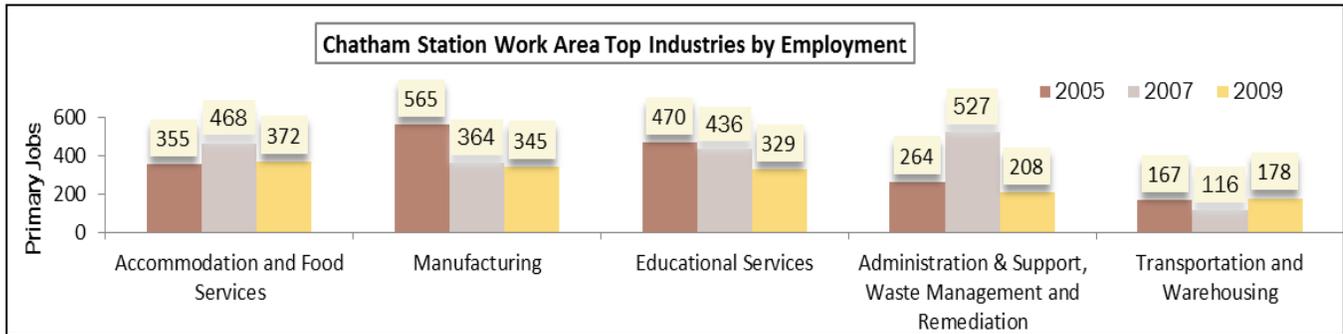


Table 3-24: Chatham Station Geographies Annualized Percent Change in Labor and Industry Demographics

Table Key						
	Strong Positive Growth	Greater than	1.50%			annually
	Weak Positive Growth	Between	1.50% and	0.75%		annually
	Flat Growth	Between	0.75% and	-0.75%		annually
	Weak Negative Growth	Between	-0.75% and	-1.50%		annually
	Strong Negative Growth	Less than	-1.50%			annually
Total Primary Jobs	2005-2007	2007-2009				
Chatham Station Work Area	3.32%	-5.74%				
Chatham Station PMA	0.83%	-1.57%				
Chatham Station SMA	0.84%	-2.31%				
Jobs by Worker Age	2005-2007	2007-2009	Jobs By Worker Earnings	2005-2007	2007-2009	
Chatham Station Work Area	Chatham Station Work Area					
Age 29 or younger	8.05%	-9.25%	\$1,250 per month or less	7.41%	-12.23%	
Age 30 to 54	1.76%	-4.57%	\$1,251 to \$3,333 per month	1.06%	-5.94%	
Age 55 or older	0.46%	-2.97%	More than \$3,333 per month	2.38%	-0.86%	
Chatham Station PMA	Chatham Station PMA					
Age 29 or younger	0.51%	-4.01%	\$1,250 per month or less	-4.00%	-3.05%	
Age 30 to 54	-0.20%	-1.55%	\$1,251 to \$3,333 per month	-3.42%	-4.69%	
Age 55 or older	4.70%	1.07%	More than \$3,333 per month	4.98%	0.38%	
Chatham Station SMA	Chatham Station SMA					
Age 29 or younger	1.06%	-5.40%	\$1,250 per month or less	-3.45%	-4.92%	
Age 30 to 54	-0.30%	-1.79%	\$1,251 to \$3,333 per month	-1.84%	-4.17%	
Age 55 or older	4.37%	-0.42%	More than \$3,333 per month	4.46%	-0.25%	



Figure 3-19: Chatham Station Geographies' Employment by Industry Trends





3.5.2 Madison Station Area

Table 3-25 presents a summary of the Madison Station geographies' worker flow demographics, and Table 3-26 presents details. Madison Station also has a large commuting population with less than 30 percent of workers both living and working in the same given geography. Both the Work Area and SMA show net worker outflow, primarily to New York City, Newark, and Morristown. However, high worker inflow in the PMA suggests a market of commuters in need of more local housing opportunities, who may be well served by a TOD, particularly in an attractive, mixed-use area such as downtown Madison.

Table 3-25: Madison Station Area Worker Inflow-Outflow, 2009

	% Live and Work	Net Job Inflow/Outflow	Primary Outflow Destination	Primary Inflow Source
Madison Station Work Area	4.6%	-1,324	New York, NY	Madison, NJ
Madison Station PMA	13.3%	109,737	New York, NY	Newark, NJ
Madison Station SMA	29.3%	-27,443	Newark, NJ	Newark, NJ

Table 3-27 presents a summary of the Madison Station geographies labor and industry demographics. Strong negative growth in employment (-2.0 to -6.7 percent annually) in the Madison Station area between 2007 and 2009 defines much of the labor and industry trends in the area. Figure 3-20 depicts the Madison Station Area labor by industry trends. Most of the top ten industries in the Work Area, PMA, and SMA saw employment declines over the 2005-2009 time period, with only the Educational Services, Health Care, and to a degree, Professional, Scientific, and Technical Services sectors maintaining or increasing employment, similar to the Chatham Station area. However, the Madison Station area was exhibiting job growth before the recession, especially in higher income jobs. Should the economy recover to resume that growth, there would be strong demand for jobs and residences in and around Madison.



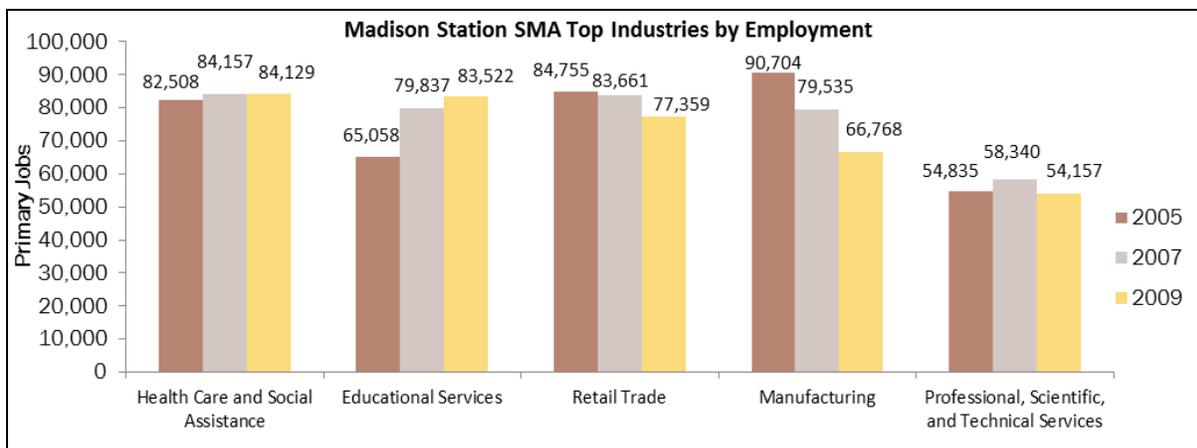
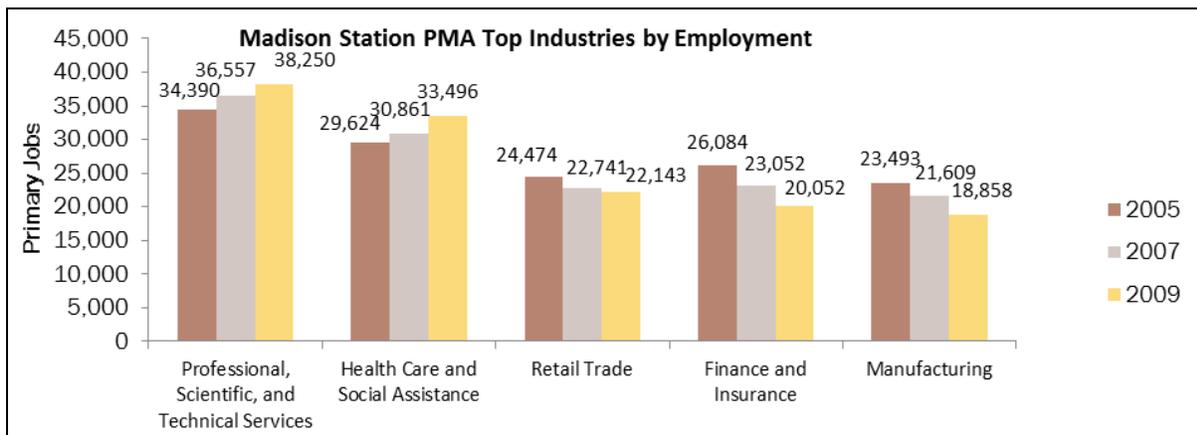
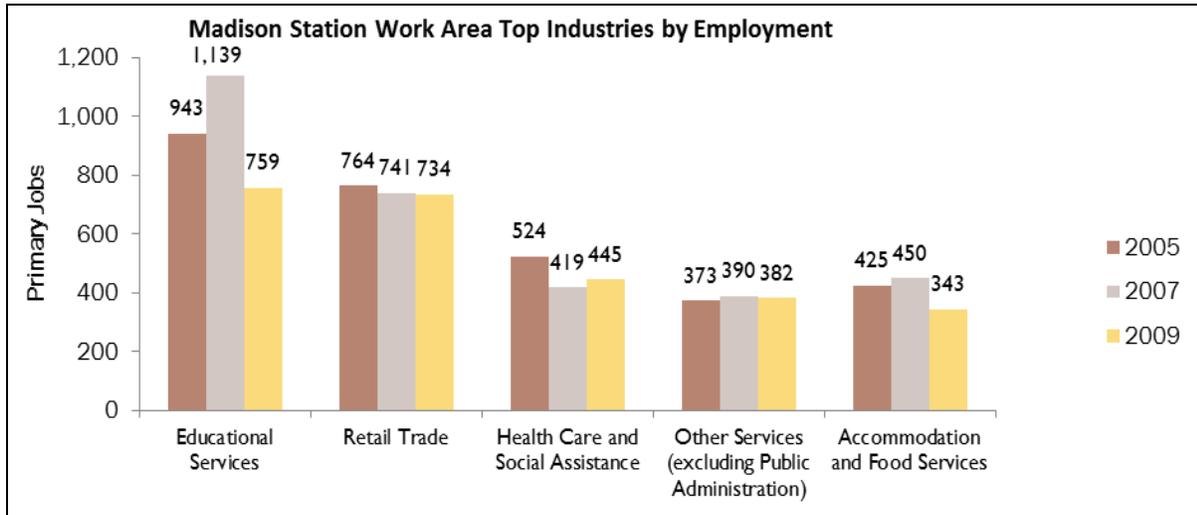
Table 3-26: Madison Station Area Worker Flow

Top 10 Places of Worker Residence		
For workers within Madison Station Work Area		
	2009	
Madison Borough, NJ	520	12.8%
Florham Park Borough, NJ	118	2.9%
New York City, NY	105	2.6%
Newark City, NJ	92	2.3%
Morristown Town, NJ	74	1.8%
Chatham Borough, NJ	69	1.7%
East Orange City, NJ	43	1.1%
New Providence Borough, NJ	41	1.0%
Jersey City, NJ	38	0.9%
Elizabeth City, NJ	31	0.8%
All Other Locations	2,926	72.1%
For workers within Madison Station PMA		
	2009	
Newark City, NJ	6,355	2.7%
New York City, NY	5,342	2.3%
Morristown Town, NJ	3,315	1.4%
Elizabeth City, NJ	2,817	1.2%
Madison Borough, NJ	2,789	1.2%
Jersey City, NJ	2,640	1.1%
Summit City, NJ	2,634	1.1%
East Orange City, NJ	2,591	1.1%
Florham Park Borough, NJ	2,000	0.8%
Paterson City, NJ	1,991	0.8%
All Other Locations	204,335	86.3%
For workers within Madison Station SMA		
	2009	
Newark City, NJ	46,395	6.5%
New York City, NY	22,710	3.2%
Elizabeth City, NJ	22,616	3.2%
Jersey City, NJ	13,481	1.9%
East Orange City, NJ	11,593	1.6%
Paterson City, NJ	10,589	1.5%
Linden City, NJ	9,674	1.3%
Clifton City, NJ	8,583	1.2%
Plainfield City, NJ	7,413	1.0%
Kearny Town, NJ	7,207	1.0%
All Other Locations	556,867	77.7%

Source: US Census Bureau, OnTheMap

Top 10 Work Destinations for Residents		
For residents within Madison Station Work Area		
	2009	
New York City, NY	595	11.1%
Madison Borough, NJ	548	10.2%
Morristown Town, NJ	264	4.9%
Florham Park Borough, NJ	223	4.1%
Newark City, NJ	164	3.0%
Chatham Borough, NJ	97	1.8%
Summit City, NJ	91	1.7%
Jersey City, NJ	64	1.2%
New Providence Borough, NJ	53	1.0%
Roseland Borough, NJ	52	1.0%
All Other Locations	3,230	60.0%
For residents within Madison Station PMA		
	2009	
New York City, NY	15,119	11.9%
Morristown Town, NJ	5,422	4.3%
Newark City, NJ	5,066	4.0%
Summit City, NJ	3,483	2.7%
Florham Park Borough, NJ	2,967	2.3%
Jersey City, NJ	2,215	1.7%
Madison Borough, NJ	1,941	1.5%
New Providence Borough, NJ	1,643	1.3%
Roseland Borough, NJ	1,444	1.1%
Short Hills CDP, NJ	1,366	1.1%
All Other Locations	86,406	68.0%
For residents within Madison Station SMA		
	2009	
Newark City, NJ	73,087	9.8%
New York City, NY	67,594	9.1%
Elizabeth City, NJ	21,189	2.8%
Jersey City, NJ	14,434	1.9%
Morristown Town, NJ	8,992	1.2%
Linden City, NJ	8,500	1.1%
East Orange City, NJ	8,302	1.1%
So. Plainfield Borough, NJ	7,802	1.0%
Clifton City, NJ	7,336	1.0%
Secaucus Town, NJ	7,317	1.0%
All Other Locations	520,018	69.8%

Figure 3-20: Madison Station Geographies' Employment by Industry Trends





3.5.3 Convent Station Area

Table 3-28 presents a summary of the Madison Station geographies worker flow demographics and Table 3-29 presents details. The Convent Station area has a large commuting population but less than thirty percent of workers both live and work within the same given geography. Net worker inflow in the Work Area favors TOD development, as it indicates the possibility for pent-up demand for housing. Conversely, a net worker outflow in the SMA suggests demand for an attractive, central transportation option for commuters traveling to Newark and New York City, two destinations likely to be favored by commuters utilizing rail transit.

Table 3-28: Convent Station Area Worker Inflow-Outflow, 2009

	% Live and Work	Net Job Inflow/Outflow	Primary Outflow Destination	Primary Inflow Source
Convent Station Work Area	0.7%	5,683	New York, NY	New York, NY
Convent Station PMA	13.9%	96,296	New York, NY	Newark, NJ
Convent Station SMA	26.8%	-51,673	Newark, NJ	Newark, NJ

Table 3-30 presents a summary of the Chatham Station geographies' labor and industry demographics. The Convent Station analysis areas generally displayed negative growth in total primary jobs over the 2005-2009 time period, with decreases in total primary jobs in the Work Area and PMA around three percent per year. Figure 3-21 depicts the Convent Station Area labor by industry trends. Negative growth in employment in several of the top ten industries has contributed to this trend, though modest increases in employment within the Professional, Technical, and Scientific Services, Health Care and Social Services, and Educational Services sectors slightly offset a generally downward trend in employment. Of the three station areas, Convent Station is the only area that showed a positive employment growth during the 2007-2009 period which could indicate that this station area is a strong attraction for jobs and most likely to emerge from the recession on stronger economic ground than the surrounding stations with respect to jobs. This is an indicator that the Convent Station area could be viable for future development.



Table 3-29: Convent Station Area Worker Flow

Top 10 Work Destinations for Residents		
For residents within Convent Station Work Area		
	2009	
New York City, NY	254	12.9%
Morristown Town, NJ	141	7.1%
Florham Park Borough, NJ	95	4.8%
Madison Borough, NJ	90	4.6%
Newark City, NJ	40	2.0%
Jersey City, NJ	34	1.7%
Summit City, NJ	31	1.6%
Secaucus Town, NJ	20	1.0%
Roseland Borough, NJ	19	1.0%
Morris Plains Borough, NJ	17	0.9%
All Other Locations	1,232	62.4%
For residents within Convent Station PMA		
	2009	
New York City, NY	12,263	10.5%
Morristown Town, NJ	5,937	5.1%
Newark City, NJ	3,754	3.2%
Summit City, NJ	3,015	2.6%
Florham Park Borough, NJ	2,953	2.5%
Madison Borough, NJ	1,939	1.7%
Jersey City, NJ	1,832	1.6%
New Providence Borough, NJ	1,540	1.3%
Roseland Borough, NJ	1,410	1.2%
Short Hills CDP, NJ	1,059	0.9%
All Other Locations	81,283	69.5%
For residents within Convent Station SMA		
	2009	
Newark City, NJ	64,074	9.7%
New York City, NY	58,801	8.9%
Elizabeth City, NJ	17,711	2.7%
Jersey City, NJ	12,271	1.9%
Morristown Town, NJ	8,703	1.3%
East Orange City, NJ	8,086	1.2%
Linden City, NJ	7,369	1.1%
So. Plainfield Borough, NJ	6,739	1.0%
Secaucus Town, NJ	6,031	0.9%
Summit City, NJ	5,810	0.9%
All Other Locations	462,303	70.3%

Source: US Census Bureau On the Map

Top 10 Places of Worker Residence		
For workers within Convent Station Work Area		
	2009	
New York City, NY	289	3.8%
Madison Borough, NJ	188	2.5%
Morristown Town, NJ	157	2.0%
Florham Park Borough, NJ	125	1.6%
Jersey City, NJ	121	1.6%
Newark City, NJ	97	1.3%
Summit City, NJ	72	0.9%
New Providence Borough, NJ	54	0.7%
Succasunna CDP, NJ	54	0.7%
East Orange City, NJ	53	0.7%
All Other Locations	6,457	84.2%
For workers within Convent Station PMA		
	2009	
Newark City, NJ	4,917	2.3%
New York City, NY	4,839	2.3%
Morristown Town, NJ	3,368	1.6%
Madison Borough, NJ	2,697	1.3%
Summit City, NJ	2,370	1.1%
Jersey City, NJ	2,346	1.1%
East Orange City, NJ	2,101	1.0%
Paterson City, NJ	1,968	0.9%
Florham Park Borough, NJ	1,905	0.9%
Elizabeth City, NJ	1,811	0.8%
All Other Locations	185,135	86.7%
For workers within Convent Station SMA		
	2009	
Newark City, NJ	40,183	6.6%
Elizabeth City, NJ	17,796	2.9%
New York City, NY	17,329	2.9%
East Orange City, NJ	10,910	1.8%
Jersey City, NJ	10,303	1.7%
Paterson City, NJ	9,511	1.6%
Linden City, NJ	8,018	1.3%
Clifton City, NJ	6,846	1.1%
Plainfield City, NJ	6,448	1.1%
Rahway City, NJ	4,953	0.8%
All Other Locations	473,204	78.2%

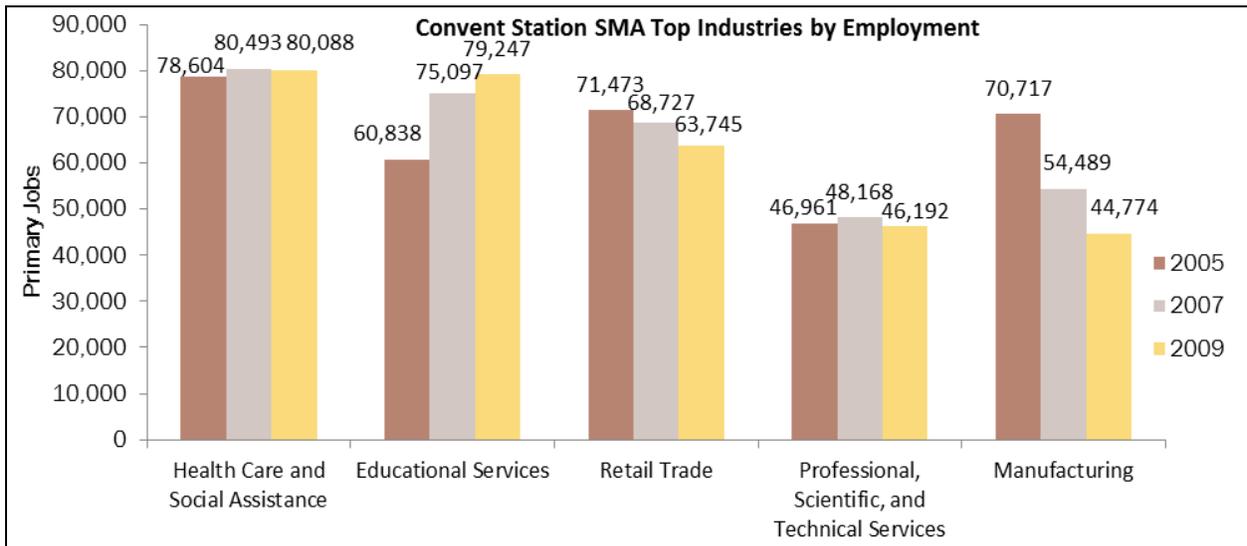
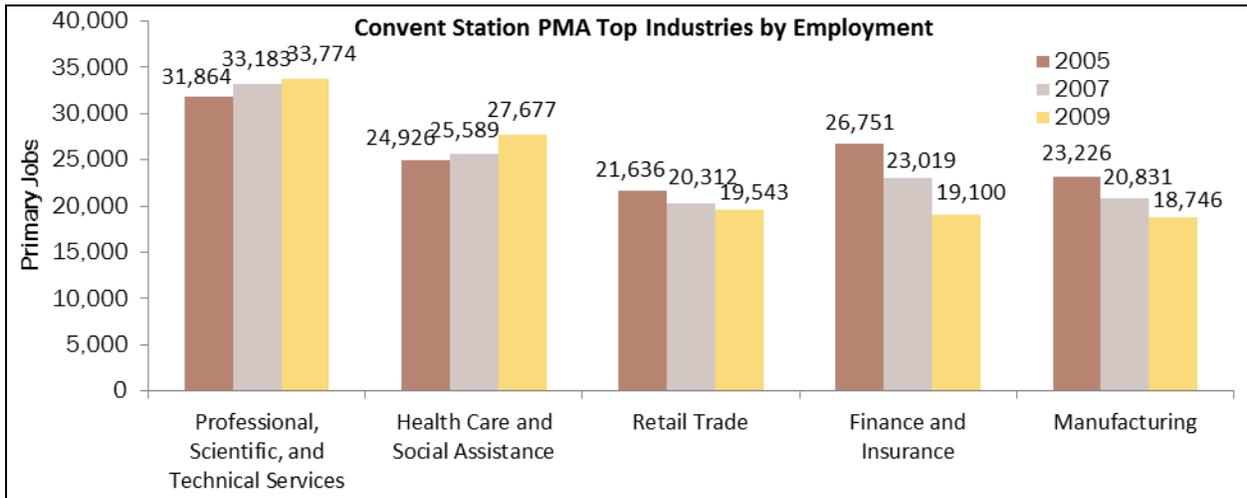
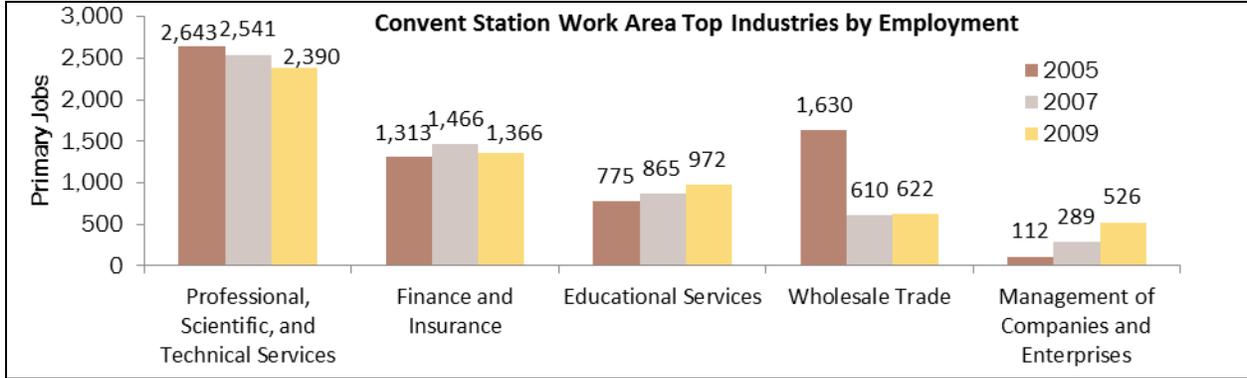


Table 3-30: Convent Station Geographies Annualized Percent Change in Labor and Industry Demographics

Table Key						
	Strong Positive Growth	Greater than	1.50%		annually	
	Weak Positive Growth	Between	1.50% and	0.75%	annually	
	Flat Growth	Between	0.75% and	-0.75%	annually	
	Weak Negative Growth	Between	-0.75% and	-1.50%	annually	
	Strong Negative Growth	Less than	-1.50%		annually	
Total Primary Jobs	2005-2007	2007-2009				
Convent Station Work Area	-3.36%	0.99%				
Convent Station PMA	-0.71%	-2.58%				
Convent Station SMA	0.98%	-1.19%				
Jobs by Worker Age	2005-2007	2007-2009	Jobs By Worker Earnings	2005-2007	2007-2009	
Convent Station Work Area	Convent Station Work Area					
Age 29 or younger	-2.12%	-2.75%	\$1,250 per month or less	-9.13%	13.44%	
Age 30 to 54	-4.64%	0.92%	\$1,251 to \$3,333 per month	-12.53%	-8.30%	
Age 55 or older	0.24%	5.83%	More than \$3,333 per month	0.04%	1.54%	
Convent Station PMA	Convent Station PMA					
Age 29 or younger	-1.59%	-5.04%	\$1,250 per month or less	-4.55%	-4.99%	
Age 30 to 54	-1.47%	-2.56%	\$1,251 to \$3,333 per month	-4.95%	-7.23%	
Age 55 or older	3.16%	0.10%	More than \$3,333 per month	2.25%	-0.16%	
Convent Station SMA	Convent Station SMA					
Age 29 or younger	1.09%	-3.94%	\$1,250 per month or less	-3.26%	-3.42%	
Age 30 to 54	-0.29%	-0.68%	\$1,251 to \$3,333 per month	-1.49%	-3.02%	
Age 55 or older	4.88%	0.28%	More than \$3,333 per month	4.75%	0.88%	



Figure 3-21: Convent Station Geographies' Employment by Industry Trends





3.5.4 Summary

Well-designed TODs can benefit both incoming commuters, as well as outgoing residents, while serving to catalyze the conversion of some of the workers from commuters to new residents. Despite general decreases in employment in each of the Chatham, Madison, and Convent Station areas, growth industries, such as Health Care, Education, and Professional Services, are likely to continue to offer opportunities for employment. The nearby colleges also provide ongoing employment opportunities.

Furthermore, the large population of commuters flowing into and out of each station area, combined with the fact that the transit lines provide access to large employment centers (e.g., New York City and Newark), indicates that each station area is well-suited to TOD-style development.

3.6 Transit-Oriented Development (TOD) Comparables and Best Case Analysis

The experience of other regions and the lessons learned by other communities in attempting to shape land use patterns in transit corridors and around transit stations can provide useful guidance in considering the options for encouraging TOD. Several locations within the NJ TRANSIT rail network and elsewhere were identified and their experiences were compared with the characteristics found in Chatham, Madison, and Convent Stations. Key findings from these examples are noted in this section and will be applied in identifying appropriate locations for TOD within the study area and implementing it where desirable and feasible.

Specifically, the overall residential, population, and employment densities of existing TOD station areas in New Jersey serve as thresholds that indicate the viability of similar environments. Higher residential densities, measured as dwelling units per acre, mean more households within walking distance of transit access, creating a built-in market for both the transit service as well as the retail and service businesses in the development. Higher population densities indicate similar trends. Higher employment densities in the vicinity of a station indicate potential demands for housing as well as higher daytime expenditures in the area. In addition, jobs located in the station area can be accessed via transit, offering an alternative to driving and reducing overall parking demand. Each of these metrics indicates the potential for TOD to create an active, vibrant community which increases the availability of multiple modes of transportation between work, home, and shopping.



Utilizing the Center for Transit-Oriented Development’s (CTOD) TOD Database¹⁸ for existing transit stations within the New York region, key TOD metrics (i.e. population, median household income, and age) were benchmarked for the half mile area around the Chatham, Madison, and Convent Stations.

These stations were then compared to other New Jersey Transit system commuter rail station areas based on residential (housing units per acre), population (persons per acre), and employment (jobs per acre) densities—identifying those station areas with densities most similar to the Chatham, Madison, and Convent Stations.

TOD literature was also reviewed for best case studies of commuter rail stations within the United States, within both established historic downtowns centers like Chatham and Madison Stations, and less established settings like Convent Station, that have been successful in attracting or retaining residents. Interviews with representatives from these selected case studies were conducted, as needed, to further investigate information regarding expectations, opportunities, and strategies and tools.

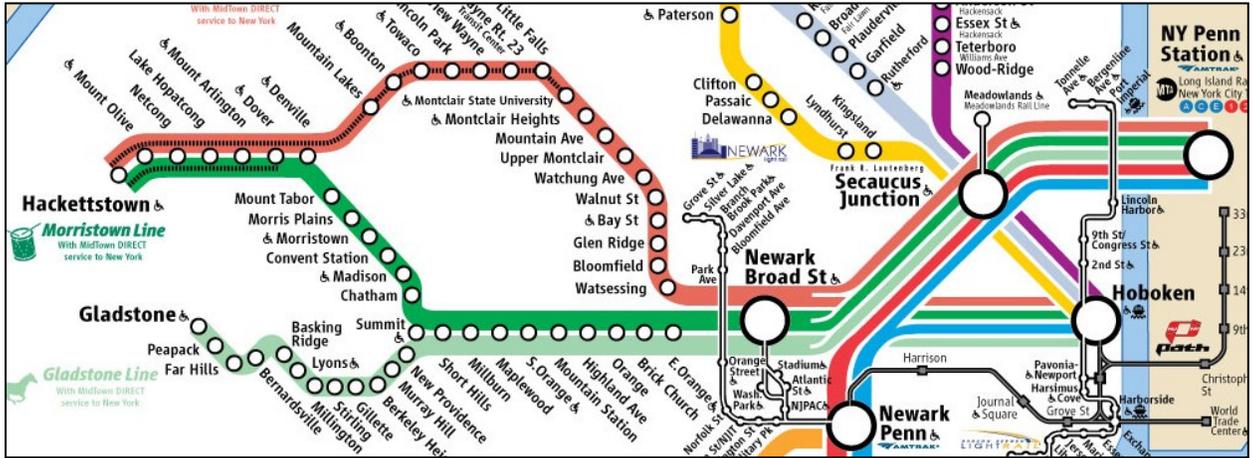
As shown, the residential population and employment densities of the three subject station areas currently fall below the density averages of other stations along the Morris & Essex Lines. However, the subject station areas are comparable in at least one of the three density measures with a number of existing station areas which either function as TODs or are currently in the process of emerging as TOD environments.

3.6.1 Morristown Line

The Morris & Essex Line, comprised of the Morristown Line and the Gladstone Branch, is the second busiest rail line in the NJ TRANSIT system. In 2008, the Morris & Essex Line’s nine stations within Morris County (between Chatham and Mount Arlington) served about 10,000 daily boarding passengers. The Morristown Line sees the majority of its service on the Morris & Essex system, from Summit to New York City. During peak periods, the Morristown Line is served by two to three trains per hour to New York City and one to two trains per hour to Hoboken. In the off-peak, hourly service is provided to New York City, and service every two hours is provided to Hoboken. Figure 3-22 depicts the line in relationship to the major destinations.

¹⁸ Data from the CTOD Database is based upon U.S. Census information. However, due to differing interpretations of geographic boundaries the data in the following sections of this report differ slightly from the ESRI US Census data provided for each municipality in the previous sections of this report.

Figure 3-22: Morristown Line, NJ TRANSIT System



Source: NJ TRANSIT

3.6.1.1 Study Area Station Ridership

Chatham, Madison, and Convent Stations are similar in the service they provide and the number of riders they serve, about 1,300 to 1,600 a day. While most Morristown Line stations are located in traditional downtown areas near commercial districts and medium-density housing, Convent Station, located near the College of Saint Elizabeth and Fairleigh Dickinson University, serves a less dense residential area.

3.6.1.2 Study Area Station Characteristics

The half mile station area surrounding Chatham, Madison, and Convent Stations have unique land use patterns and socio-economic characteristics which are summarized in Table 3-31. The Chatham Station area has more than twice the population of Convent Station but a similar number of jobs. Compared to the other station areas, the Madison Station area has 1.5 times the number of jobs but the lowest median household income (\$108,804). Despite being located in close proximity to two universities, the Convent Station area has the highest median age (42.5 years) of the three station areas.



Table 3-31: Station Area Socio-Economic Characteristics (0.5 Mile)¹⁹

Station	Total Area (acres)	Population (2010)	Households (2010)	Housing Units (2010)	Vacancy Rate (2010)	Jobs (2009)	Median Household Income (2012)	Median Age (2010)
Chatham	502	4,204	1,458	1,531	4.8%	1,769	\$143,983	38
Madison	498	3,664	1,377	1,487	7.4%	2,607	\$108,804	38.7
Convent	502	1,540	465	506	8.1%	1,736	\$117,546	42.5

Source: Center for Transit-Oriented Development: TOD Database, NJ TRANSIT Rail, 2012

3.6.1.3 Transit Density Targets

Over the years, TOD literature has continued to demonstrate the relationship between land use and transit ridership, suggesting minimum densities for encouraging the utilization of public transit (Pushkarev & Zupan, 1977; Ewing, 1996; Frank & Pivo, 1994). In general, these minimum densities, presented in Table 3-32, depend on the type of transit service and are applicable for the area within walking distance to the station (i.e. one-half mile walking radius). Accordingly, this literature suggests that the station areas along the Morristown Line should contain a minimum of 12 housing units and 30 persons per acre to support transit with regular service to a downtown like New York City, which currently contains approximately 200 million square feet of non-residential space. The threshold is 50 million square feet of non-residential space in a downtown.

¹⁹ Ibid.



Table 3-32: Minimum Densities by Transit Type

	Local Bus (Intermediate Service)¹	Local Bus (Frequent Service)²	Light Rail³	Transit⁴
Residential Density (housing units/acre)	7	15	9	12
Population Density (persons/acre)	18	38	23	30
Employment Density (jobs/acre)	20	75	125+	N.A. ⁵
¹ Average density; varies as a function of downtown size and distance to downtown. ² Average density over a two-square-mile tributary area. ³ Average density for a corridor of 25 to 100 square miles; transit to downtowns of 20 to 30 million square space feet of nonresidential space. ⁴ Average density for a corridor of 100 to 150 square miles; transit to downtowns of more than 50 million square feet of nonresidential space. ⁵ Not available.				

Source: Urban Land Institute, 10 Principles for Successful Development Around Transit, 2003

3.6.1.4 Study Area Station Densities

For a sense of context, the Chatham, Madison, and Convent Station areas were compared to other station areas in the region that are generally recognized as having the characteristics of a TOD or are in the process of emerging as a TOD-type environment. Table 3-33 presents this comparison. On average, the half mile commuter rail station areas along the Morristown Line (Newark to Mt. Tabor) have a density of 5.3 housing units, 12.8 persons, and 7.3 jobs per acre—resulting in a 1.4 jobs to housing ratio. These average densities as well as those within a half-mile radius of the Chatham, Madison, and Convent Station fall significantly below those recommended to support transit ridership (as well as local bus service). Although some Morris & Essex Line station areas such as Brick Church Station (12.9 housing units per acre), East Orange Station (29.5 persons per acre), and Newark Broad Street Station (18.4 jobs per acre) have higher densities which are more supportive of commuter rail transit service, the Chatham, Madison, and Convent Station areas are comparable with other station areas along the Morris & Essex Line and NJ TRANSIT system.

Table 3-33: Minimum Densities for Supporting Transit Ridership, ½ Mile

	Madison	Chatham	Convent	Average Morristown Line
Residential Density (housing units/acre)	3.0	3.0	1.0	5.3
Population Density (persons/acre)	7.3	8.4	3.1	12.8
Employment Density (jobs/acre)	5.2	3.5	3.5	7.3

Source: TOD Database, NJ TRANSIT Rail, 2012



3.6.2 Regionally Comparable Densities

Although the residential, population, and employment densities of the three subject station areas currently fall below the density averages of stations along the Morris & Essex Line, the subject station areas are comparable in at least one measure with a number of existing station areas which either function as TODs or are currently in the process of emerging as TOD-type environments.

The Chatham Station area has a residential density of 3.0 housing units per acre, 8.4 persons per acre, and 3.5 jobs per acre. NJ TRANSIT rail station areas with similar densities include:

- Residential Density (dwelling units (du)/ acre)
 - Edison Station (3.0 du/ acre)
 - Upper Montclair (3.0 du/ acre)
 - Hillsdale (3.0 du/ acre)
- Population Density (persons/ acre)
 - Summit (8.4 persons/ acre)
 - Ridgewood (8.3 persons/ acre)
 - Little Falls (8.3 persons/ acre)
- Employment Density (jobs/ acre)
 - Oradell (3.56 jobs/ acre)
 - Hillsdale (3.46 jobs/ acre)

The Madison Station area has a residential density of 3.0 housing units per acre, 7.3 persons per acre, and 5.2 jobs per acre. NJ TRANSIT rail station areas with similar densities include:

- Residential Density
 - Edison Station (3.0 du/ acre)
 - Upper Montclair (3.0 du/ acre)
 - Hillsdale (3.0 du/ acre)
- Population Density
 - Westfield (7.3 persons/ acre)
 - Manasquan (7.3 persons/ acre)
 - Glen Rock Borough Hall (7.3 persons/ acre)
- Employment Density
 - Dover (5.2 jobs/ acre)
 - Fairlawn (5.2 jobs/ acre)

The Convent Station area has a residential density of 1.0 housing units per acre, 3.0 persons per acre, and 3.5 jobs per acre. NJ TRANSIT rail station areas with similar densities include:

- Residential Density



- Basking Ridge (1.1 du/ acre)
- Annandale (1.0 du/ acre)
- Lebanon (1.0 du/ acre)
- Population Density
 - Bridgewater (3.2 persons/ acre)
 - Ramsey Rte 17 (3.1 persons/ acre)
 - High Bridge (3.0 persons/ acre)
- Employment Density (jobs/ acre)
 - Oradell (3.56 jobs/ acre)
 - Hillsdale (3.46 jobs/ acre)

This comparison shows that Chatham and Madison Stations have developed similarly to other stations in the NJ TRANSIT system and that some of those comparative stations (Summit, Morristown, Westfield, and Upper Montclair) are locally considered to be TOD environments despite not meeting the minimum densities for supporting rail ridership. Convent Station’s comparatives tend to be less densely developed areas, not considered as TODs and the furthest from the minimum densities for supporting rail ridership. This comparison further confirms that both Chatham and Madison Stations are not only supportive of transit-oriented development but are considered to be TODs.

3.6.3 Local Real Estate Market

Commuter rail lines provide high-speed service to downtowns in many metropolitan areas. However, these stations are often simple platforms surrounded by parking, which limits development potential. In general, commuter rail stations are typically located in one of two types of settings, a historic town center or a more suburban, twentieth-century community, with unique real estate implications:

- Historic Town Center: A commuter rail station can provide a transportation focus in the existing fabric and can help to catalyze the revitalization forces to return the community to prosperity. Limited local market forces can be harnessed to upgrade the aging community centers. South Orange and Rahway are two examples of successful New Jersey TODs based in historic commuter rail towns. The South Orange and Rahway station areas have population densities of 10.5 and 17.2 people per acre, respectively, as compared to Chatham, Madison, and Convent’s densities of 3.1 to 8.4 people per acre. The fact that the South Orange and Rahway historic downtowns were able to revitalize and achieve higher population densities indicates that even historic town centers like Madison have the potential to support further density and development.
- Suburban Community: Suburban community station areas often serve low-density bedroom communities and are not often part of an



organized or developed center/ downtown fabric as they are in Chatham and Madison. Having a vibrant real estate market is crucial to successful station area revitalization, or in the case of these stations, continued stability or growth. If there is unusual vitality in the local real estate market, new, denser transit-oriented districts that feature a concentration of residences, shops, and employment can be created around a station. Cranford, New Jersey, is an example of a successful TOD in a suburban setting.

3.6.3.1 Corridor Comparable: Cranford Crossing, NJ

Cranford, New Jersey, has been a bedroom community to New York City since the 1800s. Like many small towns and villages, the retail core that was the backbone of the economy was crippled by the exodus of shopping to malls. Starting in the 1980s, Cranford began using its train station as a catalyst for growth, focusing on streetscape improvements and promotions as a way to increase interest and cultivate private investment. The Cranford Station area has a residential density of four units per acre and a population density of 8.7 people per acre, which is comparable to the Chatham Station area with a residential density of three units per acre and a population density of 8.4 people per acre. This comparison indicates that a community like Chatham could be desirable to developers interested in TOD environments and that if desired, Chatham could use its train station as a catalyst for growth.

- Special Improvement District (SID): Special assessments on property owners generated more than \$2 million in investment which fed the resurgence of the downtown business district in Cranford. That infusion of investment dollars spurred a new round of private investment throughout the downtown, creating a market for both first-floor retail and upper-floor tenancies which added strength to the local market. This funding mechanism was successfully utilized by Cranford to spur redevelopment and could be a tool for the three study corridor communities as well.
- TOD Developments: One major project that helped to jumpstart the revitalization was the award-winning Cranford Crossing, with 50 apartments (only three are currently available for rent), ground-floor retail, and a carefully placed parking garage. A second project, the Riverfront Project (currently under construction), will complement the densities around the train station, providing two levels of parking, office, and retail.



3.6.4 Sense of Place: Balancing Opposing Forces

Successful TOD projects depend on the creation of a “sense of place” in and around the station area. It is often the responsibility of local municipalities and transit authorities to guide developers to transform station areas into vibrant places. However, commuter rail station areas located within traditional town centers are often caught between two opposing forces which result from their performing two distinct functions as:

- Town Center: The desire to use the station as a *focal point* in a broader revitalization of a traditional town center, and
- Commuter Station: The desire to surround the station with *parking* and maximize the commuter patron’s ease of *vehicular access*.

Accordingly, TOD planning for commuter rail stations must strike a balance between these two opposing forces. The following discusses how this has been accomplished in other regions.

3.6.4.1 Corridor Comparable: Arlington Heights, IL

The Village of Arlington Heights, west of Chicago, on Metra’s Union Pacific Northwest Line, has seized upon TOD as an integral component of the city’s award-winning strategy to revitalize its historic downtown. In 1980, 350 residents lived in 150 units in the downtown. By 2000, the numbers jumped to 2,200 residents and 1,500 units. This location serves as an example in which a planned effort resulted in higher densities where beforehand no TOD-type environment existed. By comparison, the densities found at this station area today are 11 people per acre and 7.4 dwelling units per acre. This station is most similar to the Morristown, NJ station area which features densities of 11.3 people per acre and 5.9 dwelling units per acre, and Chatham Station (8.4 people per acre and 3.0 dwelling units per acre) is the most comparable of the three study area stations.

Station Relocation: In 2000, this entailed a \$4.7 million construction and relocation of a Metra station closer to the downtown core. While the stations in the NJ 124 study area will not be relocated, what was important in Chicago is that the community planned for higher density development to abut their station and they were able to achieve that density. They could have opted for a more auto-friendly, commuter station environment around their station.

Town Center: This includes a new station, a performing arts center, high-density housing, commercial uses (restaurant, a bakery cafe, and a newsstand), public parking decks, parks, and public art. This community chose for their new station



to adopt a Town Center environment rather than a Commuter Station environment. For the study corridor, communities that are considering the need to add parking should consider which model they would most desire.

Funding: Funds for the station refurbishment were provided by six agencies, including Metra, Illinois Department of Transportation (IDOT), and the village, which used Tax Increment Financing funds. Since 1997, public investment of \$27 million has leveraged some \$225 million in private investment.

3.6.5 Local Regulatory Framework

The nature and extent of the relationships between public transit and nearby land uses depends greatly on the regulatory framework, including local government zoning ordinances, subdivision regulations, and other administrative requirements. In particular, the potential for TOD land use patterns that support target station area densities can be negated by inappropriate zoning such as single-use districts or density restrictions such as maximum height or minimum parking requirements. The case studies provide examples of the types of obstacles that the study area municipalities are likely to face should they promote TOD in their station areas.

Zoning Limitations: A revision of the zoning ordinance or development of a “TOD overlay district” may be required to address limitations in the current zoning ordinances or other requirements within the study areas’ municipalities. In New Jersey, this type of policy-making occurs at the municipal level. State support is available for communities in New Jersey that wish to develop in a transit-friendly manner, including the New Jersey Department of Transportation’s (NJDOT) Transit Village initiative. Designation as a Transit Village is given by the Transit Village Task Force and the NJDOT Commissioner, and provides the following benefits for communities that have demonstrated a strong commitment to revitalizing and redeveloping the area around their transit facilities into compact, mixed-use neighborhoods with a strong residential component:

- State of New Jersey commitment to the municipality's vision for redevelopment.
- Coordination among the state agencies that make up the Transit Village Task Force.
- Priority funding from some state agencies.
- Technical assistance from some state agencies.
- Eligibility for grants from the New Jersey Department of Transportation (NJDOT).



None of the communities in the study area are designated transit villages. However, Madison’s Green Village Road Special Use District encourages transit-oriented development in one section of the town.

Other regulatory barriers may include outdated street design standards that mandate high-speed auto-oriented streets inappropriate in urban, transit-served places.

3.6.5.1 Corridor Comparable: Canton, MA

Located in the downtown business district of this former industrial center, 18 miles southwest of Boston, the Town of Canton developed a vision for downtown revitalization centered around its commuter rail station. The zoning proved to be the catalyst for a constant stream of new housing development in the downtown, concentrated around the transit station. Since 2000, five new housing developments totaling 207 new residential units have been built within a five-minute walk of the train station. The densities found at this station area are 7.6 people and 3.8 dwelling units per acre, which is comparable to the Madison Station area with densities of 7.3 people and three dwelling units per acre.

Economic Opportunity District: The town designated an Economic Opportunity District and rezoned the area, integrating three distinct and unrelated zoning districts into a more unified TOD district. The town increased allowable densities, encouraged mixed-use development, allowed for shared parking, and developed strategies to reduce parking demand and to attract development interest. The new bylaw increased allowable densities and encouraged mixing residential and commercial uses.

Streetscape Improvements: To further attract economic investment, the town invested almost \$2 million for streetscape improvements within the overlay district.

3.6.6 Summary and Best Case Analysis

Currently, the half mile areas surrounding Chatham, Madison, and Convent Stations fall significantly below minimum densities recommended to support transit ridership. Despite this fact, two of the three station areas (Chatham and Madison) are already meeting many of the characteristics of vibrant transit-oriented developments. However, most lacking is the availability of low to moderate income housing in the towns’ centers which would appeal to the growing non-family and older resident demographics in these communities. Increasing residential and employment densities within the half mile of each station is likely to increase the NJ TRANSIT ridership base.



TOD planning for commuter rail stations must strike a balance between two opposing forces aimed at using the station as a focal point in a traditional town center, and maximizing the commuter patron's ease of vehicular access.

To find this balance for commuter rail stations, successful TOD planning requires strong public leadership to establish the regulatory policy, financing, incentives, programming, and partnerships designed to mold the physical shape and intensity of the station area.

Madison Borough and Chatham Borough officials have the advantage of promoting TOD elements within an existing urban fabric. In contrast, Morris Township officials have an opportunity to explore diverse regulatory approaches to leveraging market forces within a less established area.

3.6.7 Chatham Station Area

The area surrounding Chatham Station has many qualities of a TOD, including an existing stock of apartments which demonstrate the potential of achieving an overall density comparable to other station areas in the region. However, existing zoning is not conducive to higher density, and the political will to change the zoning should be assessed. There is also a strong local preference for maintaining scale and character, therefore developing design guidelines will be important to the community. The redevelopment opportunities that are available are largely limited to small infill sites, opportunities to diversify the mix of uses such as adding residential apartments over retail or conversion of parking areas to developed land uses. Overall, taking advantage of infill redevelopment could enhance the overall density and mix, adding more residents to the area who can walk to transit. However, due to cost, time, and other obstacles, including the acquisition of multiple privately-owned properties, the absence of sizable vacant or under-developed properties makes a large-scale master-planned TOD impractical.

3.6.8 Madison Station Area

The area surrounding Madison Station functions largely as a TOD today, having developed that way through historic economic and regulatory forces. The area features an attractive downtown with multiple uses. Locally, there is strong local support for TOD, as evidenced by the current pursuit of the development of a former school site. Additional redevelopment opportunities, however, are largely limited to infill or changes of use. Demographics indicate that apartment and condominium housing for growing young and senior age groups should be added to the mix of land uses, should redevelopment occur. Overall, permitted building heights might need to be increased in order to achieve the densities to



make substantial redevelopment economically viable. Demographics related to income, age, worker flows, and other studied characteristics indicate that any new development would further the economic success of Madison Borough.

3.6.9 Convent Station Area

The Convent Station area, with its existing lower-density development pattern, presents a potential opportunity to increase density with a suitable composition of uses to establish successful TOD there. In contrast to the other station areas, this area offers opportunities for more than infill development. Higher densities in the Convent Station area are not, however, currently part of Township plans. Also, the area around the station does not currently feature adequate commercial uses to achieve a mix of uses supportive of TOD. Zoning changes would be necessary to allow for the density and mix of uses to make successful TOD a possibility. A master plan that created an appealing vision for this area would be a key step toward that goal. The availability of larger tracts and a substantial existing parking lot at and in the vicinity of Convent Station functions as more of a blank slate on which a vision of a more dense mixed-use development could be realized. Demographics in the station area include the right mix of worker flows, age, population, and income to economically support a TOD vision.



4

Stakeholder and Public Engagement

4.1 Stakeholder and Public Engagement Plan

A comprehensive stakeholder and public engagement plan was undertaken that had several components including establishing a Technical Advisory Committee (TAC), developing a project website, conducting stakeholder interviews, convening public meetings, and conducting transit access surveys. This Chapter describes the outreach tools and materials that were developed for this project, and public and stakeholder feedback received.

4.2 Technical Advisory Committee

A Technical Advisory Committee (TAC) was established consisting of active stakeholders, including Morris County Division of Transportation (MCDOT), Morris County Division of Engineering, North Jersey Transportation Planning Authority (NJTPA), NJ TRANSITTRANSIT, New Jersey Department of Transportation (NJDOT), TransOptions, and study area and surrounding municipality representatives from Chatham Borough, Chatham Township, Florham Park Borough, Harding Township, Madison Borough, and Morris Township. The purpose of the TAC was to provide project input on draft products to facilitate data exchange, and to provide guidance in the selection of stakeholder interview candidates, the transit access survey, and other technical matters.

Three working TAC meetings were conducted. The first TAC meeting was conducted on February 8, 2012. The meeting included an overview of the project including project purpose, objectives, schedule, and scope. Data needs,



the public open house meeting, parking survey, transit access survey, and stakeholder interviews were also discussed.

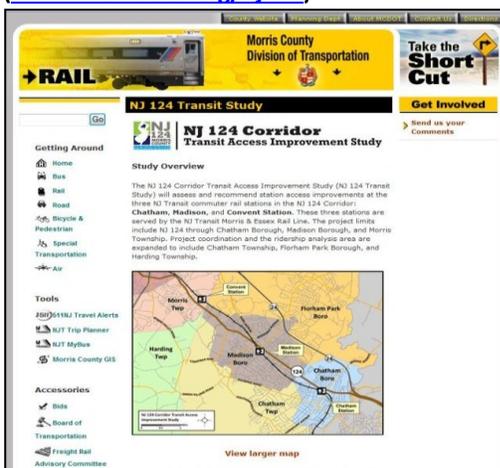
The second TAC meeting was conducted on November 28, 2012. The meeting focused on what has been learned to date through the stakeholder interviews, the public open house, transit access surveys, existing data review, land use and zoning analysis, and other existing conditions analyses. Data needs and potential solutions to be studied were also discussed.

The final TAC meeting was conducted on March 27, 2013. At the final meeting an update was provided on the project progress in terms of scope and deliverables along with a detailed presentation of the project's recommendations.

4.3 Project Website

VHB worked with the MCDOT, the Morris County web manager, and web designer to develop a project website. The website included a study overview and study area map, project objectives, a list of TAC members and links to their websites, a listing of project tasks along with links to the associated deliverables, and a “send us your comments link” that allowed people to sign up for project emails and provide comments or suggestions. The project website was also used to advertise both the public open house meeting and the transit access survey. Figure 4-1 shows a screenshot of the project website.

Figure 4-1: Project Website found on the MCDOT website
(www.morrisdot.org/nj124)





4.4 Stakeholder Interviews

VHB, along with Morris County and the Technical Advisory Committee (TAC), identified seven stakeholder groups that were interviewed in late March and early April 2012. Most of the meetings were held at the Madison Public Library (Figure 4-2). As shown in Table 4-1, 40 attendees representing 30 different organizations participated in the stakeholder meetings. Two additional stakeholders provided email responses to the interview questions due to their inability to attend the stakeholder meetings.

Table 4-1 Stakeholder Interviews

Stakeholder Group		Organizations	Attendees	Email Responses
1	Transit Provider: NJ TRANSIT and TransOptions (separate meetings)	2	10	
2	Municipal Planning Representatives	4	4	
3	Municipal Chambers of Commerce/Economic Development	4	4	
4	Public Works and Parking Enforcement Representatives	5	5	
5	Senior Citizen and Advocacy Groups	8	10	
6	Other	2	2	2
7	Businesses and Colleges	5	5	
Total		30	40	2

The following sections provide a summary of stakeholder feedback divided into four categories: transit, parking, pedestrians/ bicycles/ kiss-n-ride, and land use and economic development. Detailed meeting notes can be found in Appendix B.

4.4.1 Transit

NJ TRANSIT bus routes 873, 878, 879 and the MAD Shuttle route primarily serve the NJ 124 corridor as last mile distributors, providing service from the stations to train riders’ final destinations. Each of the NJ TRANSIT routes (873, 878, and 879) is served by a single bus so providing more frequent or a longer span of service would be costly. NJ TRANSIT has received an increase in bus

stop requests from the study area as the economy rebounds and businesses move to the corridor. Some of the privately funded and operated shuttles are difficult to sustain due to funding issues. It is perceived that transit cost and schedules, among other reasons, deter student transit ridership in the corridor.

4.4.2 Parking

Parking at the train stations is not as constrained as it was in the pre-recession years. Parking management may be a key strategy for improving access especially for nonresidents. The daily parking spaces are filled early in the morning at Chatham and Madison Stations. There are a few enforcement and safety issues related to parking, including illegal parking in handicapped spaces, and illegal parking or standing by drivers waiting to pick-up or drop-off their passengers. Due to the lack of parking at the train stations, commuters are finding alternative parking at local churches, or traveling to other stations to park and board transit, such as at Summit and Jersey City.

Figure 4-2: Stakeholder interviews held at the Madison Public Library





4.4.3 Pedestrians, Bicycles, and Kiss-n-Ride

Many people walk or bicycle to access Chatham and Madison Stations. There have been some bicycle thefts reported at Madison Station. More bicycle lockers and racks are needed to meet bicycle parking demand at Chatham and Madison Stations. Bicyclists and pedestrians would like to see the Traction Line Recreation Trail (a paved bicycle and pedestrian path along the NJ TRANSIT Morris & Essex: Morristown Rail line from Morristown to the border of Madison) extended into Madison. Pedestrians are concerned about train station lighting, especially under the rail bridges. Additional trailblazing and information signage are needed at the stations. Kiss-n-ride (drop-off) areas, as well as staging areas for taxis and shuttles, are needed to more efficiently manage parking.

4.4.4 Land Use and Economic Development

The commercial rental space in downtown Madison and Chatham Boroughs seem consistently occupied, but there are many vacancies in office parks within the study area such as in Giralda Farms and at various locations along Park Avenue. Municipalities are mixed on their desire to see denser Transit-Oriented Development (TOD). In some cases there is conflicting levels of interest for denser development from different organizations within the same town. Chatham Borough and Madison are striving to maintain the character of their town centers, but also recognize the benefit of new development. Some infill development locations can be identified. Convent Station appears to be the best opportunity for TOD, which will increase transit usage but will not offset existing access issues.

4.5 Public Open House Meeting

A Public Open House meeting was held Thursday, March 29, 2012 from 4PM to 7PM at the Madison Train Station. Meeting notices were posted on the project website, several of the municipal websites, and websites of TAC members (Figure 4-3). Notices were posted on social media sites like Facebook and Twitter. Flyers were posted at Chatham, Madison, and Convent Train Stations, as well as other public places, including libraries and grocery stores (Figure 4-4). A press release was distributed by Morris County and local newspapers had articles alerting the public to the open house meeting.



NJ 124 Corridor Transit Access Improvement Study

Final Report

Figure 4-3: Public Open House meeting notes posted on various websites and social media sites

UPCOMING EVENTS

Transportation Events

NJ 124 Transit Study - Open House - March 29, 2012

A Public Open House will be held at Madison Train Station as part of the NJ 124 Corridor Transit Access Improvement Study. This study will analyze and recommend train station access improvements at Chatham, Madison, and Convent Stations.

The open house is an opportunity for the public to meet and share their ideas on accessing the train stations being studied with the project team. The open house is being held early in the project so that the public's feedback can be incorporated into the various tasks of the study.

Date: Thursday, March 29, 2012
Time: 4:00 PM - 7:00 PM
Location: Madison Train Station

Chatham Courier

March 29 open house to focus on improvements at Chatham, 2 other train stations

THE CHATHAM — Have something to say about the train station in downtown Chatham? Then today, and offer some ideas when the Morris County Division of Transportation holds an open house 4-7 p.m. Thursday, March 29, at the Madison Train Station in downtown Chatham as part of the new Jersey 124

BOROUGH OF MADISON New Jersey

Transit Access Improvement Study

Date: March 19, 2012

The NJ 124 Corridor Transit Access Improvement Study will assess and recommend station access improvements to the Chatham, Madison, and Convent Station NJ Transit commuter rail stations. Residents and rail patrons should anticipate activity at and around the Madison Train Station on Thursday, March 29, starting around 4PM. For more information, please see <http://morrisdot.org/NJ124/>

Morris County Seeks Input on Train Station Access Study

Monday, March 19, 2012

The Morris County Division of Transportation and its consultant, VHB, will conduct a Public Open House as part of the NJ 124 Corridor Transit Access Improvement Study on Thursday, March 29, from 4 p.m. to 7 p.m. inside the Madison Train Station in Madison.

The study will analyze and recommend train station access improvements at Chatham, Madison, and Convent Station for all users of those stations.

The open house is an opportunity for the public to meet with the project team, identify any difficulties they encounter getting to or from those train stations being studied, and suggest any solutions. The open house is being held early in the project so that the public's feedback can be incorporated into the various tasks of the study.

Once completed, the study will yield a final report that will include an assessment of existing transportation infrastructure, modes of access, and land use, and will provide recommendations and strategies to meet the access needs of the public in the near and long term.

This study is funded through the North Jersey Transportation Planning Authority's Subregional Studies Program and is managed by the Morris County Division of Transportation. The project began in January 2012 and is anticipated to be completed in March 2013.

More information on the study is available on the Morris County Division of Transportation web site, www.MorrisDOT.org/NJ124/.

Anyone unable to attend the open house is encouraged to visit the web site to submit comments online and join the study email list. Comments can also be mailed to the Morris County Division of Transportation at PO Box 900, Norwood, NJ 07963-0900.

North Jersey Transportation Planning Authority (NJTPA)

Government Organization

North Jersey Transportation Planning Authority (NJTPA)

Get ideas on improving access to the Madison Train Station? Morris County wants to hear them - the county's Division of Transportation will host an open house at the station next week (4 to 7 p.m., Thursday, March 29) to hear the public's ideas. The open house is part of the NJTPA-funded NJ 124 Corridor Transit Access Improvement Study.

Wanted: Ideas to Improve Train Station Access

If you've got ideas, the Morris County Division of Transportation wants to hear them at an open house to be held at the Madison Train Station.



Figure 4-4: Public Open House flyer with QR code that was posted at each of the train stations, in municipal buildings, and other public places

**NJ 124 Corridor
Transit Access Improvement Study**

OPEN HOUSE

You are invited to a project open house to share your thoughts on how to improve transit access along the Route 124 corridor for drivers, bicyclists, pedestrians, and transit users.

Thursday March 29, 2012
Stop by anytime between 4PM and 7PM
Madison Train Station
 Kings Road 
 Between Green Ave. & Prospect St.
 (one block from Main St./NJ 124)
 Madison, NJ 07940

For more information visit the project website at:
www.morrisdot.org/NJ124
 Or Scan the QR code below

If you require any special assistance, please contact Susan O'Donnell (VHB) at 973-693-4488

Morris County has initiated a study to assess and recommend station access improvements at the three NJ Transit commuter rail stations served by the Morris & Essex Rail Line in the NJ 124 Corridor: Chatham, Madison and Convent Station. The project limits include NJ 124 through **Chatham Borough, Madison Borough, and Morris Township** and the ridership analysis area are expanded to include **Chatham Township, Florham Park, and Harding Township.**

The open house included five “information areas” where attendees viewed presentation boards with project staff on-hand to answer questions (Figure 4-5). These information areas provided an introduction to the project and an opportunity to learn about station access issues as follows:

- Introduction/ PowerPoint – Project staff provided a PowerPoint presentation with several slides outlining the purpose, goals, and objectives of the study, followed by a few interactive survey slides to record where participants live, work, primary mode of transportation, and their top transportation concerns within the corridor. The final two slides included information regarding upcoming study surveys and a guide to the “information areas” at the public meeting. Participants were also given a small card with the project website address.
- Transit Access – Presentation boards displayed the transit routes serving the study area.
- Traffic Access and Parking – Presentation boards provided the location of train station parking areas and the transportation network.
- Bicycle and Pedestrian Access – One presentation board provided a list of potential issues such as conflicts with turning vehicles or missing sidewalks in order to facilitate discussion about the problem areas related to bicycling and walking in the study area. A second presentation board described amenities to improve pedestrian and bicycle safety and circulation.
- Land Use – Presentation boards identified the benefits and trends of TOD, and displayed maps of each station area with photos showing building types in the area.

Figure 4-5: Public Open House meeting held at the Madison Train Station





Notes from the Transit Access, Traffic Access and Parking, Bicycle and Pedestrian Access, and Land Use “information areas” can be found in Appendix B.

About 30 people attended the Madison Train Station Open House and 23 people participated in the interactive survey polling activity. The highest number of survey participants were from Madison Borough (10 people) and Harding Township (6 people), and some worked in New York City (7 people) or Madison Borough (5 people).

Most survey respondents travel to the train station by driving and then parking (44 percent) as shown in Figure 4-6. When asked to identify the top three transit access improvements needed in the NJ 124 corridor, 27 percent of the respondents wanted more parking, 21 percent wanted shuttles/ bus connections, and 18 percent requested improved transit information as shown in Figure 4-7.

Figure 4-6: How do you get to the station?

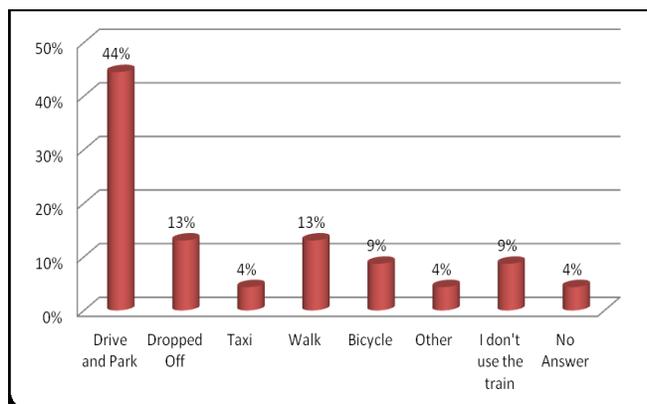
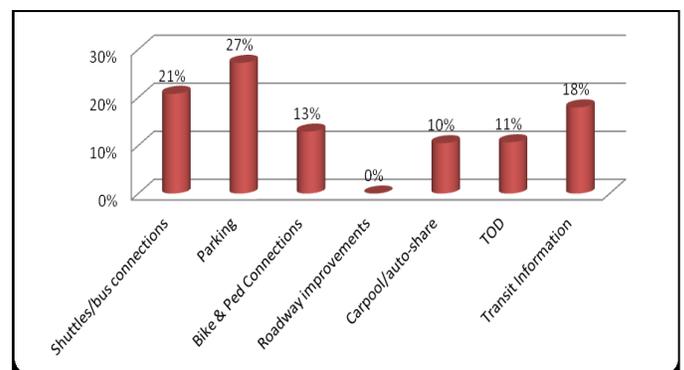


Figure 4-7: Ranking of top three transit access improvements needed



4.6 Survey Overview

Two public surveys were conducted to gather information pertaining to study area station access: a web-based survey was conducted in May 2012 and an augmentation of NJ TRANSIT’s ScoreCard Customer Satisfaction survey was conducted in June 2012.



4.6.1 Survey Methodologies

The in-depth online survey was launched in May 2012 through use of the Survey Monkey web service. The survey was targeted to current NJ TRANSIT rail customers (both regular commuters and occasional rail riders) as well as people who are not currently rail customers but may travel to or from the study area. A hyperlink to the online survey was posted on the project webpage and MorrisDOT.org home page. A total of 29 questions were included in the survey (See Appendix B). An extensive outreach effort was conducted to encourage the public to participate. Signs with a short study description, study website address, and Quick Response (QR) Codes (a QR Code is a smart phone-scan able barcode imbedded with a website address) were displayed throughout the study area at the train stations, local grocery stores, libraries, post offices, the YMCA, and municipal buildings. TAC members and stakeholder group meeting attendees were asked to assist in the outreach effort by posting a link to the survey on their websites, or emailing the survey hyperlink to their constituents. Several of the municipalities and TAC members posted the survey link on Twitter, Facebook, and/ or their websites. Additionally, people that signed up for the project mailing list on the website and at the project open house were also invited by email to take the survey. Morris County issued a press release regarding the survey and also included information in the Morris County Connections Newsletter. These advertising strategies are shown in Figure 4-8.

Additional data was collected through NJ TRANSIT's quarterly ScoreCard survey. ScoreCard is NJ TRANSIT's online quarterly customer satisfaction survey which is designed to collect information based upon the five pillars of NJ TRANSIT's metrics-based performance system:

- Customer Experience
- Safety and Security
- Financial Performance
- Corporate Accountability
- Employee Excellence



NJ 124 Corridor Transit Access Improvement Study

Final Report

Figure 4-8: Survey flyer for the online survey, press release, and advertising on municipal websites and other social media sites

NJ 124 Corridor Transit Access Improvement Study

Want a better TRAVEL Experience?

Complete our brief online Transportation Questionnaire and tell us about how you travel and what improvements are needed.

To participate visit the project website at: www.morrisdot.org/NJ124 Or scan the QR code below

The NJ 124 Corridor Transit Access Improvement Study (NJ 124 Transit Study) will assess and recommend station access improvements at the three NJ Transit commuter rail stations in the NJ 124 Corridor: Chatham, Madison, and Convent Station. If you travel to or from southeast Morris County daily, a few days per week, or once a year, we would like to hear from you. Whether you travel by train or not, please complete this Transportation Survey which will provide valuable input into the study.

NJTPA @NJTPA
The North Jersey Transportation Planning Authority is the Metropolitan Planning Organization for the 13-county northern New Jersey region.
Newark, NJ | <http://www.njtpa.org>

Tweets

- NJTPA @NJTPA If you travel through southeast Morris Co. by transit, car, bike or walk, please complete this Transportation Survey surveymonkey.com/NJ124
- NJTPA @NJTPA Chairman Holt discusses the key role the NJTPA plays in improving the region's transportation network in this... fb.me/2AG2mC
- NJTPA @NJTPA Congratulations to Hunterdon County Freeholder Matthew Holt on being elected the NJTPA's new Chairman fb.me/15WJ068M
- NJTPA @NJTPA NJDOT has announced construction-related traffic changes in the area of the NJTPA office. Those driving to... fb.me/26M2G2jps
- NJTPA @NJTPA USA Today takes a look at the cutting edge of automobile technology... fb.me/0K0K0d8f
- NJTPA @NJTPA Saturday is National Train Day. Check this site for contests and events near you fb.me/toTArYEx

HARDING TOWNSHIP
Marion S. & Allan P. Kirby Municipal Building

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NJ 124 Transit Access Study Transportation Survey

Last Updated on Tuesday, 22 May 2012 11:43

If you travel through southeast Morris County daily, a few days per week, or once a year, we would like to hear from you. Whether you travel by train or not, please complete this Transportation Survey <http://www.surveymonkey.com/NJ124> which will provide valuable input into the NJ 124 Transit Access Study <http://www.morrisdot.org/NJ124>. To see a flyer describing the survey, click [here](#). The survey is scheduled to be live until the end of the month. Thanks in advance for your help.

BOROUGH OF MADISON New Jersey

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NJ 124 Travel Corridor Study

The NJ 124 Corridor Transit Access Improvement Study and involving station access improvements at the NJ Transit commuter rail stations in the NJ 124 Corridor: Chatham, Madison and Convent Station. Whether you travel by train or not, please complete this Transportation Survey. For more information, please [click here](#).

Borough Announcements

- May 08 Letter Carriers Food Drive Borough Clerk MAY 08 Letter Carriers Food Drive You see help. Please contact proper for details and more.
- May 04 Fox Attack in Madison Health The Sun Health Lab has informed the Madison Health Department that the fox that
- Apr 27 Rain Barrel Workshop Administration The Borough of Madison will be hosting a

Borough Calendar

- Tuesday, May 08, 2012 12:00 PM The Descendants Senior Services
- 04:00 PM North Jersey Stroke Discussion Senior Services
- 07:30 PM Madison Historical Preservation Historic Preservation
- Wednesday, May 09, 2012 12:00 PM and Wednesday Bridge

Morris County, NJ

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Morris County Conducting Online Travel Survey

Friday, May 11, 2012

The Morris County Division of Transportation and its consultant, VHB, are conducting an online travel survey as part of the NJ 124 Corridor Transit Access Improvement Study.

The study will analyze and recommend train station access improvements for all users at the stations in Chatham, Madison, and Convent Station. The project team invites the public who travel to or from southeast Morris County to complete the travel survey on the project web site.

"Whether a person travels by train or not, his or her responses will provide valuable input into the study," said Gerald Rohler, division director.

The survey asks various questions regarding travel patterns and solicits suggestions on improving train station access. The survey responses will be incorporated into the various tasks of the study, according to Rohler.

"Once it's completed, the study will produce a final report that will include an assessment of existing transportation infrastructure, modes of access and land use, and will provide recommendations and strategies to meet the access needs of the public in the near and long term," Rohler said.

The study is funded through the North Jersey Transportation Planning Authority's Sub-regional Studies Program and is being managed by the county's Division of Transportation.

The project began in January and is anticipated to be completed in March 2013.

The Travel Survey and more information about the study are available on the Morris County Division of Transportation Web site, www.morrisdot.org/NJ124.

Borough of Chatham, New Jersey
Settled 1692, Incorporated 1897

54 Farmont Avenue, Chatham, NJ 07828
973-435-9624 Hours: 9am to 4pm M-F

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COMING UP!

- Tue May 15 Historic Preservation Comm. 7:30pm
- Wed May 16 Planning Board Meeting Cancelled March Area 12-4pm
- Thu May 17 Green Initiatives Comm. 7:30pm
- Sat May 19 Rededication of Memorial Park Pool & Field @ 10am
- Shredding event at Train Station 10am to 1pm
- March Area 12-4pm
- Recycling Depot 8am-12pm
- Mon May 21 J. Mtg Finance & Operating Comm. 7:30pm
- Tue May 22 Library Board 7:30pm
- Wed May 23 Farmers Market Comm. 7:30pm
- Zoning Board 7:30pm
- March Area 1-4pm

QUICK LINKS

- Chatham Senior Center
- Chatham Joint Recreation
- Pool - Parks - Tennis
- Farmers Market
- School District

NEWS & EVENTS

Transit Access Study - Please Help!

If you travel through southeast Morris County daily, a few days per week, or once a year, we would like to hear from you. Whether you travel by train or not, please complete this Transportation Survey <http://www.surveymonkey.com/NJ124> which will provide valuable input into the NJ 124 Transit Access Study www.morrisdot.org/NJ124.



NJ TRANSIT uses the ScoreCard results to measure overall performance, guide strategic business decisions, and help bring accountability to their riders and the taxpayers of New Jersey. The hyperlink for the survey is sent electronically to NJ TRANSIT customers and the survey is completed online.

The ScoreCard survey related to this study was conducted by NJ TRANSIT in June 2012 as part of their quarterly ScoreCard effort. The survey was available for completion between June 8, 2012 and June 29, 2012. Fifteen supplemental study-oriented questions were provided to NJ TRANSIT for inclusion in the ScoreCard survey. These questions were asked (in addition to the regular ScoreCard survey questions) to respondents who indicated that they either boarded or alighted trains at Chatham, Madison, or Convent Stations. At the three study stations, NJ TRANSIT staff distributed small business cards with ScoreCard information and website address, and spoke with customers to encourage their participation to increase response rates. Staff promoted the survey at the stations on a few days over the three week period that the survey was available for completion. These efforts exceeded NJ TRANSIT's regular ScoreCard survey notification and distribution procedures.

The next two sections of this report discuss the results of each survey.

4.7 Online Survey Findings

The online survey was open for response for approximately six weeks. A total of 468 surveys were started on the website; after further review 433 were substantially complete and included in the analysis. Surveys were eliminated from analysis if they contained invalid home or work zip codes, or had too few completed questions.

This section includes key findings and selected tables that were prepared from the survey results. The universe of potential participants in the online survey participants was largely undefined, so the survey data was not "weighted" or expanded to represent the universe. The web survey was specifically designed to capture opinions and experiences from a wide range of respondents and it was primarily advertised within Morris County. The potential that some populations would be over-represented or under-represented because the survey was not weighted (or balanced) was expected. For instance, there may be an over-representation from passengers having difficulty accessing the stations (during their travel to the station, with parking, or some other access issue) since the survey is a transit access study and the survey offered them the opportunity to lend their opinion. Regular commuters that are satisfied with access to the station may be under-represented because they may feel they



have nothing to add to the study and thus were not interested in taking the time to complete the survey.

Therefore, the results of this survey should not be taken in the context that they accurately (or statistically) represent the entire universe of potential respondents that regularly commute via the Morristown Line, occasionally use the Morristown Line, or could potentially use the Morristown Line within the study area. Rather, the results of the survey should be used to understand a sampling of experiences and opinions from that target universe of respondents to inform the definition of study area needs and potential improvements.

4.7.1 General Characteristics of Respondents

Nearly 86 percent of the survey respondents live in Morris County, three percent in Essex, 2.3 percent in Somerset, and 1.4 percent in Union County. The top hometowns included about 30 percent from Morris Township (including Morristown which shares a zip code with Morris Township), almost 28 percent from Madison, 10 percent from Chatham (Borough and Township share a zip code), and almost four percent from Florham Park (see Table 4-2). Since the data was collected by zip code, towns with shared zip codes were grouped together.

**Table 4-2: In what zip code or town is your home located?
(All Respondents)**

Home Town	Percent
Morris Township (Including Morristown)	30.3%
Madison	27.7%
Chatham (Borough and Township)	10.2%
Florham Park	3.7%
Morris Plains	2.1%
Harding	1.6%
Randolph	1.4%
Mendham	1.4%
All Others	21.7%
Total	100.0%

Most (about 80 percent) of the respondents are employed full or part-time, 11 percent are retired, seven percent are not working, and three percent are full or part-time students.



Most respondents work five days a week (nearly 70 percent). About 11 percent work four days a week, and over four percent work more than five days per week. Nearly 45 percent work or attend school in Morris County, about 16 percent work or attend school in New York, and almost three percent work or attend school in Essex County. As shown in Table 4-3, most of the respondents work in Madison (nearly 23 percent), in New York (about 16 percent) or in Morristown.

**Table 4-3: In what zip code or town is your work or school located?
(All Respondents)**

Work/School Town	Percent
Madison	22.5%
New York	16.4%
Retired	11.3%
Morris Township (including Morristown)	10.9%
No Answer	8.3%
Not working	6.7%
Florham Park	3.7%
Chatham (Borough and Township)	1.9%
Parsippany	1.6%
All Others	16.7%
Total	100.0%

A high percentage of respondents indicated they drive alone (nearly 61 percent) to work or school. Almost 23 percent indicated that they travel by train; nearly five percent participate in a carpool or vanpool, and about six percent (three percent each) walk or bicycle to work.

Results from a subset of respondents that live and work or go to school in Morris County show that most drive alone to work (72 percent), about eight percent walk, about six percent carpool or vanpool, nearly six percent bicycle, about three percent either telework or work a compressed schedule (work same number of weekly hours over fewer weekdays), and about two percent travel by train within Morris County (see Table 4-4). This indicates that the respondents within Morris County were mostly comprised of non-transit commuters or occasional users.



Table 4-4: Access Mode to Work or School
(Respondents that Live and Work or go to School in Morris County)

Access Mode to Work/School	Percent
Bicycle	5.5%
Bus	0.7%
Car/Vanpool	6.2%
Drive Alone	72.4%
Dropped Off by spouse or family member	1.4%
Taxi	0.7%
Telework/Compressed Schedule	2.8%
Train	2.1%
Walk	8.3%
Total	100.0%

4.7.2 Travel Patterns of Train Riders

The purpose of this project is to determine the most effective and acceptable course of action to improve access to train stations in southeast Morris County for all users of all ages and abilities, including transit dependent populations. While the initial questions related to home and work/ school locations and commute modes, it was important to also capture feedback from those who ride the train less frequently, not just people commuting to work and school. Of the 433 survey responses, 80 respondents indicated they travel by train to commute to work or school. All survey participants were asked about their train usage, for any purpose, and 374 (86 percent) indicated they had traveled by train in the past year. The tables and figures that follow in this section as well as Section 4.7.3: Parking Patterns of Train Riders and Section 4.7.4: Station Access Preference are from the 374 respondents (or some subset of 374 responses in the case of follow-up questions) which are comprised of 80 (21 percent) regular commuters and 294 (79 percent) less frequent rail travelers.

Most of the 374 respondents that traveled by train accessed it at Madison Station (nearly 37 percent), Convent Station (23 percent), Morristown Station (13 percent), or Chatham Station (nearly 12 percent), and they traveled primarily to New York Penn Station (about 83 percent) or Hoboken (five percent) as depicted in Tables 4-5 and 4-6. As shown in Figure 4-9, about 51 percent of these respondents drove alone to the train station, 23 percent walked to the train station, 12 percent were dropped off, and nearly 10 percent traveled to the station by a car or vanpool.



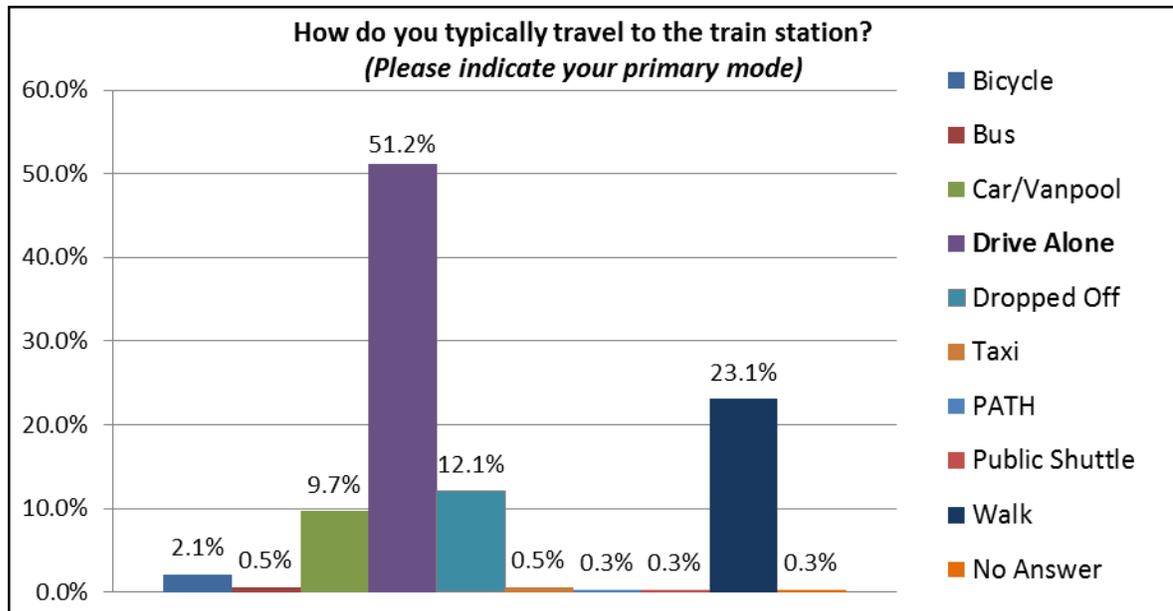
Table 4-5: When you travel by train, what is your typical boarding station?

Train Boarding Station	Percent
Madison	36.9%
Convent Station	23.0%
Morristown	13.1%
Chatham	11.8%
Morris Plains	2.7%
Summit	2.4%
Denville	1.3%
South Orange	1.1%
All others	7.5%
No Answer	0.3%
Total	100.0%

Table 4-6: When you travel by train, what station do you typically get off?

Alighting Station	Percent
NY Penn Station	82.9%
Hoboken	5.3%
Newark Penn Station	2.4%
Newark Broad Street	1.1%
Madison	2.7%
All Others	3.5%
No Answer	2.1%
Total	100.0%

Figure 4-9: Typical Mode used to Travel to the Train Station



The survey respondents who boarded trains at the three study area stations (Chatham, Madison, and Convent Station) are primarily residents of the town



where the station is located. About 75 percent of the respondents boarding at Chatham Station are from Chatham Township or Chatham Borough. About 14 percent are from Madison, nine percent from Florham Park, and about two percent are from Morris Township including Morristown.

Respondents boarding at Madison Station reside in a wider area than Chatham Station, including 77 percent from Madison, six percent from Florham Park, four percent from Harding, three percent from Morris Township including Morristown, one percent from Chatham (Borough and Township), and the remaining nine percent from towns outside the project study area.

Survey participants who boarded at Convent Station primarily live in Morris Township including Morristown (79 percent), the Green Village area of Chatham and Harding Townships (one percent each), and a variety of other towns outside the study area comprising the remaining 19 percent.

About three percent (13 respondents) reported that they exited the train at one of the three study area stations. Ten passengers exited at Madison Station, three at Convent Station, and none at Chatham Station. Four passengers traveled between study area stations – three between Chatham and Madison Station, and one between Madison and Convent Station. When asked about their egress mode to travel from Madison or Convent Station to their final destination, most responded that they walked to their final destination while one respondent traveled by bicycle.

4.7.3 Parking Patterns of Train Riders

Most respondents (about 76 percent) that drove and parked at the train station indicated that they parked in a station or municipal parking lot. About 13 percent parked for free either on-street or in a free private lot, and seven percent parked in a private lot nearby (see Figure 4-10).

As shown in Figure 4-11, most respondents reported they paid a daily parking fee (about 51 percent), while 18 percent parked for free, and almost nine percent paid for a monthly residential permit. While the percentage of daily and free parkers may seem high, it is important to note that only 21 percent of the respondents are regular train commuters while 79 percent are occasional riders who may travel by train infrequently, or during off-peak hours like nights and weekends. Since these riders only park at the station occasionally, they are more likely to use daily parking rather than purchase a monthly permit.

Figure 4-10: Parking Location

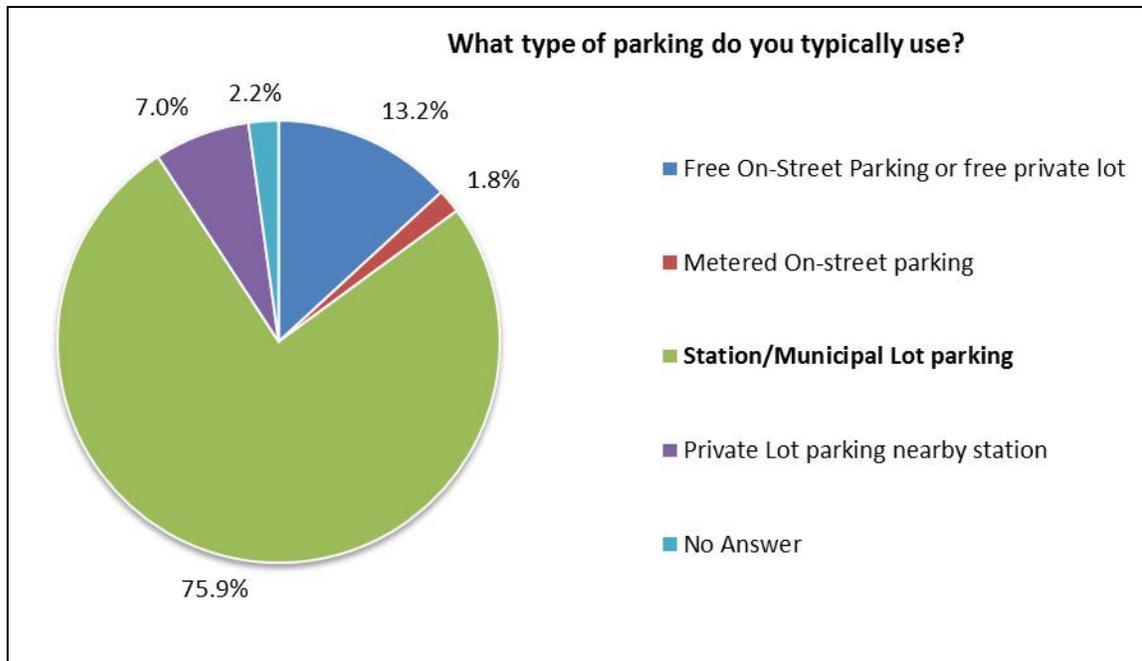
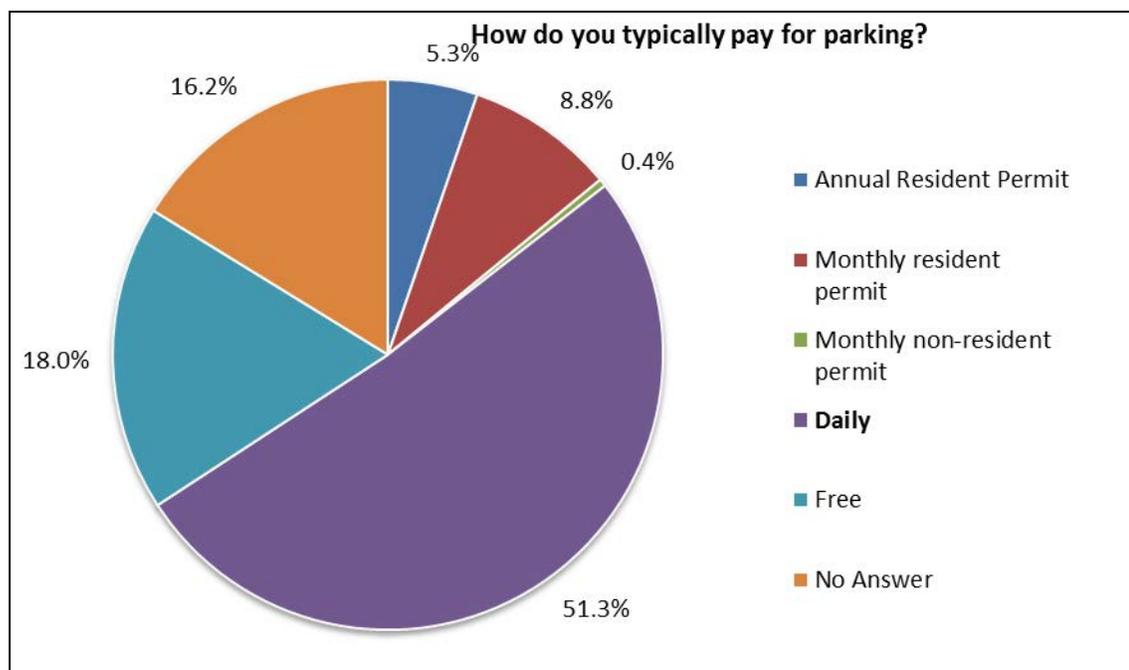


Figure 4-11: Parking Payment Type





4.7.4 Station Access Preferences

About 80 percent of train rider respondents are content with their current travel mode to the station. About 44 percent of the remaining respondents (those that are not using their preferred mode) are currently driving alone to the train, while almost 24 percent are walking, nearly 21 percent are dropped off, and the remainder is coming by carpool, bicycle or taxi (see Table 4-7). A closer look reveals that most of those dissatisfied with driving alone to a station would prefer to be able to walk to the station (11 percent), and about 10 percent would like to be dropped off at the station. Another six percent of those dissatisfied with driving alone would like to continue to drive alone and park, if their trip would be improved if there is more parking (both resident and non-resident) or free/ less expensive parking.

Overall, of the respondents not satisfied by their current access mode to the train station, almost 24 percent (or nearly five percent of the total train riders) would prefer to use a mode requiring parking (either driving alone or carpooling). Walking, a public shuttle, or getting dropped off were each identified as the preferred access mode by 18 percent of the dissatisfied respondents, and bicycling to the train station was identified by about 17 percent.

4.7.5 Vehicle Availability and Distance to Stations

Nearly 76 percent of all respondents said they had a personal vehicle available for their trip. The actual percentage may be higher however, as this question had a high “no answer” percentage (about 18 percent). The high percentage of respondents with available vehicles is consistent with the reported high percentage of train riding respondents that either drove alone (about 51 percent) or car/ vanpooled (about ten percent) to travel to the train station.

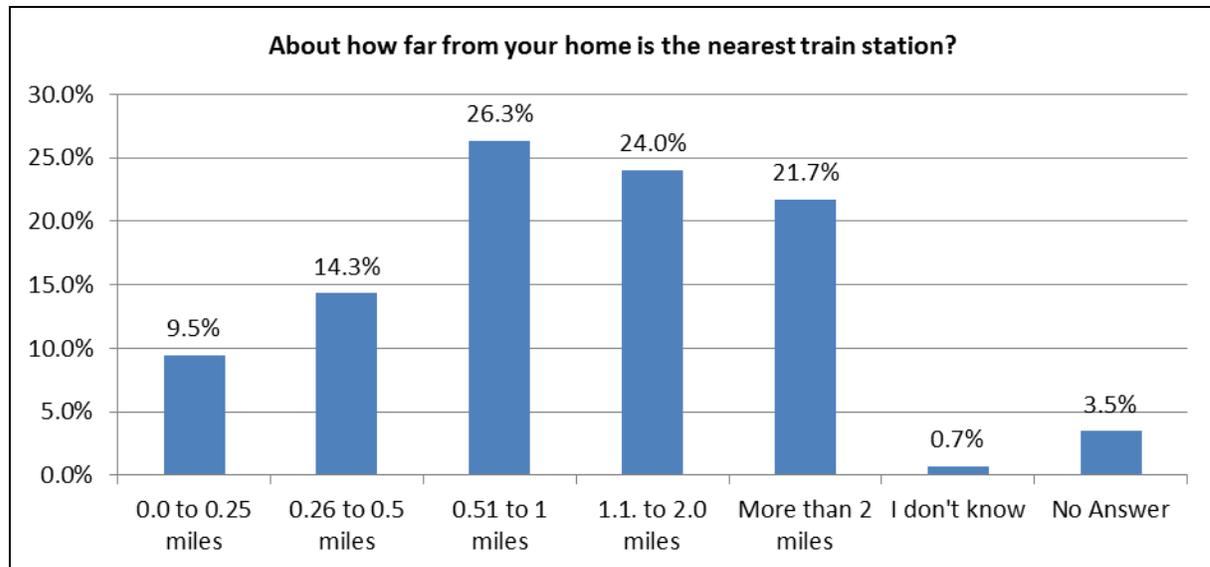
Nearly 46 percent of the respondents reported that they live more than one mile from the nearest train station (see Figure 4-12). About 26 percent live between a half mile and one mile away, 14 percent reside between a quarter mile and half mile way, and just under 10 percent live within a quarter mile of a station. A transit stop is typically considered to be accessible by walking from locations within a quarter mile.



**Table 4-7: Preferred Access Mode to Station of Train
Travelers NOT Currently Using their Preferred Access Mode**

Current Mode	Preferred Mode	Percent
Bicycle	Car-Drop off	1.4%
<i>Bicycle Total</i>		1.4%
Car-Dropped off	Bicycle	4.2%
	Carpool and park	1.4%
	Drive alone and park	8.3%
	Public Shuttle	2.8%
	Walk ONLY	1.4%
	Other Train Station	1.4%
	No Answer	1.4%
	<i>Car-Dropped off Total</i>	
Carpooled and parked	Public Shuttle	2.8%
	Walk ONLY	5.6%
<i>Carpooled and parked Total</i>		8.3%
Drove alone and parked	Bicycle	5.6%
	Car-Drop off	9.7%
	Drive alone and park	5.6%
	Public Shuttle	9.7%
	Walk ONLY	11.1%
	Other Train Station	1.4%
	No Answer	1.4%
<i>Drove alone and parked Total</i>		44.4%
Taxi	Car-Drop off	1.4%
<i>Taxi Total</i>		1.4%
Walk Only	Bicycle	6.9%
	Car-Drop off	5.6%
	Carpool and park	2.8%
	Drive alone and park	5.6%
	Public Shuttle	2.8%
<i>Walk Only Total</i>		23.6%
TOTAL		100.0%

Figure 4-12: Distance from Home to Nearest Train Station



4.7.6 Access Improvement Recommendations

Two questions were asked regarding improving access to the train stations. The first question was asked to people who are currently riding the train on their regular commute to work or school. Specifically the question was, “What is needed most to improve travel to and from the NJ TRANSIT train station?” The question was designed to be open-ended where participants could write in any response. The high “no answer” percentage (nearly 33 percent), for this question, is most likely because of the open-ended nature of the question where respondents were required to type in a reply rather than select from provided multiple choices.

The second question was, “What improvements could be made to encourage you to make more trips by train?” This was asked as a multiple choice question to all survey participants (not just regular train commuters). Multiple answers were permitted and there was an “other” option where a person could type in their own response. The “other” responses were coded for analysis similar to the responses in the open-ended question.

The results of both questions are shown in Tables 4-8 and 4-9. Responses are grouped and color-coded by category to facilitate comparisons between each other. The color coding legend is shown below the tables. The top three categories are similar for both questions. The top improvements identified for both lists were in the more parking category (nearly 25 and 38 percent), followed by train service/ fares/ information/ accessibility improvements that



would need to be implemented by NJ TRANSIT (almost 12 and nearly 36 percent), bicycle and pedestrian improvements (eight and almost 22 percent), and shuttles (seven and almost 20 percent).

Table 4-8: What is needed most to improve travel to and from the NJ TRANSIT train station?

Improvement	Percent
More Parking	24.9%
Parking Management etc.	4.8%
Buses/Shuttles to Station	7.0%
Improved bicycle access, parking	4.3%
Improved walk access; sidewalks, crosswalks	4.0%
Traffic improvements	1.9%
Faster, more reliable, expanded train service	8.8%
Hi-Level Platform	0.5%
Lower or maintained train fares	2.4%
Next Train information	0.3%
Other	0.8%
Nothing; Travel is fine	7.5%
No Answer	32.9%
Total Respondents	374

Color Coding	
More Parking	Blue
Parking Management	Purple
Shuttles	Red
Bicycle/Pedestrian	Green
Traffic/Roadway	Light Purple
Carpool/Auto-Share	Orange
TOD Development	Pink
Train Service/ Fares/Information/ Accessibility	Light Blue
Other	White
Nothing Needed	Yellow
No Answer	Brown
Nothing would encourage me	Grey

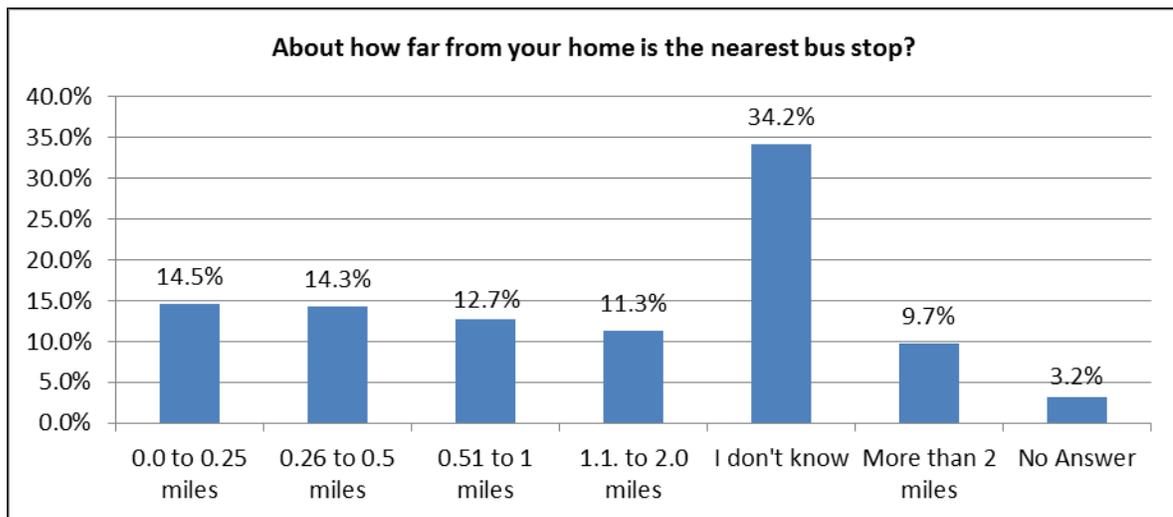
Table 4-9: What improvements could be made to encourage you to make more trips by train?

Improvement	Percent
More parking	37.6%
OTHER - Parking Management	0.7%
OTHER - Free or less expensive parking	0.9%
More shuttles/bus connections	19.6%
Better bicycle and pedestrian connections	20.6%
OTHER - Safety improvements	1.2%
Roadway improvements	8.1%
Carpool and auto-share	3.7%
Housing, employment and retail adjacent to the train station	7.2%
Information services regarding existing transit services	10.9%
OTHER - Faster, more reliable, expanded train service	14.3%
OTHER - Accessibility improvements	0.7%
OTHER - Lower train fares	9.7%
Other	0.5%
OTHER - Already ride the train	2.3%
Nothing would encourage me	11.8%
Total Respondents	433

“OTHER” was a response that was not in the original multiple choice list for the question but was an improvement that the respondent specified.

While shuttles to the train station ranked high on both lists of recommended improvements, when asked “About how far is your home from the nearest bus stop?” a large percentage of people (34 percent) responded that they did not know (see Figure 4-13). All other responses were fairly evenly dispersed among the mileage bracket ranges.

Figure 4-13: Distance from Home to Nearest Bus Stop



Nearly 38 percent responded that there are sidewalks on most/ all streets and almost 37 percent reported that there are sidewalks on some street in their home neighborhood (see Figure 4-14).

When asked “What improvements could be made to encourage you to make more trips by walking?” the top responses included provide more sidewalks (almost 30 percent), maintain sidewalks (27 percent), and better snow removal (15 percent) as shown in Figure 4-15. This suggests that people might walk more if given small improvements to the walking environment. Although, about a quarter (24 percent) indicated that nothing would encourage them to walk more.

When asked “What improvements could be made to encourage you to bicycle to the train station?” the top responses included bike lockers/ racks (almost 26 percent), shoulders on the roadway for bike use (nearly 21 percent), make motorists aware of bicyclists (almost 20 percent), separate bike lanes (nearly 19 percent) and more bike lanes (about 16 percent) as shown in Figure 4-16. This indicates the potential to encourage more people to bicycle to transit if given improved amenities. Almost 30 percent responded that nothing would encourage them to bicycle to the train.

Figure 4-14: Sidewalks in Home Neighborhood

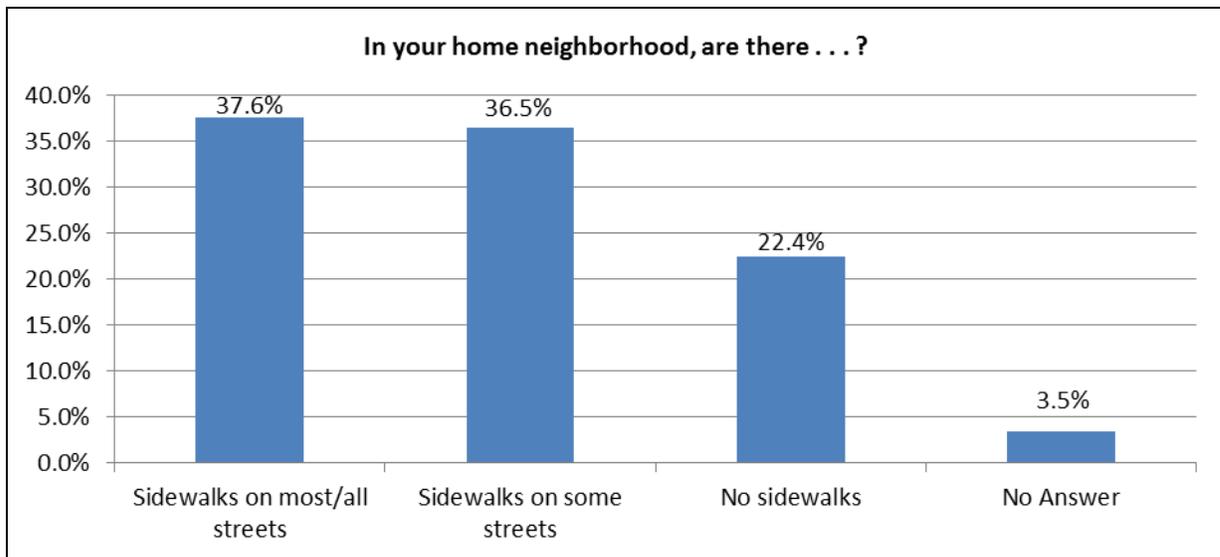


Figure 4-15: Walking Improvements

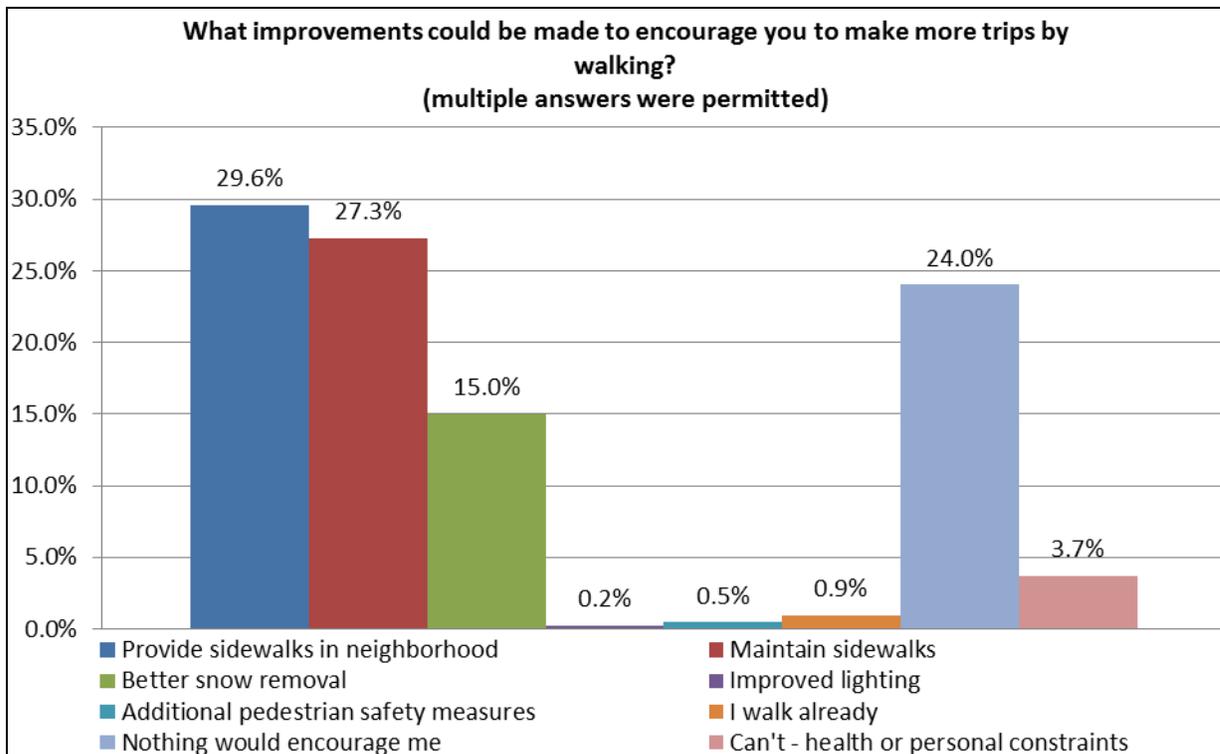
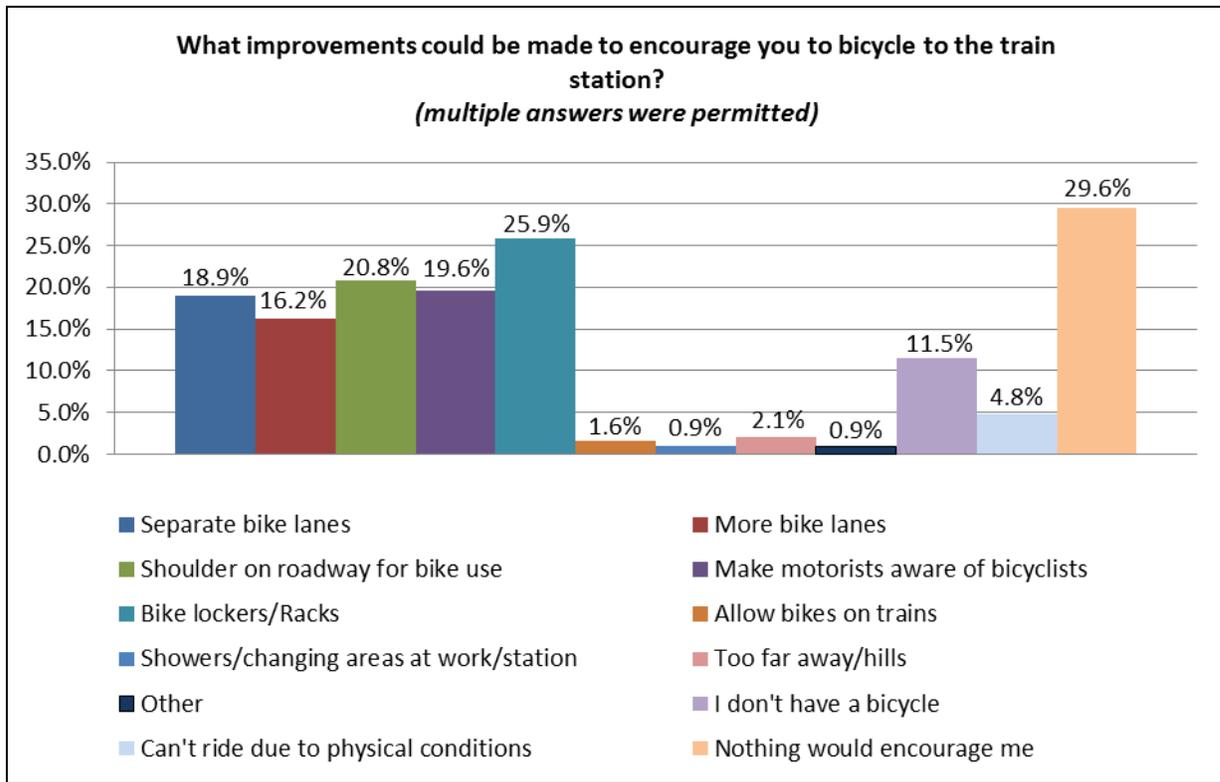


Figure 4-16: Bicycle Improvements



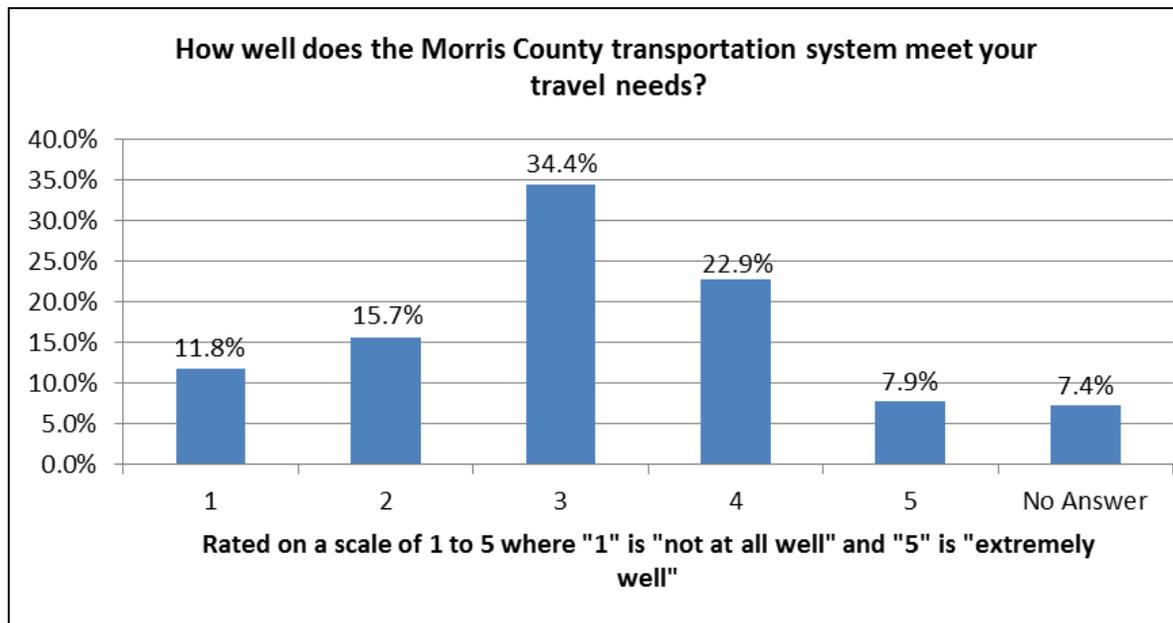
4.7.7 Customer Information and Satisfaction

Nearly 31 percent of the respondents have requested or sought information on the types of transportation available in Morris County or other parts of New Jersey within the past year. In general, these respondents sought bus or train schedules and fare information via online sources. Based on the information they acquired, almost 31 percent of those who sought information (or just under 10 percent of the total respondents) made a change in the way they travel. Nearly 69 percent of those requesting information, did not make a change in their travel option based on the information they found. In most cases the reason they did not make a change was because the service did not meet their needs in terms of service area, schedule, or cost.

Survey participants were asked to rate how well the Morris County transportation system meets their needs. The ratings were based on a scale of 1 to 5 where “1” is “not at all well” and “5” is “extremely well.” Almost 31 percent rated the transportation system a 4 or 5, the highest ratings. About 34 percent rated it a 3, and almost 28 percent rated it a 1 or 2 (see Figure 4-17).

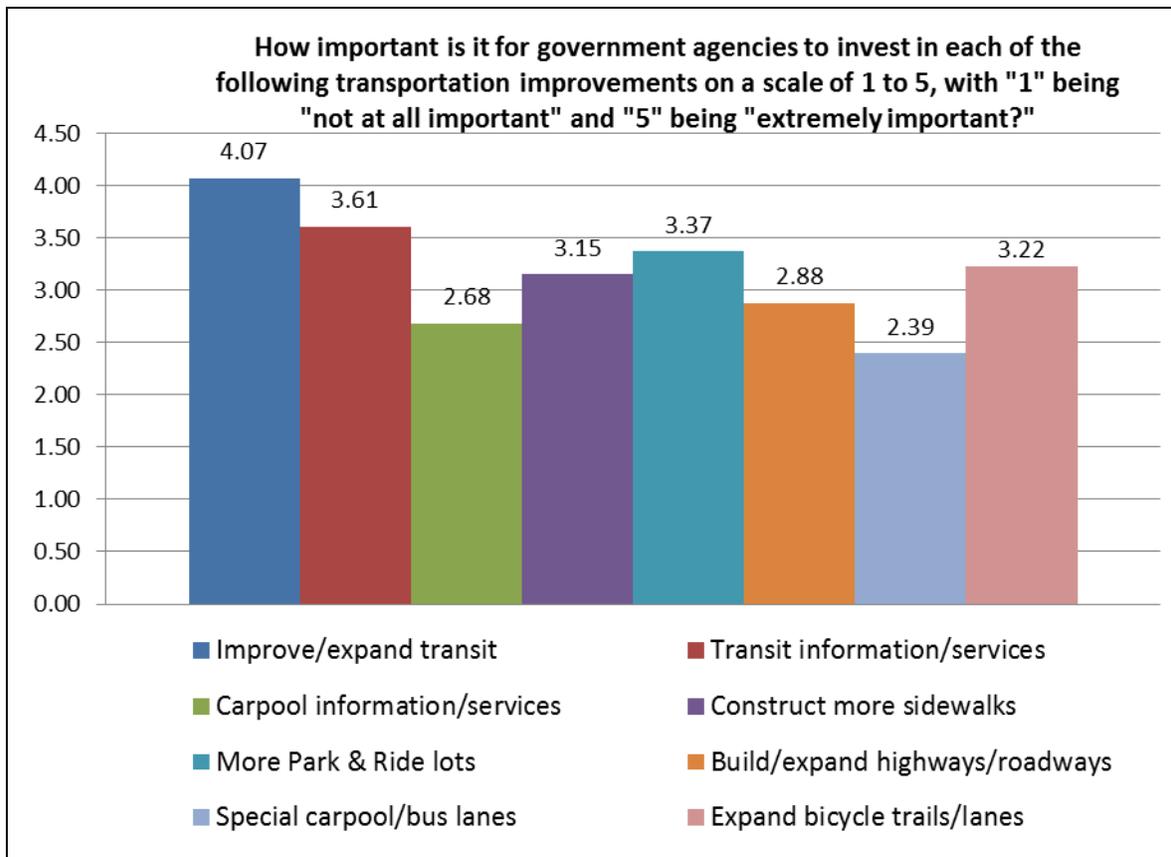
Overall, the weighted average rating was 2.99, which indicates that most people are satisfied with the Morris County transportation system.

Figure 4-17: Rating of Morris County Transportation System



The final question of the survey asked respondents to rate how important it is for government agencies to invest in various transportation improvements. A similar scale of 1 to 5 was used where “1” represents “not at all important” and “5” is “extremely important.” Figure 4-18 shows the weighted average rating for each improvement. The highest average rating was given to improving and expanding transit (4.07) which was echoed in the responses to the questions regarding what was needed to encourage the respondents to use the train more. The second highest average response was to improve transit information and services (3.61). Adding more service was also mentioned often in the train use related questions. More park and ride lots rated third highest (3.37), followed by expanding bicycle trails/ lanes (3.22) and constructing more sidewalks (3.15). Building/ expanding highways and roads, providing carpool information and services, and special carpool or bus lanes were ranked the lowest.

Figure 4-18: Transportation Improvement Investment



Based on the survey respondents, improving access to the train stations would be best achieved by a multi-pronged approach with a broad range of improvements for all modes and users. The key improvements identified from the survey include:

- more parking,
- better bicycle and pedestrian connections,
- shuttle and bus connections,
- faster, more reliable, or expanded train service, and
- better information regarding existing transit services.

The key transportation improvements identified from the earlier multiple choice and open-ended questions regarding needed improvements are consistent with responses from this question regarding ratings for transportation improvement investments. Respondents from both groups of questions ranked improving/ expanding transit, providing transit information and services, and providing more park and ride lots as the top three choices.



4.8 ScoreCard Survey Findings

A total of 373 surveys were submitted by passengers either boarding or alighting trains at Chatham, Madison, or Convent Stations (see Table 4-10). Since the survey asked about the respondents' first trip of the day, most (319) responses were from passengers boarding trains at the study area stations while the remaining responses (55) were from passengers alighting trains.

The survey responses were weighted (or expanded) to represent the full “universe” (also known as the *potential respondent pool*) of passengers. NJ TRANSIT provided typical weekday passenger information from 2009 through 2011 for the three stations in the study area that represents this “universe.” A total of 2,561 passengers were represented as boarding or alighting trains that stopped at study area stations during the AM Peak period (Table 4-11). This data was used to adjust the survey responses to account for non-responses (the difference between the survey responses and the universe of passengers). Weighting factors were developed for each station based upon this difference. For instance, we received 101 survey responses for Madison Station and the universe of passengers for Madison is 672. Therefore each of the survey responses can be expanded to represent the universe of passengers by multiplying each response by a weighting factor (Table 4-11) of 6.653 (672 divided by 101). Weighted data analyses adjust the raw survey data to accurately represent the population from which the sample is drawn. The weighted survey responses are presented in Table 4-12.

Table 4-10: Boarding and Alighting Stations (Unweighted Survey Responses)

Alighting Station	Boarding Station							Totals
	Chatham	Madison	Convent Station	Newark Broad Street	NY Penn Station	Other	No Answer	
Chatham				2		3	1	6
Madison					15	6		21
Convent Station	1			2	9	16		28
Hoboken	15	11	18					44
Newark Broad		5	4					9
Newark Penn		1						1
NY Penn Station	81	79	89					249
Other	1	3	2					6
No Answer	4	2	3					9
Total	102	101	116	4	24	25	1	373



Table 4-11: Passenger Volumes and Weighting Factors

AM Peak Passenger Volumes ²⁰				Weighting Factors		
Station	ON	OFF	Total	Station	ON	OFF
Chatham	798	71	869	Chatham	7.90099	11.83333
Madison	672	123	795	Madison	6.653465	5.857143
Convent Station	582	334	916	Convent Station	5.017241	11.92857
Total	2052	528	2580			

Table 4-12: Boarding and Alighting Stations (*Weighted Survey Responses*)

Alighting Station	Boarding Station							Totals
	Chatham	Madison	Convent Station	Newark Broad Street	NY Penn Station	Other	No Answer	
Chatham				24		36	12	71
Madison					88	35		123
Convent Station	10			23	104	184		321
Hoboken	117	73	90					281
Newark Broad Street		33	20					53
Newark Penn Station		7						7
NY Penn Station	634	526	447					1606
Other	10	20	10					40
No Answer	31	13	15					60
Total	802	672	582	47	192	255	12	2,561

²⁰ AM Peak Passenger volumes were provided by NJ TRANSIT and represent typical AM Peak volumes at these stations. The passenger count data were collected on various dates in 2009 and 2011.

The next sections were prepared from the weighted survey results. The responses were weighted by boarding station and whether they were boarding or alighting trains at Chatham, Madison, or Convent Station.

4.8.1 Rail Passenger Origins

A large percentage of passengers boarding trains at the three study area stations had origins or resided in the same municipality that the station is located as shown in Figures 4-19 through 4-21. About 41 percent of the passengers boarding trains in Chatham had a Chatham Borough origin, about 63 percent of the Madison passengers had a Madison origin, and nearly 39 percent of the passengers boarding trains at Convent Station indicated their origin was Morris Township.

Figure 4-19: Origins of Passengers Boarding Trains at Chatham Station

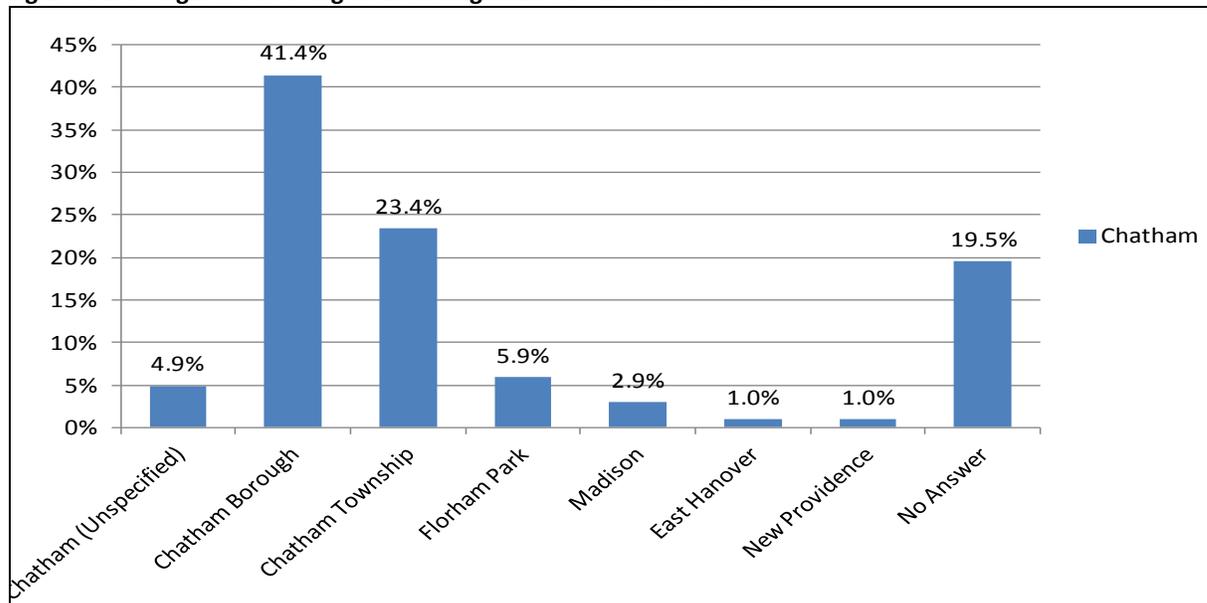




Figure 4-20: Origins of Passengers Boarding Trains at Madison Station

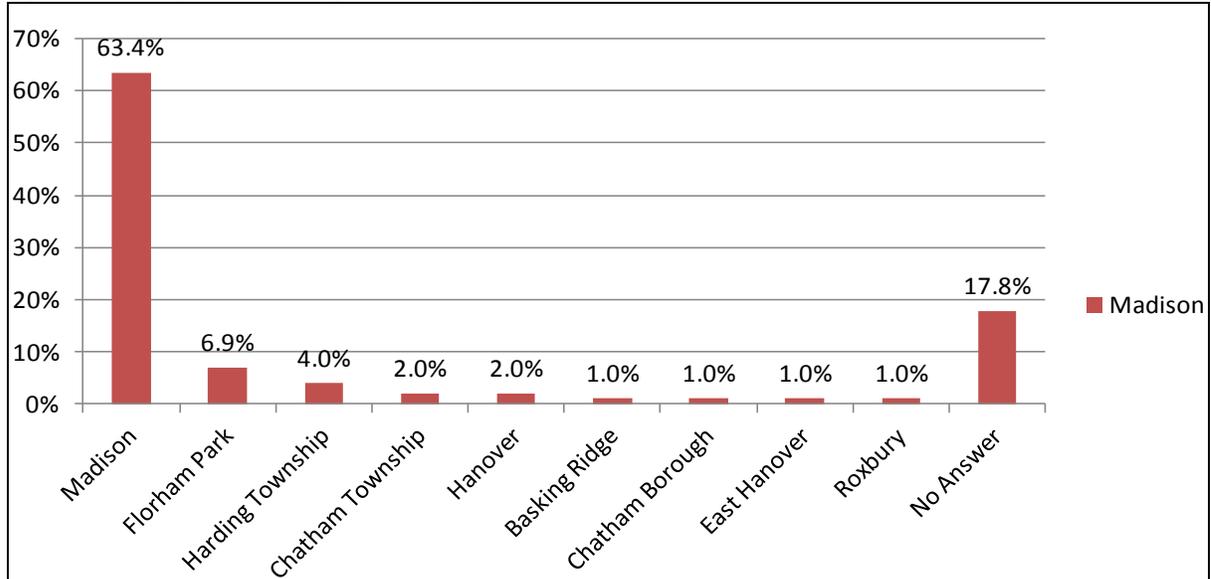
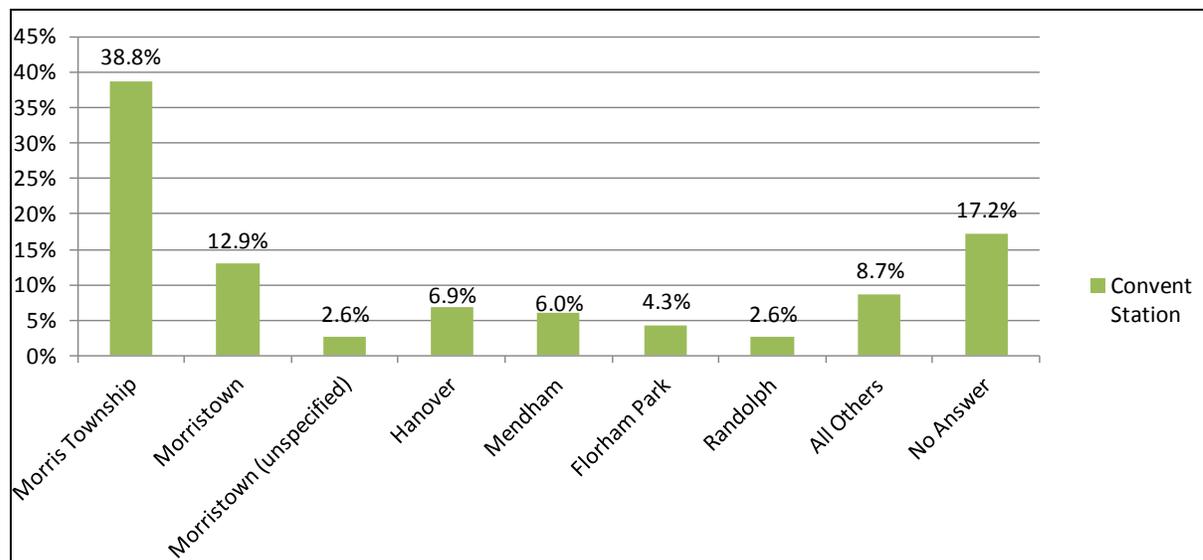


Figure 4-21: Origins of Passengers Boarding Trains at Convent Station



4.8.2 Accessing the Stations

As shown in Figures 4-22 through 4-24, most passengers accessed the study area stations by car, and most drove alone and parked (Chatham 37 percent, Madison almost 49 percent, and Convent Station 74 percent). About 22 percent at Chatham, nearly 19 percent at Madison, and almost eight percent of the surveyed passengers at Convent Station were dropped off at the station by car. Smaller percentages of responding passengers arrived via carpools.

At Chatham (nearly 27 percent) and Madison (almost 26 percent) Stations, many of the survey respondents walked to the stations, while at Convent Station only about nine percent of the respondents walked to the station, reflecting the more suburban development pattern in its vicinity. Access by bus or shuttle, and bicycle comprised about three percent for each mode at the stations.

The egress mode for passengers alighting trains at the three study area stations was generally either walking or bus/ shuttle as shown in Figure 4-25.

Figure 4-22: Access Mode by Boarding Station – Chatham

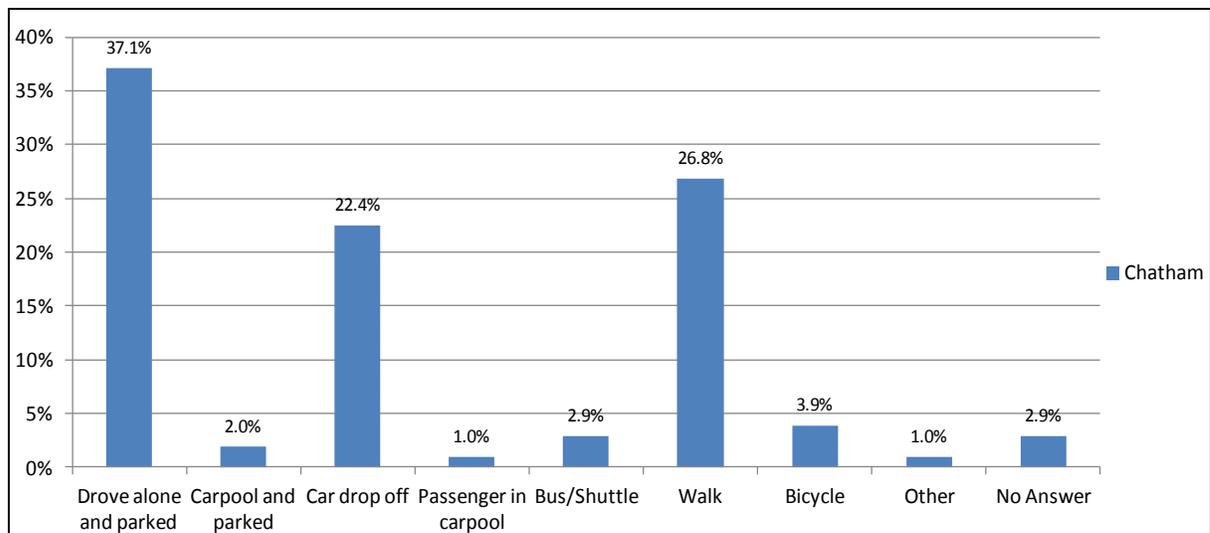




Figure 4-23: Access Mode by Boarding Station – Madison

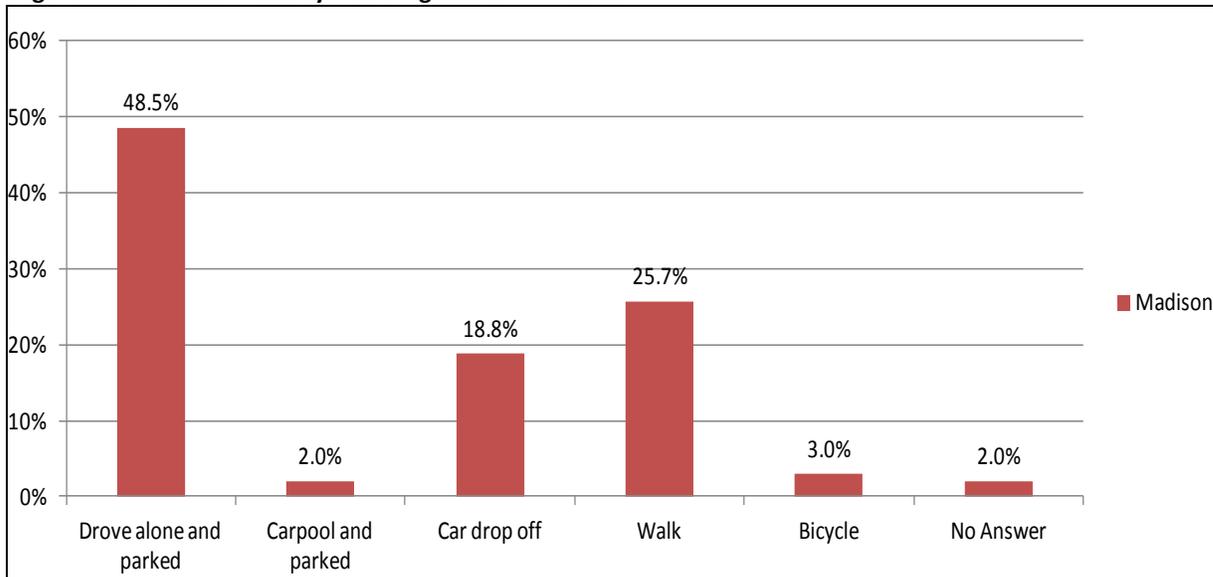


Figure 4-24: Access Mode by Boarding Station – Convent

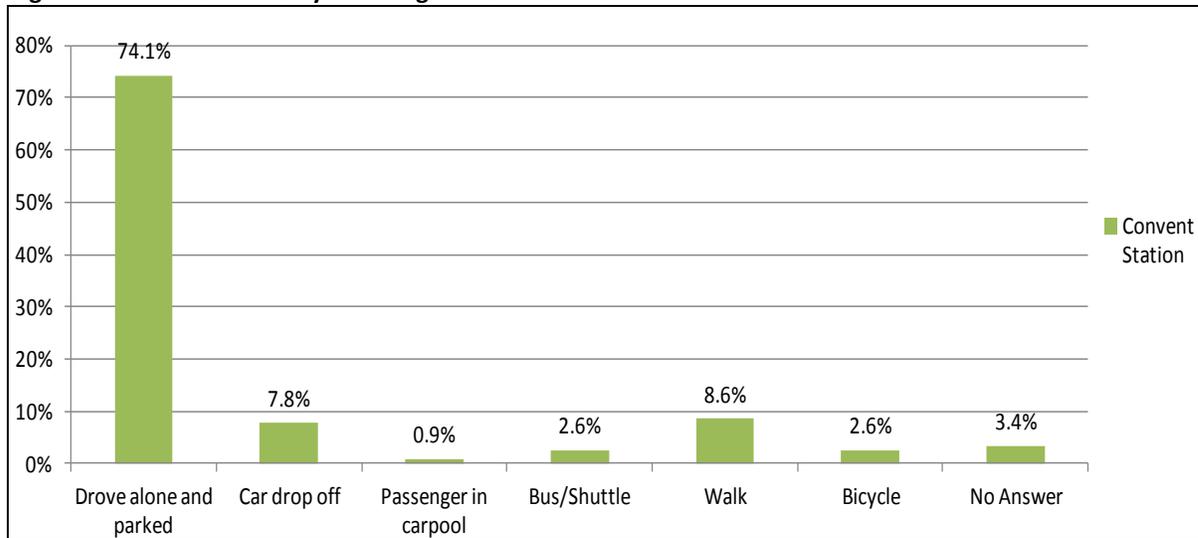
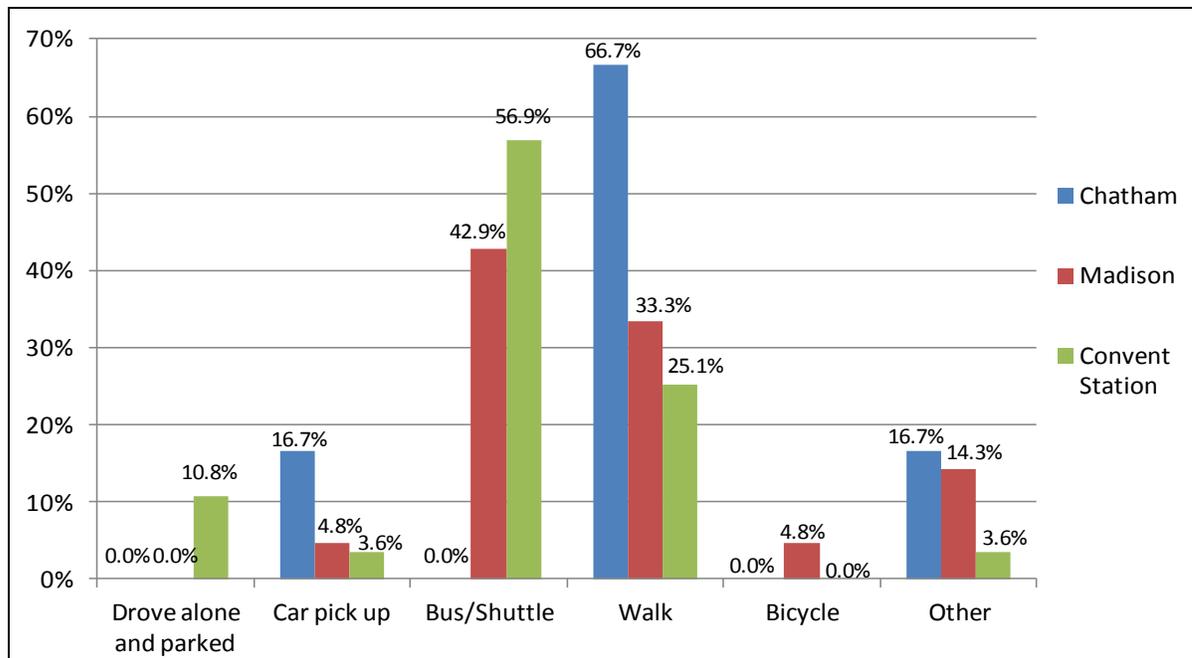


Figure 4-25: Egress Mode for Alighting Passengers



4.8.3 Parking at the Stations

For respondents boarding at Chatham Station, about 46 percent parked in a station or municipal lot resident-designated parking space, and almost 44 percent parked in a non-resident space (see Figure 4-26). At Madison Station, nearly 59 percent parked in a resident-designated parking space, and almost 18 percent of passengers utilized non-resident station or municipal lot parking, or free on-street parking. Resident and non-resident municipal parking was used by about 49 and 46 percent of the passengers, respectively, at Convent Station.

At Chatham Station, almost 49 percent of the responding passengers paid a daily parking fee, and nearly 20 percent paid for parking via a monthly permit (see Figure 4-27). At Madison Station, almost 26 percent of the passengers have a monthly parking permit, nearly 24 percent are daily meter parkers, and almost 16 percent park for free. At Convent Station, 32 percent of the passengers are daily meter parkers and 31 percent have monthly permits.

Figure 4-26: Parking Location

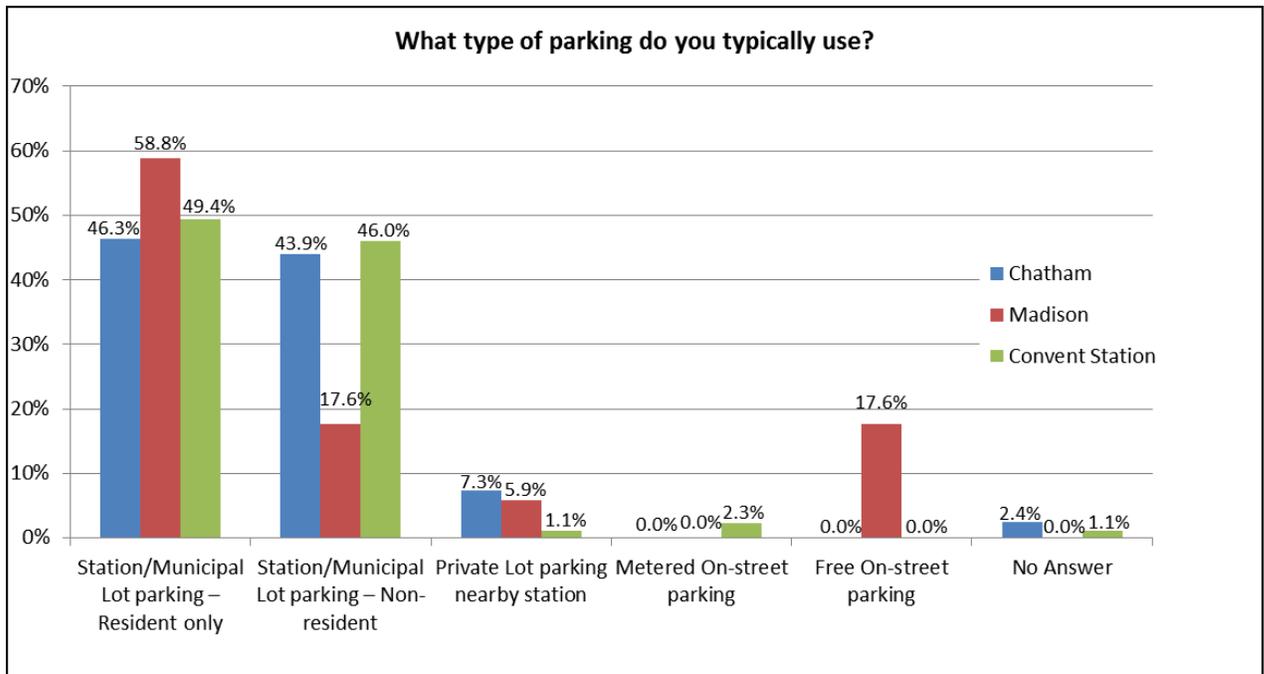
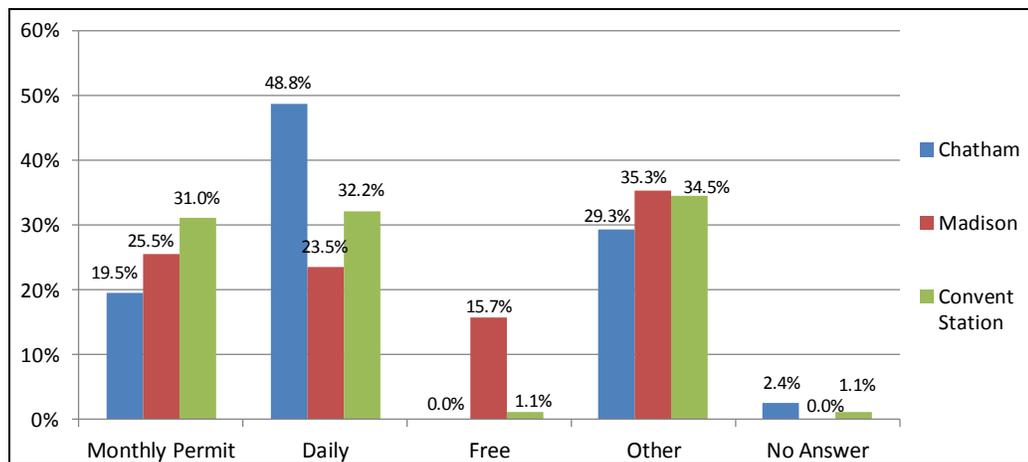


Figure 4-27: Parking Payment Type



4.8.4 Vehicle Availability

A high majority of the passengers boarding trains at the three study area stations had personal vehicles available for the trip (78 to almost 85 percent) as shown in Figure 4-28. Passengers alighting trains at the three study area stations were more transit-dependent (see Figure 4-29). About 67 percent of alighting passengers at Chatham Station and about 61 percent at Convent Station had access to a personal vehicle for the trip, while only 33 percent at Madison Station had access to a personal vehicle for the trip, while only 33 percent at Madison Station had access to a personal vehicle.

Figure 4-28: Was a personal vehicle available to you to make this trip? (by boarding station)

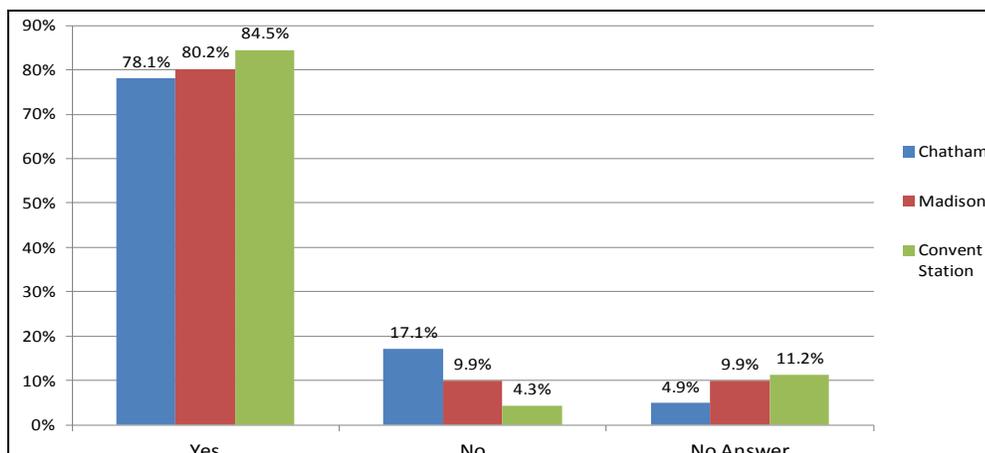
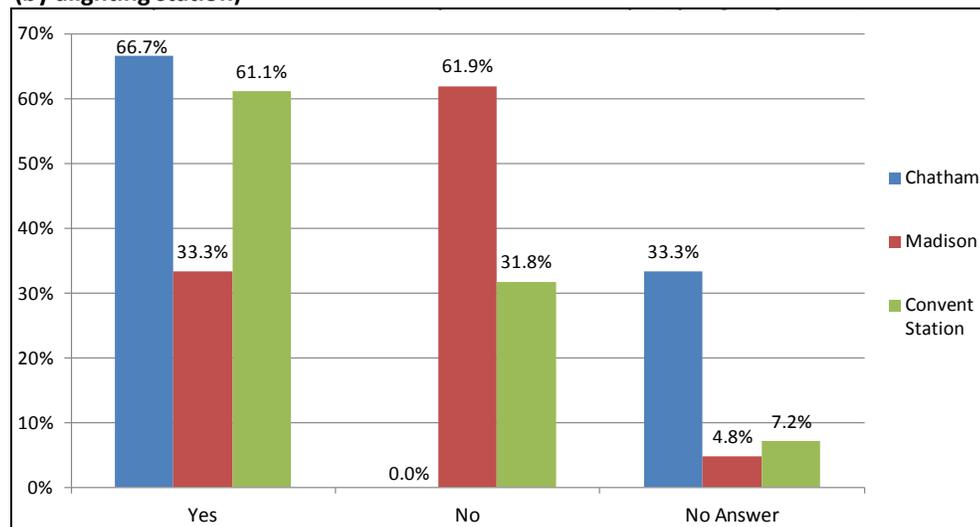


Figure 4-29: Was a personal vehicle available to you to make this trip? (by alighting station)





If transit service was not available for the trip, most passengers said they would drive alone as an alternative (almost 50 to nearly 60 percent) as shown in Table 4-13. Some passengers said they would carpool (nearly nine to almost 14 percent), and others said they would not make the trip (about 10 to nearly 21 percent).

Table 4-13: If transit service was not available, how would you have made this trip?

Alternate Mode	Chatham	Madison	Convent Station
Drive alone	56.6%	49.5%	59.5%
Car drop off	2.9%	2.0%	0.9%
Carpool	14.6%	13.9%	8.6%
Taxi	0.0%	1.0%	0.9%
Walk	2.4%	0.0%	0.0%
Would not have made this trip	9.8%	20.8%	12.1%
Other	8.8%	3.0%	6.9%
No Answer	4.9%	9.9%	11.2%
Total	100.0%	100.0%	100.0%

4.8.5 Trip Frequency and Purpose

As shown in Tables 4-14 and 4-15, most (70 to almost 83 percent) of the survey respondents are regular passengers who ride the train four or more times a week, and most (85 to almost 91 percent) of these riders are commuters.

Table 4-14: Trip Frequency by Station

Trip Frequency	Chatham	Madison	Convent Station
4 or more times a week	81.4%	71.3%	82.5%
1 - 3 times a week	9.5%	18.8%	12.9%
1 - 3 times a month	1.8%	3.2%	1.8%
6 - 11 times a year	0.0%	2.4%	0.0%
1 - 5 times a year	3.6%	0.8%	0.6%
No Answer	3.6%	3.3%	2.2%
Total	100.0%	100.0%	100.0%



Table 4-15: Trip Purpose by Station

Trip Purpose	Chatham	Madison	Convent Station
Work	90.0%	85.2%	90.8%
Company business	1.8%	0.8%	1.8%
School	0.0%	2.4%	1.8%
Recreation	3.6%	2.5%	0.6%
Medical	0.9%	0.0%	0.0%
Social	0.0%	2.5%	0.6%
Personal business	0.0%	3.1%	1.1%
Other	0.0%	0.0%	1.1%
No Answer	3.6%	3.3%	2.2%
Total	100.0%	100.0%	100.0%

4.8.6 Station Access Preferences

Train passengers were asked “What one improvement would you make to improve your travel to the station?” Their responses were coded for analysis (the detailed survey and responses can be found in Appendix B). About 48 percent of the Chatham Station passengers, 34 percent of the Madison Station passengers, and 25 percent of the Convent Station passengers that responded to the question commented on parking, including asking for more parking, better parking management, or free or less expensive parking (see Table 4-16). About eight to 10 percent of those that responded from each station would like to see bicycle, pedestrian, or safety improvements. A very high percentage of respondents at each station (Chatham Station – 25 percent, Madison Station – 43 percent, Convent Station almost 49 percent) said that nothing was needed to improve travel to the station.



Table 4-16: What one improvement would you make to improve your travel to the station?

Comments	Chatham	Madison	Convent Station
More parking	31.3%	21.5%	6.8%
Parking Management	10.8%	6.3%	12.5%
Free or less expensive parking	6.0%	6.3%	5.7%
Parking	48.2%	34.2%	25.0%
Shuttles	3.6%	1.3%	8.0%
Improved bicycle access, parking	1.2%	1.3%	2.3%
Improved walk access; sidewalks, crosswalks	8.4%	6.3%	4.5%
Safety improvements	0.0%	0.0%	1.1%
Bicycle/Pedestrian/Safety Improvements	9.6%	7.6%	8.0%
Traffic/Roadway Improvements	0.0%	0.0%	2.3%
TOD Development	1.2%	0.0%	0.0%
Information services regarding existing transit services	0.0%	1.3%	1.1%
Faster, more reliable, expanded train service	3.6%	5.1%	2.3%
Accessibility improvements	8.4%	2.5%	2.3%
Lower train fares	0.0%	1.3%	0.0%
Train Service/Fares/Info/Accessibility	12.0%	10.1%	5.7%
Other	0.0%	2.5%	2.3%
Nothing	25.3%	44.3%	48.9%
Total	100.0%	100.0%	100.0%

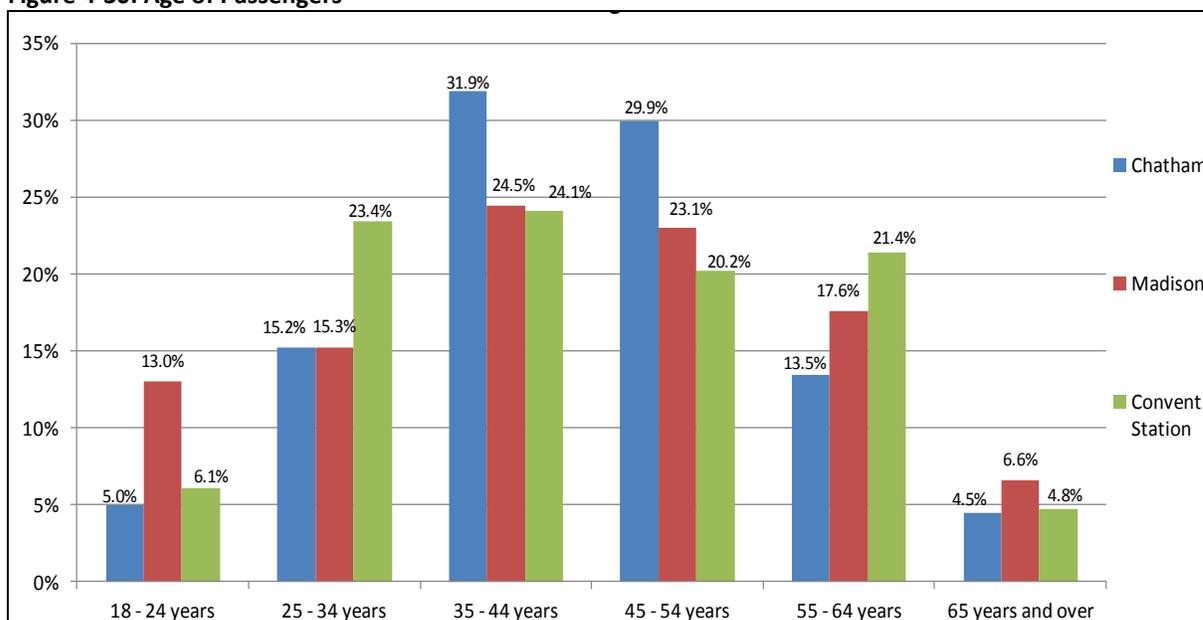
4.8.7 Demographics of Respondents

This section provides detail on the demographic characteristics of responding passengers that either boarded or alighted trains at Chatham, Madison, or Convent Stations including gender, age, Spanish/ Hispanic/ Latino origin, ethnicity, and income. All percentages are based on total respondents (both boarding and alighting passenger) that answered the survey question.

At all three stations a majority of the respondents were male – almost 68 percent at Chatham Station, 62 percent at Madison Station, and nearly 54 percent at Convent Station.

Almost 62 percent of the Chatham Station passengers, nearly 48 percent of the Madison Station passengers, and 44 percent of the Convent Station passengers that responded indicated they were between 35 to 54 years old, as shown in Figure 4-30.

Figure 4-30: Age of Passengers



A majority of the transit rider survey respondents were white in ethnicity (nearly 82 percent of the Chatham passengers, 89 percent of the Madison passengers, and 82 percent of the Convent Station).

As shown in Figures 4-31 through 4-33, passengers that use the three study area train stations tend to be in the higher household income brackets with 39 percent of Chatham Station passengers, 27 percent of Madison Station passengers, and almost 19 percent of Convent Station passengers indicated they earn \$250,000 or more.

Figure 4-31: Chatham Station Riders Household Income

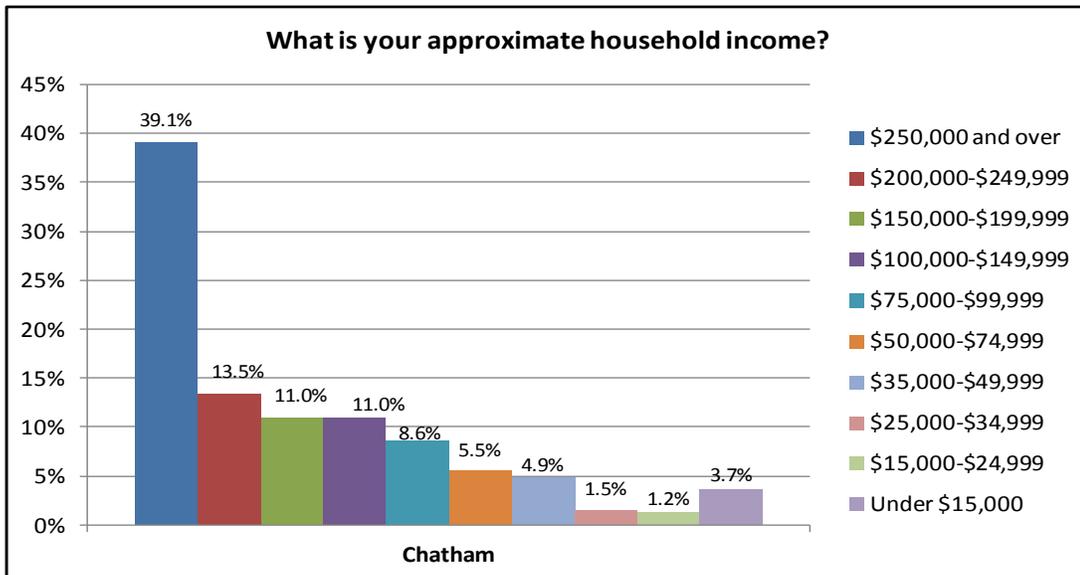


Figure 4-32: Madison Station Riders Household Income

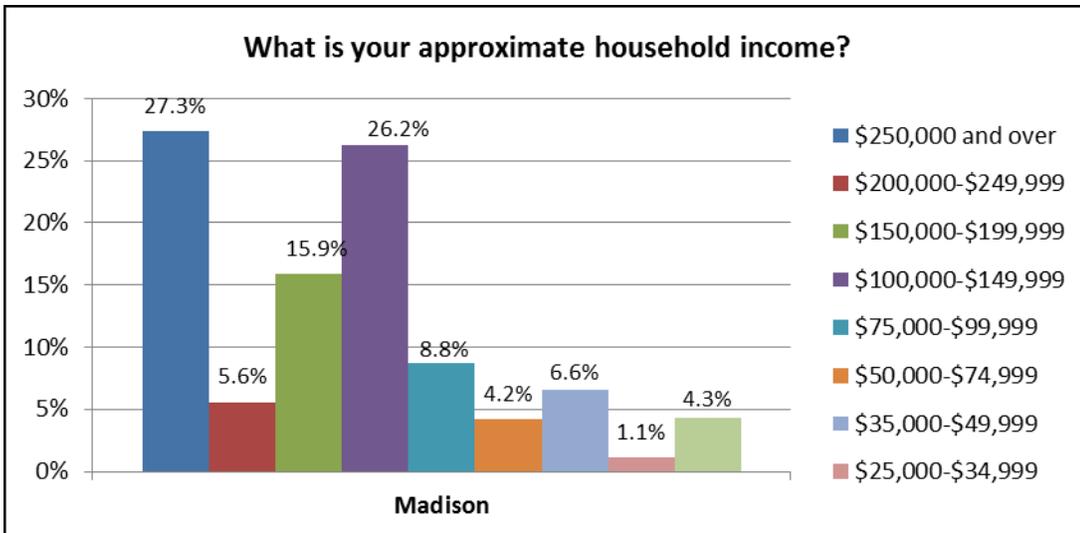
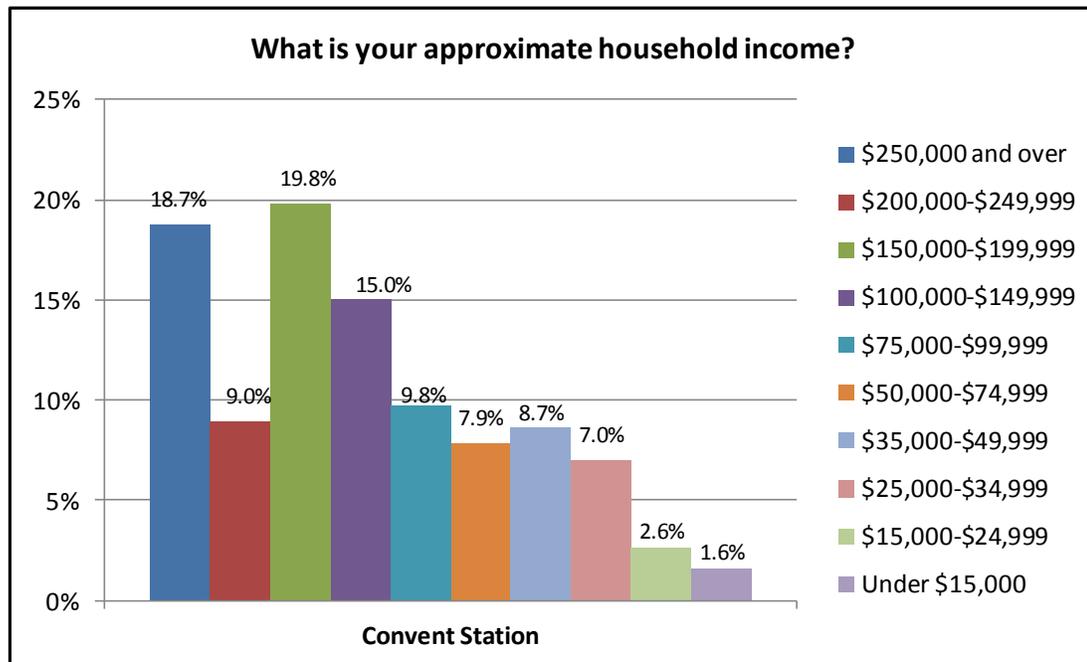


Figure 4-33: Convent Station Riders Household Income



4.9 Municipal Presentations

Presentations summarizing the project findings and recommendations were made at public forums in the study area as follows:

- May 13, 2013: Chatham Borough Council
- May 15, 2013: Morris Township Committee
- May 21, 2013: Madison Borough Planning Board

The Chatham Borough Council noted that some of the study recommendations were already being implemented and that no single municipality could bear the cost of the full range of the improvements. In addition the Council noted that they were committed to maintaining the character of their borough. The Morris Township Committee and the Madison Borough Planning Board were interested in the parking and land use recommendations.



5

Objectives and Recommendations

5.1 Introduction

This chapter recommends strategies and improvements to address the infrastructure, land use, transit service, and other study area station access gaps and opportunities that were identified in the previous chapters of this report. Strategies and improvements are proposed to meet the existing and future needs. These recommendations are provided on a topic, station, and corridor basis as well as being arrayed by an implementation timeframe.

A supplementary strategy, related to transit-oriented development and its potential to fund parking infrastructure in the three study area municipalities, is provided in Section 5.8 of this chapter. This alternative strategy is intended to provide the study area stakeholders with a potential, conceptual vision of how transit-oriented development might be approached in this corridor to attract investment and fund additional parking infrastructure.

Many recommendations can be implemented by a single municipality while others would require the collaboration of multiple local, regional, and statewide organizations. Implementing a single strategy alone will not meet all of this study area's future access needs. Only a combination of solutions, with a partnership between the study area municipalities, could result in a lasting and well-managed approach to station access.

5.2 Summary of Needs

The previous report chapters identified the study area's needs (problems that require solutions) and opportunities (conditions that might enable solutions).



These were developed based upon field and other data collection, stakeholder outreach, and technical analyses. They are summarized in Table 5-1.

Table 5-1: Study Area Needs and Opportunities

Need (N) or Opportunity (O)	Item	Found in Previous Report(s) from Task	Technical Area
O	Chatham and Madison station areas are already Transit-Oriented Development (TOD) environments	4	Land Use
O	Corridor properties are not developed to their maximum land value indicating potential for “spot” redevelopment in a TOD manner	4	Land Use
O	The corridor real estate market shows traditional, strong demand	4	Land Use
N	Demographics indicate the apartment and condominium housing are needed for the growing young and senior age groups	4	Land Use
N	Existing ridership analyses show a deficit of 121 parking spaces in the corridor	5	Parking
N	Future ridership analyses show the potential for an additional deficit of 250-500 parking spaces in the corridor	5	Parking
N	Primary access mode is drive and park	3,5	Parking
N	Few non-residents park at the stations; highest demand is from Harding, Florham Park, and Whippany	3	Parking
N	Parking turnover at the stations is minimal; each space can only be used once per day	6	Parking
O	Convent Station currently has parking vacancy	6	Parking
N	Chatham and Madison station parking is utilized at capacity (permit and daily)	6	Parking
O	Non-official parking is used by 4% of the parkers at the stations	3	Parking
N	Satellite parking lots are not well used	6	Parking
N	Parking payment infrastructure is outdated	6	Parking
N	The existing bus and MAD shuttle service are not effective feeders to the train; there are currently no transit-based feeders at these stations	6	Transit
N	Forecast rail ridership growth is primarily for eastbound riders, though NJ TRANSIT has received increased requests for bus distributors for westbound riders.	3,5	Transit
N	Chatham, Madison, and Convent stations are each in a different rail fare zone which may affect parking choice	6	Transit
N	Students and staff at the study area universities are not well-informed about the rail system	3	Transit
N	There is no efficient location (or official Kiss and Ride) to drop off passengers at Chatham or Madison Station	6	Non-parking access



Table 5-1: Study Area Needs and Opportunities

Need (N) or Opportunity (O)	Item	Found in Previous Report(s) from Task	Technical Area
O	20 percent of train boarders access the three stations without parking	3	Non-parking access
N	Signals along NJ 124 are not coordinated	6	Roadway
N	Congestion on NJ 124 is exacerbated by parking maneuvers and discontinuous streets	6	Roadway
N	Queues behind vehicles waiting to make left turns from combined left/through lanes add to congestion on NJ 124	6	Roadway
N	Pedestrian-auto interface on NJ 124 contributes to congestion and delay	6	Roadway
N	Sight distance around the rail trestle at Punch Bowl Road near Convent Station is limited	6	Roadway
N	Unsignalized intersections create congestion on some side streets that intersect NJ 124	6	Roadway
N	Mid-block pedestrian crossings are needed in Chatham and Madison	6	Pedestrian
N	Lighting and sidewalk maintenance is insufficient in station areas	6	Pedestrian
N	Gaps exist in the walk paths to the stations	6	Pedestrian
O	Several traffic calming and pedestrian safety amenities exist in the corridor	6	Pedestrian
N	Traction Line trail does not provide good connectivity between municipalities	6	Pedestrian
N	Current bike facilities are worn or non-standard	6	Bicycle
N	Chatham does not have a bicycle plan	6	Bicycle
N	Bike lockers and racks at stations are fully utilized and there is unmet demand; some are poorly located	3, 6	Bicycle
N	NJ 124 is not well-marked as a bicycle facility	6	Bicycle
N	Current bicycle maps and information are not up to date or accurate	6	Bicycle
N	Gaps exist in the study area bicycle network	6	Bicycle
N	Some roadway, bicycle, and pedestrian signs in the corridor are not compliant with standards	6	Safety



Today, a deficit of approximately 125 spaces of available commuter parking exists in the NJ 124 study corridor (Chatham, Madison, and Convent stations combined). This deficit is primarily attributed to commuters' preference to access the rail line in Chatham first, followed by Madison, and the increasing demand for transit service; parking is not filled to capacity at Convent Station. By 2020, if this current deficit is not addressed, and should NJ TRANSIT restore previously eliminated service and provide expanded service to Hoboken, there will be a significant deficit of approximately 500 available commuter parking spaces in the study area. The improvements described herein are therefore not only intended to provide for safer and more efficient access to the rail stations by all modes, they are also intended to reduce the existing and potential future parking deficit by encouraging access to the station by modes that do not require parking (pedestrian, bicycle, carpool, kiss and ride, transit) while also providing options for adding parking.

5.3 Recommended Improvements

Recommended improvements are provided on corridor-wide and station-specific levels. Table 5-2 lists all of the recommended improvements, numbered by location and implementation timeframe, and classified by improvement type. Table 5-2 corresponds with Figures 5-1 through 5-3. Corridor-wide improvements are not mapped on these figures. The following sections present a description of each improvement.

Table 5-2 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
N/A		Improve mapping for all modes			X	X	X		X	Short	Low
N/A		Enhance on-line information			X	X	X		X	Medium	Medium
N/A		Create Preferential parking strategies (carpools etc)				X			X	Medium	Medium
N/A		Create Transit information packages for colleges and universities							X	Short	Low
N/A		Consolidate NJ TRANSIT fare zones							X	Medium	Medium
N/A		Conduct Operation Lifesaver training at area universities and Convent station							X	Short	Low
N/A		Improve train station pedestrian access maintenance (snow removal, other maintenance issues)					X		X	Short	Low
N/A		Adopt a complete streets policy (Borough of Madison & Morris Township)			X	x	X	X	x	Short	Low
N/A		Create a bicycle sharing program with coordinated bicycle maintenance					X			Medium	Medium
N/A		Install enhanced wayfinding and bicycle route signage					X			Short	Low
N/A		Make signage and markings for pedestrians and bicyclists at all three stations consistent with MUTCD and AASHTO Bicycle Guide			X		X	X		Short	Low
N/A		Stripe advanced stop bars eight to ten feet from crosswalks in pedestrianized areas.		Corridor-Wide	X		X	X		Short	Low
N/A		Create bicycle markings and signage along the shoulders of NJ 124		Chatham Station			X			Medium	Low
N/A		Restripe all other bike routes and stencils that are faded and barely visible in Madison	Multiple Locations	Madison Station			X			Short	Low
N/A		Develop a bicycle master plan	Chatham Borough				X			Medium	Medium
Ch - 1	a	Restripe the eastbound and westbound approaches			X					Short	Low
	b	Modify the signal timing	NJ 124 & Hillside Ave.		X						
Ch - 2	a	Provide Signal Timing offsets to coordinate traffic signals	NJ 124 in Chatham		X					Short	Medium
	a	Restripe the eastbound and westbound approaches			X					Short	Low
	b	Modify the signal timing			X						
	c	Install signage to increase the "no turn on red restrictions"			X		X	X			
	d	Remove "State Law: stop for pedestrians in crosswalk sign"			X		X	X			
	e	Install "Turning Vehicles Yield to Pedestrians" sign			X		X	X			
	f	Install advanced pedestrian or school crosswalk signage on all approaches of the intersection			X		X	X			
Ch - 3	g	Install "Share the Road" bicycle signs	NJ 124 & Passaic Ave.		X		X				
Ch-4	a	Add a pedestrian crosswalk	NJ 124 & Washington Ave.				X			Short	Low
	a	Restripe the westbound approach of the intersection			X					Short	Low
	b	Modify the signal timing			X						
	c	Install signage to increase the "No Turn on Red" restrictions to all hours and days and add this restriction to westbound and southbound approaches of the intersection			X		X	X			
	d	Remove "State Law: stop for pedestrians in crosswalk sign"			X			X			
	e	Install "Turning Vehicles Yield to Pedestrians" sign			X			X			
Ch-5	f	Install "Share the Road" bicycle signs	NJ 124 & Fairmount Ave.		X		X				
Ch-6	a	Conduct a signal warrant study at this interesection, if signal is not warranted, repair pedestrian warning flashers and install "State Law: Stop for Pedestrians in Crosswalk" signage	NJ 124 & Coleman Ave./Railroad Plaza North		X		X	X		Short	Low
Ch-7	a	Conduct a signal warrant study	Fairmount Ave and Station Driveway	Chatham Station	X					Short	Low

Table 5-2 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Ch-8	a	Install a "No Turn on Red" sign	Lafayette and Van Doren Avenues		X		X	X		Short	Low
	b	Remove "Stop for pedestrians in crosswalk sign" and replace with "Turning Vehicles Yield to Pedestrians"			X		X	X			
	c	Install a "Share the Road" sign at this intersection			X		X	X			
Ch-9	a	Replace "Stop for Pedestrians in Crosswalk" sign with "Turning Vehicles Yield to Pedestrians"	Fairmount Ave and Watchung Ave		X		X	X		Short	Low
	b	Install "Share the Road" bicycle signage on all approaches of the intersection			X		X	X			
	c	Install new crosswalks on north and south legs of the intersection			X		X				
	d	Install "State Law: Stop for Pedestrians in Crosswalk" at intersection			X		X				
Ch - 10	a	Install ped ramps on the north and south legs of the intersection	Fairmount Ave and Watchung Ave			X			Medium	Medium	
Ch - 11	a	Install shared lane markings/sharrows	Fairmount Ave and Red Road			X			Short	Low	
Ch - 12	a	Install a street-light	Fairmount Ave and Red Road			X			Medium	Medium	
Ch - 13	a	Install a crosswalk at the south leg of the intersection	Fairmount Avenue and 2nd Street		X		X	X		Short	Low
	b	Install an advanced pedestrian or school crosswalk signal on all approaches of the intersection			X		X	X			
	c	Install an advanced pedestrian or school crosswalk signal on all approaches of the intersection			X		X	X			
	d	Install shared lane markings/sharrows or parking lane stripes			X		X	X			
Ch - 14	a	Install pedestrian ramps at all four corners of the intersection	Fairmount Avenue and 2nd Street				X	X	Medium	Medium	
Ch - 15	a	Repair the speed feedback sign	North Passaic Avenue and Weston Avenue		X			X		Short	Low
	b	Install shared lane markings/sharrows			X		X				
Ch - 16	a	Implementation of the Morris County bike map, which includes Fairmount and Watchung Avenues as shared facilities and NJ 124 as a bicycle route	Fairmount and Watchung Avenues				X		Medium	Medium	
Ch - 17	a	Develop bicycle facilities	Kings Road and Woodland Road				X		Medium	Medium	
Ch - 18	a	Monitor bike facilities to ensure adequate supply	Chatham Station				X		Short	Low	
Ch - 19	a	Create a pedestrian and bicycle connection across the sports field south of the station to the driveway to connect to Lum Avenue	Chatham Station				X		X	Medium	Medium
Ch - 20	a	Add coordinated pedestrian signal and lighted crosswalks under the railroad trestle	Various Locations				X			Medium	Medium
Ch - 21	a	Install two additional electronic pay parking stations	Chatham Station Parking Lot				X			Medium	Medium
Ch - 22	a	Provide additional signage to highlight commuter parking availability at nearby municipal lots for Chatham permit holders	Chatham Station Parking Lot				X			Short	Low
Ch - 23	a	Create a new parking lot adjacent to Lot 1 on the site of the athletic field	Chatham Station Parking Lot				X			Long	High
Ch - 24	a	Construct a three-level parking structure on the site of existing lot 1	Chatham Station Parking Lot				X			Long	High
Ch - 25	a	Create two shuttle bus routes at Chatham Station, serving the northern and southern part of the town	Various Locations	Chatham Station					X	Medium	High
Ma - 1	a	Restripe the eastbound and westbound approaches of the intersection	NJ 124 and Rosedale Avenue/Cross Street		X					Short	Low
	b	Modify the intersection signal timing			X						
	c	Install pedestrian signals or school crosswalk			X		X	X			
	d	Install "Turning Vehicles Yield to Pedestrians" and "No Turn on Red" at all approaches			X		X	X			
	e	Install "Share the Road" signage on all approaches of the intersection			X		X	X			

Table 5-2 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Ma - 2	a	Create eastbound and westbound turn lanes	NJ 124 and Greenwood Avenue/Prospect Street		X					Short	Low
	b	Add southbound left turn signal phase			X						
	c	Add signal actuation for left-turn movements with pedestrian projection			X						
Ma - 3	a	Add pedestrian crosswalk and signal across NJ 124	NJ 124 between Greenwood Avenue and Waverly Place			X	X		Medium	Medium	
Ma - 4	a	Create eastbound and westbound turn lanes	NJ 124 and Central Avenue/Waverly Place		X					Short	Low
	d	Install "Turning Vehicles Yield to Pedestrians" and advanced pedestrian signage at all approaches of the intersection			X		X	X			
	e	Install "Share the Road" signage at all approaches of the intersection			X		X	X			
Ma - 5	a	Add mid-block pedestrian crossing including crosswalk and signage	NJ 124 between Waverly Place/Central Avenue and Green Village Road			X	X		Medium	Medium	
Ma - 6	a	Add signal actuation for left turn movements with pedestrian protection at intersection	NJ 124 and Central Avenue/Waverly Place			X			Medium	Medium	
Ma - 7	a	Modify the intersection signal timing	NJ 124 and Park Avenue			X			Short	Low	
Ma - 8	a	Modify the intersection signal timing	NJ 124 and Kings Road		X					Short	Low
	b	Install a west crosswalk advanced pedestrian or school crosswalks and "Turning Vehicles Yield to Pedestrians" signage on all approaches of the intersection			X		X	X			
	c	Install "No turn on red" restrictions on eastbound and northbound approaches of the intersection			X		X	X			
Ma - 9	a	Install pedestrian signals and ramps on all approaches of the intersection	NJ 124 and Kings Road							Medium	Medium
	b	Extend the bike lanes on NJ 124 through the intersection of the intersection					X				
Ma - 10	a	Install crosswalks on the east and west legs with advanced pedestrian or school crosswalk signage on all approaches of the intersection	NJ 124 and Alexander Avenue		X		X	X		Short	Low
	b	Install "State Law: Stop for Pedestrians in Crosswalk"			X		X	X			
Ma - 11	a	Install bike lanes	NJ 124 and Alexander Avenue		X		X			Medium	Medium
	b	Install pedestrian signals and ramps on all approaches of the intersection			X		X				
Ma - 12	a	Install a north crosswalk	Central Avenue and Brittin Street		X		X	X		Short	Low
	b	Install an advanced school crosswalk sign			X		X	X			
	c	Install a "State Law: Stop for Pedestrians in Crosswalk" on the southbound approach			X		X	X			
	d	Install a "share the Road" sign on all approaches of the intersection			X		X	X			
Ma - 13	a	Install a north crosswalk	Greenwood Avenue and Brittin Street			X	X		Short	Low	
	b	Remove bike lane markings and install "Share the Road" signs or sharrows. On Street parking should also be prohibited.	Greenwood Avenue and Brittin Street			X	X		Short	Low	
Ma - 14	a	Install pedestrian ramps on the north side							Medium	Medium	
Ma - 15	a	Relocate the share the road sign to improve its visibility	Greenwood Avenue north of NJ 124			X	X		Short	Low	
Ma - 16	a	Install a bicycle actuated signal	Danforth Road and NJ 124			X			Medium	Medium	
Ma -17	a	Remove the "State Law: Stop for Pedestrians in Crosswalk" sign and replace with "Turning Vehicles Yield to Pedestrians in Crosswalk"	Kings Road and Waverly Place				X	X		Short	Low
	b	Implement "No Turn on Red" restrictions on the northbound, southbound, and westbound approaches of the intersection			X		X	X			
	c	Install a "Share the Road" sign at all approaches of the intersection			X		X	X			
	d	Install advanced pedestrian or school crosswalk on all approaches			X		X	X			

Table 5-2 - Summary of Recommended Improvements

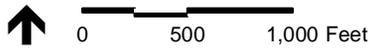
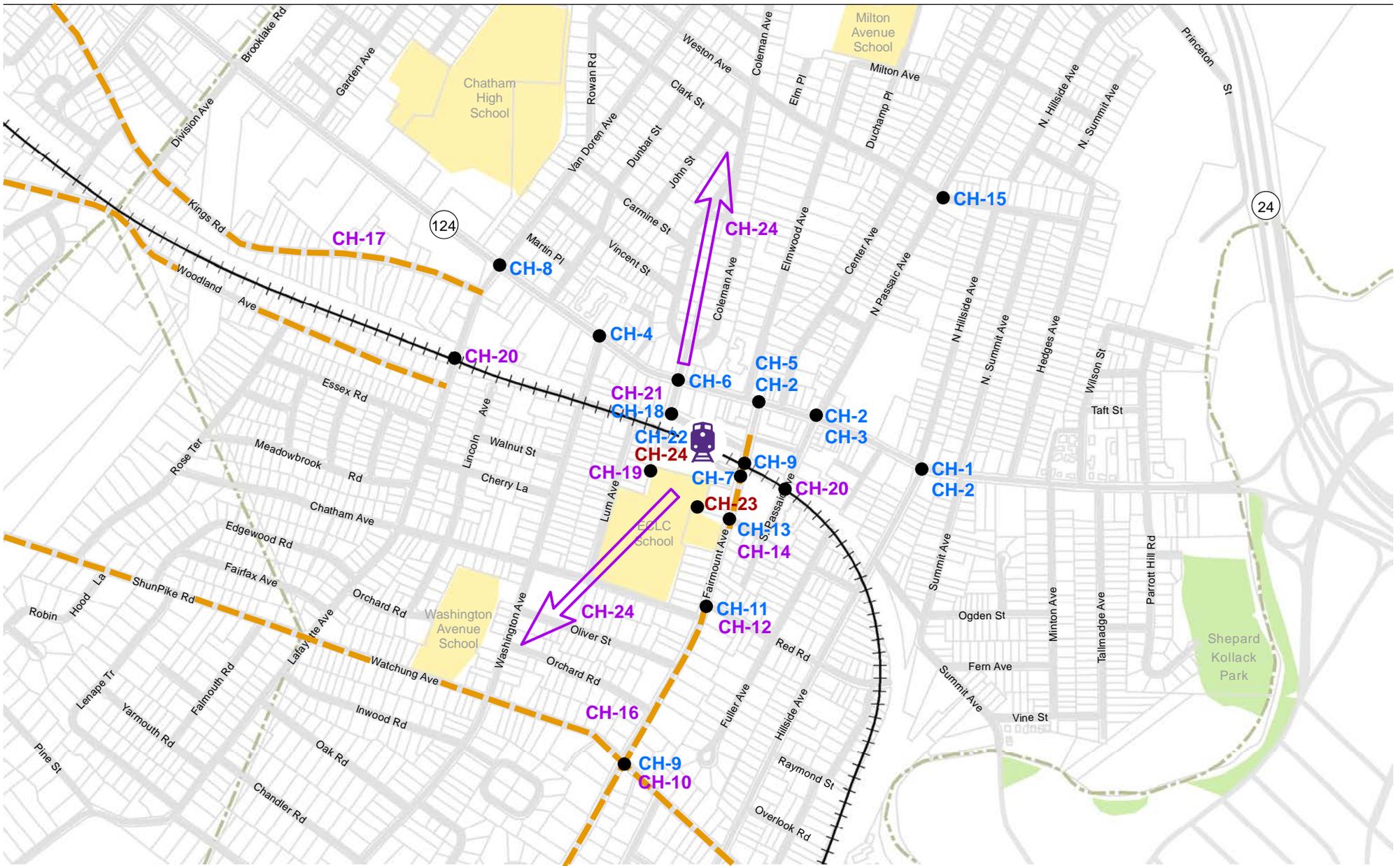
Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Ma - 18	a	Install streetlights at the north, east and west crosswalks	Kings Road and Waverly Place	Madison Station			X			Medium	Medium
	b	Install a west pedestrian ramp	Kings Road and Maple Avenue				X			Medium	Medium
Ma - 19	a	Install a west crosswalk	Kings Road and Maple Avenue		X		X	X		Short	Low
	b	Install a "State Law: Stop for Pedestrians in Crosswalk"			X		X	X			
	c	Move the pedestrian crossing across Kings Road to improve connectivity			X		X				
Ma - 20	a	Remove "Yield to Pedestrians in Crosswalk"	Park Avenue and Ridgedale Avenue		X		X	X		Short	Low
	b	Install a west crosswalk			X		X				
	c	Install "Turning Vehicles Yield to Pedestrians"			X		X	X			
	d	Install advanced pedestrian or school crosswalk signage			X		X	X			
	e	Add "No Turn on Red" restrictions on all approaches			X		X	X			
	f	Install "Share the Road" signs on all approaches			X		X	X			
Ma - 21	a	Install west pedestrian ramps and signals	Park Avenue and Ridgedale Avenue		X		X			Medium	Medium
Ma - 22	a	Install crosswalks, and advanced pedestrian signage on all approaches	Park Avenue and Kinney Street		X		X	X		Short	Low
Ma - 23	a	Install pedestrian ramps on all approaches	Park Avenue and Kinney Street		X		X			Medium	Medium
Ma - 24	a	Extend existing bike routes on Kings Road, Green Village Road, Green Avenue, Prospect Street, Central Avenue, and Greenwood Avenue to the NJ Transit Station	Multiple Locations				X			Medium	Medium
Ma - 25	a	Replace bike markings east of downtown	NJ 124				X			Short	Low
	b	Restripe all bike stencils and install "Share the Road" signs west of downtown	NJ 124				X				
Ma - 26	a	Extend the Traction Line recreation trail to Madison	Multiple Locations				X			Long	High
Ma - 27	a	Improve pedestrian lighting on NJ 124 between Madison Station and Drew University	Multiple Locations				X	X		Medium	Medium
Ma - 28	a	Reduce Speed Limit to 25 MPH	Central Avenue and Elmer Street/Cook Avenue					X		Short	Low
	b	Install advance pedestrian or school crosswalk signage on all approaches			X		X				
	c	Add: "State Law: Stop for Pedestrians in Crosswalk" signage			X		X				
	d	Install "Share the Road signage on all approaches			X		X				
Ma - 29	a	Relocate the station bicycle lockers from their remote location	Madison Station				X			Short	Low
Ma - 30	a	Improve the pedestrian experience along Kings Road from the parking lot, including wider sidewalks and additional pedestrian lighting	Madison Station				X			Medium	Medium
	b	Install three to four electronic pay parking stations at Lot 3	Madison Station			X					
Ma - 31	a	Construct a multi-level parking facility on the site of existing Lot 3	Madison Station			X				Long	High
	b	Create a formal kiss-and-ride location on the eastbound side of the station	Madison Station			X					
Ma - 32	a	Create four shuttle bus route serving Madison Station	Various Locations					X		Medium	High

Table 5-2 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Co - 1	a	Modify the intersection signal timing	NJ 124 and Convent Road	Convent Station	X					Short - <1 Year	Low - <\$25,000 per item
	b	Correct and clarify the mismatched sidewalks and crosswalks	NJ 124 and Convent Road		X		X	X			
Co - 2	a	Install new pedestrian signals with countdown timers	NJ 124 and Convent Road		X					Long ->3 Years	Above \$100,000 per item
Co - 3	a	Conduct a signal warrant study and safety assessment	Old Turnpike Road and Punch Bowl Road		X						
	b	Assess the effect of restricting left turns from westbound Old Turnpike Road to southbound Punch Bowl Road			X						
	c	Relocate the existing south crosswalk to the intersection			X		X				
	d	Install bike lanes or "Share the Road" signage			X		X	X			
Co - 4	a	Install new traffic signal, realign the northbound approach, and reconstruct the bus turnouts	NJ 124 and Punch Bowl Road		X				X	Long	High
Co - 5	a	Install a pedestrian ramp on the south leg of the southwest corner and install crosswalk	Old Turnpike Road and Punch Bowl Road		X		X	X		Medium	Medium
Co - 6	a	Install sidewalk on the east side of the south and north legs, on the west side of the north leg, and on the north and south sides of the west leg of the intersection	Old Turnpike Road and Convent Road		X		X	X		Medium	Medium
	b	Install pedestrian ramps on all approaches			X		X	X			
	c	Install sidewalks and other pedestrian amenities					X				
Co - 7	a	Install crosswalks on all four legs	Old Turnpike Road and Convent Road		X		X	X		Short	Low
	b	Install advanced pedestrian signage on all approaches									
	c	Place the eastbound approach under stop control			X			X			
	d	Install "Share the Road" signs on all approaches			X		X	X			
Co - 8	a	Extend the bike lane beyond the border of Madison Borough and Morris Township	NJ 124				X			Medium	Medium
Co - 9	a	Create a bike route between the Traction Line Recreation Trail and NJ 124	Convent Road			X			Medium	Medium	
Co - 10	a	Implement a bike connection from NJ 124 to Woodlawn Avenue and the Loantaka Reservation	Various Locations			X			Medium	Medium	
Co - 11	a	Install bike markings and signage	Old Turnpike Road			X			Short	Low	
Co - 12	a	Install a bike route and sidewalks	Punchbowl Road			X			Long	High	
Co - 13	a	Provide a direct connection between Convent Station and Park Avenue through the College of St. Elizabeth	Various Locations			X			Long	High	
Co - 14	a	Restripe the bike stencils south of Convent Station	Woodlawn Avenue			X			Short	Low	
Co - 15	a	Eliminate the stairs along the trail	Traction Line Recreation Trail and Normandy Parkway			X			Medium	Medium	
Co - 16	a	Add additional bike lockers	Convent Station			X			Short	Low	
Co - 17	a	Create an additional bike/ped connection	Traction Line Recreation Trail and Pilgrim Court/Constitution Way			X			Medium	Medium	

Table 5-2 - Summary of Recommended Improvements

Map Number	Improvement ID	Improvement	Specific Location	Associated NJ TRANSIT Station	Area of Improvement					Implementation Period	Cost
					Roadway	Parking	Bike/Ped	Safety	Transit		
Co - 18	b	Improve lighting between the station and the Fairleigh Dickinson campus	Convent Station	Convent Station			X			Medium	Medium
Co - 19	a	Connect the two segments of the sidewalk at the west end of the parking lot.	Convent Station				X			Short	Low
	b	Review and simplify parking regulations	Convent Station			X					
Co - 20	a	Conduct a review of resident and non-resident waiting lists to possibly re-allocate spaces	Convent Station			X				Medium	Medium
Co - 21	a	Construct a multi-level parking structure on the site of Lot 1	Convent Station			X				Long	High
Co - 22	a	Create two shuttle bus routes at Convent Station, serving the northern and southern part of the town	Various Locations						X	Medium	High



- Town Line
- School, College or University
- Railroad Line
- Parks
- Train Station
- Implementation Period**
- CH-# Short
- CH-# Medium
- CH-# Long
- New Shuttle Route
- New Bike Route
- Specific Improvement Location



Morris County NJ 124
Transit Access Study

**Chatham Station
Proposed Improvements**

FIGURE 5-1

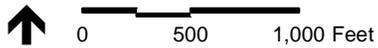
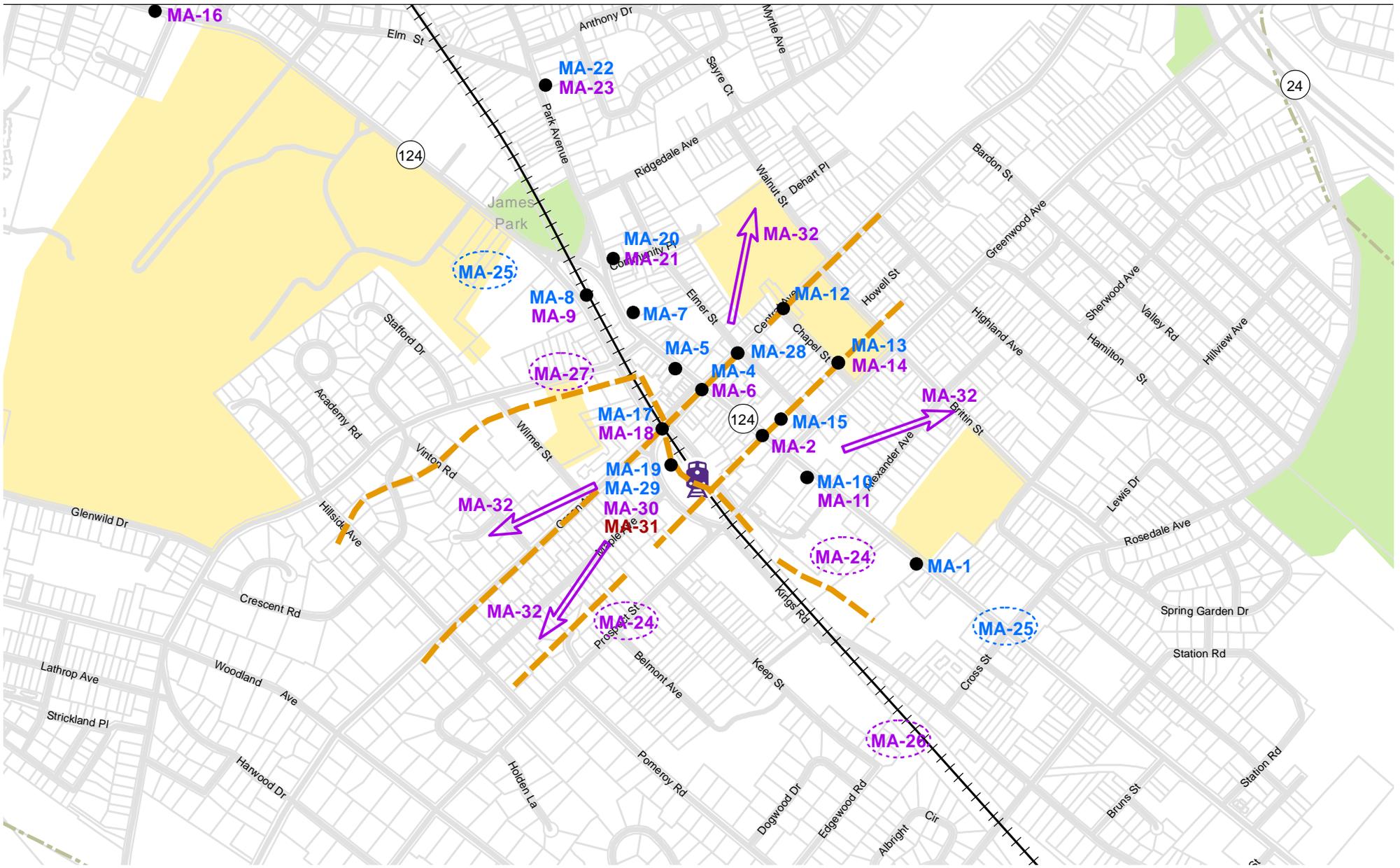


NJ 124 Corridor

Transit Access Improvement Study

Final Report

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-  Town Line
-  School, College or University
-  Parks
-  Railroad Line
-  Train Station

- Implementation Period
- MA-# Short
 - MA-# Medium
 - MA-# Long

-  New Shuttle Route
-  New Bike Route
-  Generalized Area of Improvement
-  Specific Improvement Location



Morris County NJ 124
Transit Access Study

**Madison Station
Proposed Improvements**

FIGURE 5-2

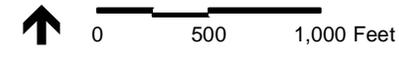
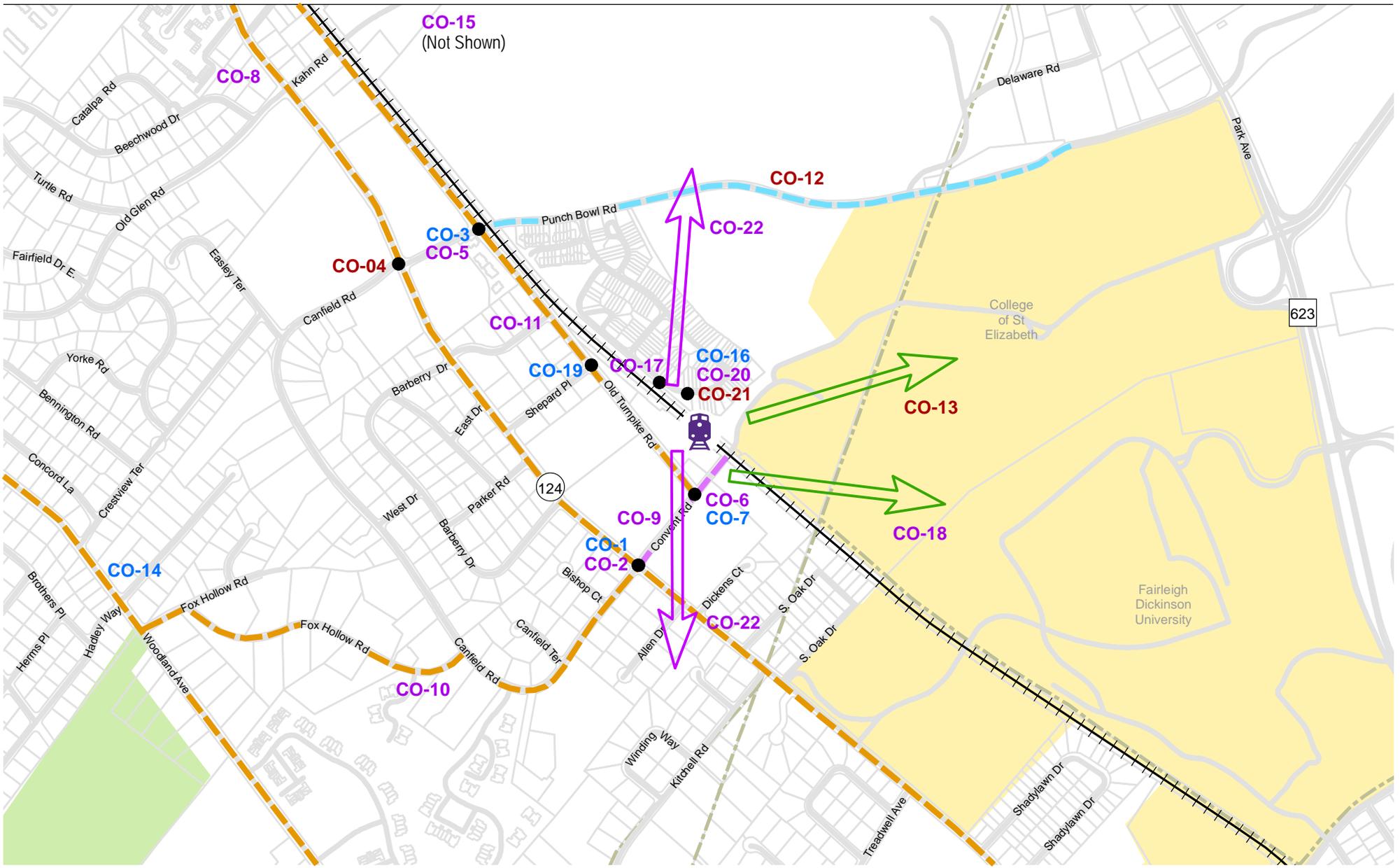


NJ 124 Corridor

Transit Access Improvement Study

Final Report

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-  Town Line
-  School, College or University
-  Railroad Line
-  Parks
-  Train Station

- Implementation Period
- CO-# Short
 - CO-# Medium
 - CO-# Long

-  New Shuttle Route
-  Potential Pedestrian Connections
-  New Bike Route
-  Specific Improvement Location



Morris County NJ 124
Transit Access Study

**Convent Station
Proposed Improvements**

FIGURE 5-3

5.3.1 Corridor-wide Improvements

Within the study corridor there is a significant lack of information about the transit system as well as information about system access. It is recommended that the following steps be taken to improve awareness of the transit system and also encourage non-automotive access to the stations.

5.3.1.1 Mapping at Chatham, Madison, and Convent Stations

To improve access by non-automotive modes it is recommended that each station display professional and accurate maps that show safe and designated pedestrian and bicycle routes in the station area. Resource phone numbers and web links should be displayed so patrons can gain information on parking permits, bicycle locker rental, and carpool formation. Maps and schedules of connecting bus routes should also be displayed in areas of the station that are accessible even when the station building is closed. In addition, a permanent and official parking lot layout map should be provided at each station to convey guidance as to where permit, daily, and other parking are permitted. These maps should be coordinated with the County, municipalities, and TransOptions (the Transportation Management Association for Morris County), so that they are also available on-line. Figure 5-4 displays the current approach to conveying station parking information at Convent Station.

Figure 5-4: Temporary Parking Map at Convent Station





5.3.1.2 Enhanced On-Line Information

It is recommended that Chatham and Madison Boroughs improve on-line access of transit and parking permit data. Of the three municipalities, Morris Township currently has the most comprehensive information available on-line, including how to get a parking permit, links to transit schedules, and other information directly accessible via their municipal home page (Figure 5-5). Some information is provided on Chatham and Madison Boroughs' websites, but finding the data is not intuitive or comprehensive. While links are provided to the TransOptions website, direct links to carpool and bicycle/ pedestrian resources should be provided on the municipal websites.

Reverse peak riders alighting at Convent Station have the ability to park overnight at Convent Station (the station with the most reverse commuters; though NJ TRANSIT notes that peak commuters represent the vast majority of rail riders in this corridor). Reverse peak commuters can purchase a non-resident monthly parking permit at Convent Station, if non-resident permits are available, and park their automobiles overnight at the station (overnight parking is permitted). These commuters can ride the train to the station daily and use their personal automobiles to complete the last segment of their commutes to work. Improved communication about this policy is encouraged.



Figure 5-5: Township of Morris Home Page with Direct Transportation and Parking Links

TOWNSHIP OF MORRIS
MORRIS COUNTY - NEW JERSEY - USA

Home Search

Township

- Township Committee
- Township Calendar
- Recreation Calendar
- Parks and Recreation Information
- Services A - Z
- Municipal Departments
- Land Use Information**
- Boards & Committees
- Meeting Dates & Minutes
- Ordinances
- Morris Township Bids
- Municipal Messenger
- Volunteer's Opportunities Application
- Transportation**
- Demographics

Public Safety

- Police Department
- Fire Department
- First Aid Squad

Permits, Applications, Licenses & Fees (pdfs)

- Construction Code Enforcement
- Landlord Registration
- Dog & Cat Licenses
- Board of Adjustment
- Planning Board
- Off-site Records Request
- Public Records Request
- Raffle/Bingo Licenses
- Train Station Parking**

Sunday, February 10, 2013
Good morning!
Welcome to
Morris Township, NJ, USA

**A Community Rich in History,
With Constant Striving
For A Better Tomorrow.**
50 Woodland Avenue
P.O. BOX 7603
Convent Station, NJ 07961-7603
[Department Phone List](#)

Municipal Building Hours:
Monday - Friday
8:30 AM to 4:30 PM
For your convenience, there is a mail slot at the front door of the
Municipal Building for any after-hours mail.

INFORMATION

- [Honeywell Property Redevelopment Proposal](#)
- [Projected Fiscal Impacts](#)
- [Public School Generation](#)
- [Zoning Ordinance](#)
- [Honeywell Property Master Plan Amendment](#)
- [Technical Coordinating Committee Responses to Public Comments](#)
- [Township Financial Analysis](#)
- [Honeywell Fiscal Impact Analysis Revised 8-29-2012](#)
- [Township Financial Analysis Addendum](#)
- [Township Financial Analysis Addendum #2](#)
- [Honeywell Redevelopment Website](#)

Morris County Mosquito Commission
[Safeguards Against Mosquitoes and West Nile Virus](#)

ANNOUNCEMENTS

Pending Snowstorm 2/6-2/9
[Read notice](#)

EMERGENCY INFO

LOCAL Emergency & Community Notices
[What is Nixte?](#)
[Sign up](#)

MULTI-JURISDICTIONAL Emergency Alerts
[What is MCUrgent?](#)

- MCUrgent on [Twitter](#)
- MCUrgent on [Facebook](#)
- Text "Follow @MCUrgent" to 40404 (no quotes) for MCUrgent to your phone

People With Disabilities: Special Needs Emergency Registry Information

Valentine's Day Roses Fundraiser
[Learn more!](#)

Planning Board Meeting
February 4 [Agenda](#)

Leaf and Brush Collection Update
January 16
[Read Notice](#)

MCMUA Household Hazardous Waste Days
[Read Notice](#)

New Jersey Special Needs Registry
[Register Now](#)

James St Bridge Over 287 Closure
[Read Notice](#)

Summer Municipal Messenger
[Read Newsletter](#)



5.3.1.3 Preferential Parking Strategies

As described in Chapter 2, all of the permit and daily parking spaces are filled daily at Chatham and Madison stations. This indicates strong demand for both permit and daily parking at these stations and therefore no recommendations are provided to change the mix of permit versus daily parking. Per information gathered through this study’s surveys, station parkers typically arrive in single-occupant vehicles, though some carpool activity was reported. To encourage station access by alternative (non-single occupant automobile) modes, it is recommended that each municipality (including Morris Township) reserve a few permit spaces for carpools of two or more people, or for bicyclists and pedestrians who may need to drive to the station one day of the week. Commuters eligible for the daily permits for these preferred spots (located closer to the station entrance) would be required to register their carpool/ bicycle/ pedestrian usage with the municipality or TransOptions, and display their permit when parked (carpoolers would be required to display at least two or more carpool parking permits, bicyclists may need to be bicycle locker renters, pedestrians could be required to have permits for a specific day of the week). This flexibility to park at the station once per week could attract more people to bicycle and rent lockers at the stations, for instance. Consideration could also be given to providing lower fees (for daily permits) to parkers who primarily commute by carpool or non-automotive modes.

5.3.1.4 Transit Information Package for Colleges and Universities

Interviews with representatives of the three study area’s colleges and universities, Fairleigh Dickinson University, Drew University, and the College of Saint Elizabeth, revealed that the majority of their commuting students and staff arrive at their campuses by automobile. Minimal transit usage by this population was reported and a potential cause is the lack of accessible information and the timing of information sharing. Information should be shared at the beginning of the school year when new students arrive. Each college representative recommended that NJ TRANSIT prepare a student guide for accessing transit that could be provided during new student orientation. In addition, they encouraged NJ TRANSIT to be present on campus with a booth during move-in days, parent’s weekends, and orientation events so that the parents of the students could become knowledgeable about transit access to campus, and even purchase transit tickets or passes for the students. In addition, it was recommended that NJ TRANSIT reinstitute their previous “free trial week” program for students to give the students an opportunity to experience how simple it is to use transit. Reduction of single-



occupancy vehicle travel to the local educational institutions would improve mobility throughout the study area.

5.3.1.5 Consolidation of NJ TRANSIT Fare Zones

This study's surveys and analyses have shown that Chatham Station is the most popular of the three stations to park and access the Morristown Line. Eastbound commuters, those typically traveling to Newark and New York City, generally prefer boarding at the eastern-most station if access to more than one station is relatively equal. However, the preference for Chatham Station could also be influenced by the fact that NJ TRANSIT Chatham fares are lower than fares at Madison and Convent Stations. Each station within this study area is in a different NJ TRANSIT fare zone, despite the fact that they are all within a few miles of each other. Of the three stations, Convent Station currently has available parking while complaints accumulate over the lack of daily parking at Chatham or Madison stations. Treating the stations equally in terms of fare would help to encourage more even usage of the three stations by residents in the study area. It is recommended that NJ TRANSIT study the effect of Chatham, Madison, and Convent station fare zone consolidation.

5.3.1.6 Operation LifeSaver at Study Area Universities and Convent Station

The presence of an at-grade rail/ roadway crossing at Convent Station represents a potential safety concern. Public feedback gathered during this study indicates that commuters and students duck under lowered crossing gates to access the other side of the rail line at Convent Station. Operation Lifesaver is a non-profit organization that provides public information on safety at and around rail lines. Their network of certified volunteers could be engaged to provide safety materials and education workshops at the study area's educational institutions and at Convent Station. In addition, each municipality should provide a link to Operation Lifesaver's website and Facebook page on their municipal websites.



**5.3.1.7 Improved Train Station Pedestrian
Access Maintenance**

Pedestrian access and amenities at the NJ TRANSIT stations are in good condition. To ensure pedestrian comfort and access, attention to maintenance is important, such as snow removal along sidewalks leading to the station and ensuring lighting fixtures are working at all nighttime hours. Public feedback has indicated that the lack of attention to such maintenance discourages pedestrian access.

5.3.1.8 Complete Streets Policy Development

One overarching recommendation would be for the Borough of Madison and the Township of Morris to adopt a Complete Streets policy (Chatham Borough has already adopted one) that could support the development of increased multi-modalism. Instituting a Complete Streets policy formalizes a community's intent to plan, design, and maintain streets that are safe for all users of all ages and abilities – including bicyclists, transit vehicles and riders, and pedestrians, as well as vehicles. Complete Streets can be achieved in a variety of ways: adoption of resolutions or ordinances; rewriting design manuals; inclusion in comprehensive plans. Adopting a policy, for example, would set a direction for the community by stating that planners and engineers will build (and reconstruct) roads that are safer for everyone. It is important to note that Complete Streets does not mean that all streets have to accommodate all modes (one size does not fit all), but that all users will be equally considered. More information on Complete Streets can be found at www.smartgrowthamerica.org/complete-streets. In 2009, the New Jersey Department of Transportation adopted a Complete Streets policy and, according to Smart Growth America, there are over 40 boroughs, towns, and counties in New Jersey that have adopted policies, including the Borough of Chatham and the Town of Morristown.

**5.3.1.9 Bike Share Program potentially
coordinated with Bicycle Maintenance**

Bike share programs are becoming increasingly popular in urban areas and at transit stations. A bike share program provides bicycles for individuals who do not own them. Bike share can be a low-cost community service or a higher-cost public-private venture with a bicycle shop where private bicycle maintenance could also be provided. With the bike share program, bicycles would be provided for free or for an affordable fee for short-distance trips as an

alternative to automobile usage, thereby reducing traffic congestion, noise, and air pollution. Bike share systems have also been cited as a way to solve the “last mile” problem and connect users to public transit networks from their places of employment. Figure 5-6 depicts the popular Capital Bikeshare Program in Washington, D.C. While a bike share program would not reduce parking demand it would improve accessibility from the corridor rail stations to the employment centers located in and adjacent to the study area. It is recommended that a study be conducted to assess the possibility of a bike share program at one of the three stations.

Figure 5-6: Capital Bikeshare in Washington, D.C.



5.3.1.10 Wayfinding and Bicycle Route Signage

Wayfinding signage should be added throughout the study area and along the bicycle routes leading to the station to direct bicyclists, pedestrians, and drivers to the train stations. Wayfinding signage will encourage easier station access and heighten visibility of the transit service. While some NJ TRANSIT signage does exist, it is sparse. This improvement should be coordinated with NJDOT and NJ TRANSIT. Figure 5-7 depicts bike route wayfinding signage.

**Figure 5-7: Bicycle Route Wayfinding
in Bethlehem, NY**



5.3.1.11 Bicycle Lane Markings and Bike Boxes

Pedestrian and bicycle markings on roadways throughout the study area are in need of attention because they are non-existent, faded, or incorrect. Bicycle markings and signage along shoulders of NJ 124 should be created, after a feasibility evaluation, and in compliance with the AASHTO Bicycle Guide and MUTCD (Figure 5-8). A general recommendation to improve pedestrian safety is to stripe advanced stop bars eight to ten feet from crosswalks, at signalized intersections and on the stop-controlled approaches of unsignalized intersections. At the pedestrian and bicycle crash study locations identified in Chapter 2, there are no advanced stop bars. Advanced stop bars are recommended at each location discussed below. Advanced stop bars provide room for bike boxes, which could be added to increase cyclist safety along bicycle routes near stations. See Figure 5-9.

Figure 5-8: Example of a Shared Lane Marking
(Class III Bicycle Facility)



Figure 5-9: Bike Box Treatment





5.4 Overview of Station Area Improvements

Site-specific, multi-modal improvements targeted to meet the access and station-based needs in the study area are included in this section. These improvements include recommendations to traffic, pedestrian, and bicycle facilities, as well as transit services along the roadways leading to the stations and recommended improvements to the stations themselves. These proposed improvements are presented by station to facilitate local implementation.

All improvements within this section respond to gaps identified in the existing study area conditions including existing stations, roadways, transit service, and surrounding land uses. An alternate land use scenario has been developed that offers additional opportunities to address the identified station area needs. This Transit-Oriented Development (TOD) scenario is addressed in Section 5.8 of this chapter.

Three of the categories of improvements – Roadway and Intersection, Road Safety Analysis, and Bicycle and Pedestrian – are recommendations targeted to roads and intersections. Each category is introduced separately because there are conditions, general information, and caveats for each. Recommendations, however, have been consolidated as much as possible so that, for example, a single intersection’s proposed improvements are presented once in the report.

5.4.1 Roadway and Intersection Improvements

Proposed roadway improvement measures have been developed to address station access constraints for the three rail stations in the study corridor. Most of the proposed improvements are either directly on NJ 124 or are at intersections adjacent to NJ 124 where queuing and signal progression will require considerations for NJ 124. It is presumed that approvals from the New Jersey Department of Transportation (NJDOT) would ultimately be required, regardless of funding sources for the proposed improvements.

Most of the proposed intersection improvements listed herein have been proposed in previous circulation studies conducted on and around NJ 124 within the study area. Those previously recommended measures were assessed for relevance in improving overall mobility and access in the NJ 124 study area. A comparison of the different studies (as well as the other recommendations for this study) was performed to ensure that proposed



intersection improvements do not present conflicts with other recommendations being proposed as part of this study, such as bicycle and pedestrian improvements. In some cases, the roadway or operational improvements identified in other studies are intended to address weekend traffic circulation. These were not considered as part of this NJ 124 study since weekends are not peak periods for rail transit access in this corridor. However, in some cases, those weekend-based improvements were listed as recommendations for this study since the proposed changes in lane configurations and roadway geometry would be in place for all time periods.

The following proposed measures would address roadway mobility and accessibility constraints identified in Chapter 2. However, two mobility impediments/ constraints identified in that report could not be mitigated without additional study due to the potential impacts that would result to surrounding land uses. The first issue identified is the discontinuity of major north-south streets in the center of Chatham Borough which constrains roadway access to Chatham Station for some motorists. Reconfiguration of those intersections would require significant street alterations and use of adjacent private properties. The second issue is the interruption of traffic circulation by motorists parking in the Chatham and Madison village centers during periods of peak commercial activity. While the on-street parking conflicts affect overall study area mobility they do not significantly impact access to the train stations since the majority of station access occurs during the non-peak commercial times.

5.4.2 Road Safety Analysis Improvements

Crash analyses and field investigations presented in Chapter 2 describe roadway safety issues. Although the crash analyses concluded that there are no locations with an average crash rate exceeding one pedestrian or bicycle crash per year, which would indicate a trend of unsafe conditions, signage in the study was found to be inconsistent with the standards in the Manual on Uniform Traffic Control Devices (MUTCD) at the identified pedestrian and bicycle crash locations in the study area. To maintain a high level of pedestrian and biking activity and safety along NJ 124 to and from Chatham and Madison stations, and to grow non-motorized access mode share at Convent Station, improvements to pedestrian and bicycle signage, markings, and infrastructure are recommended.

Specific safety issues and suggested improvements are presented below, along with the implementation time (short, medium, or long-term) and relative cost (low, medium, or high). Costs for specific physical improvements are



discussed in Section 5.6, and potential funding for medium or high cost improvements are discussed in Section 5.7.

5.4.3 Bicycle and Pedestrian improvements

The following recommended improvements address the bicycle and pedestrian station access needs that were identified in Task 6. The implementation of all bicycle routes and infrastructure improvements should be done in compliance with AASHTO’s Guide for the Development of Bicycle Facilities (4th edition, 2012), referred to herein as the “AASHTO Bicycle Guide,” and the MUTCD. These provide guidance for the implementation of bicycle routes, whether done as bicycle lanes, paved shoulders, or shared with vehicular traffic. The design of bicycle facilities, both along the route and particularly at intersections, must be done carefully with attention to detail, to provide for the safest and most usable routes possible.

5.4.4 Parking Improvements

The recommendations presented herein include short-term parking management strategies, intermediate-term parking capacity expansion proposals, and long-term measures to build parking structures at any of the three stations to accommodate the projected long-term parking shortfall identified for this study corridor in the NJ TRANSIT ridership forecast used in this study. The long-term parking shortfall is projected at approximately 250 to 500 spaces in the combined three-station area.

The proposed parking expansion measures described in this report assess each station’s ability to absorb a net gain of the maximum number of potentially needed parking spaces (500) to the extent possible, even though the forecasted demand is distributed across the three stations. The analysis was intended to show what would be required financially in order to have the cost of the entire 500 space corridor parking need captured by a private developer as part of a TOD. The analysis is intended to show that if each individual station could absorb the entire forecasted parking demand, strategies that would result in a shared distribution of the new parking amongst the three stations would therefore also be feasible and result in fewer parking space additions and less of an impact at any individual station. However, structured parking economies of scale (i.e. it is more cost-effective to build a multi-storied garage than several shorter garages) should be considered if strategies are employed to add parking at multiple stations. While the proposed parking improvements are intended to fulfill the entire parking deficit for the corridor, it is likely that this deficit would be partially diminished by implementation of the improvements



to facilitate non-automotive or shared access to the stations that are presented in this report. Considering that each structured parking space costs \$20,000,²¹ concerted efforts should be made to encourage access by other modes. Ultimately, it is unlikely that high end of the deficit (500 spaces) would need to be met and that the burden would fall to only one municipality.

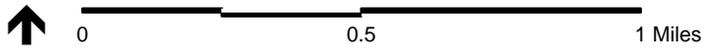
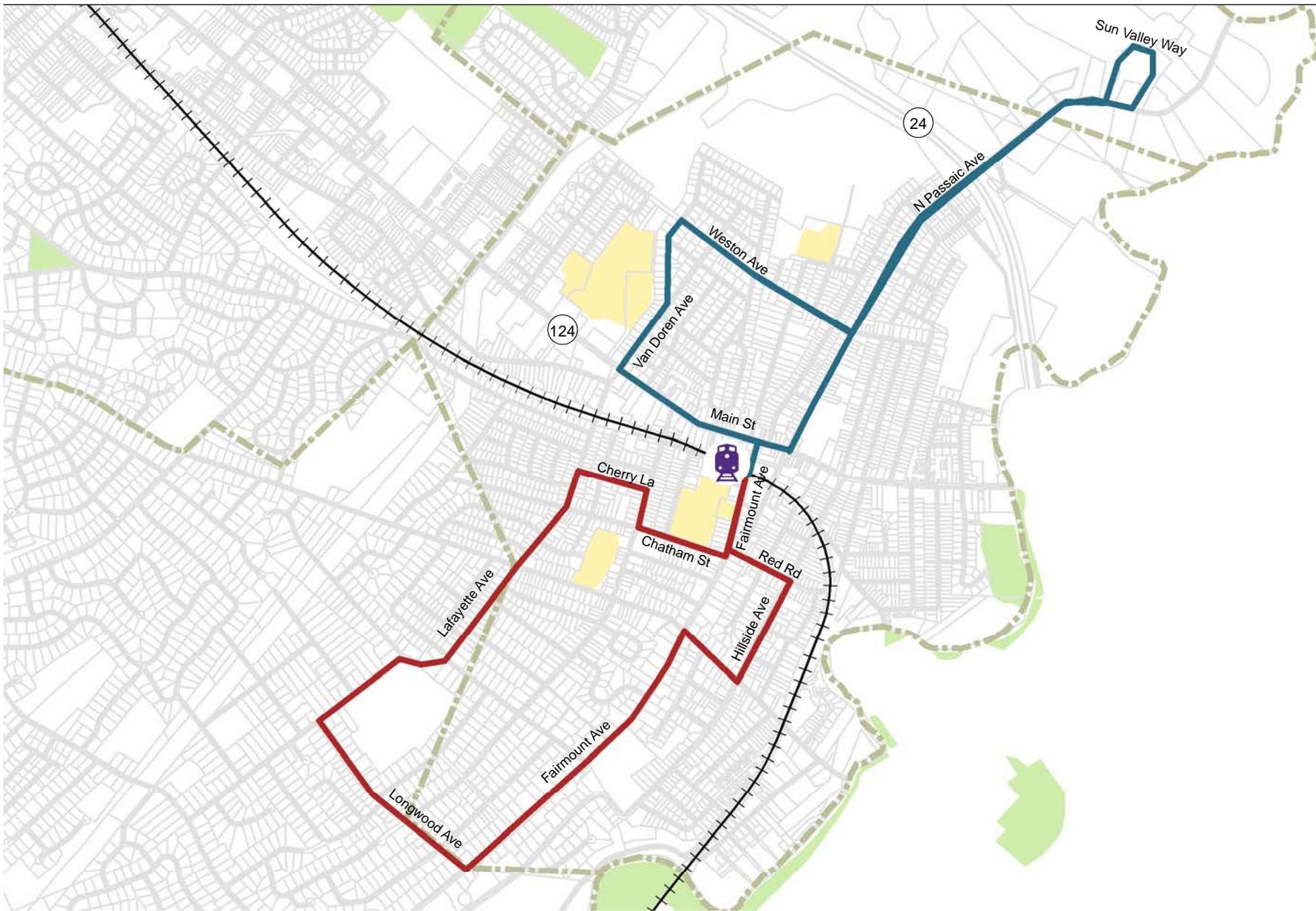
For the purpose of this study, parking capacity in new surface lots was computed based on a ratio of 300 square feet per parking space, which includes access driveways and circulation aisles. For structured parking where additional space is needed to accommodate columns and internal ramps, a ratio of 400 square feet per space was used.²²

5.4.5 Potential Shuttle Bus Routes Improvements

Recommendations for shuttle bus routings were developed to serve each of the three railroad stations in the study area. Routings were created using information from the US Census on the concentration of railroad users as well as information on existing shuttles/ NJ TRANSIT bus service. Routes were designed to be short in order to limit the total fleet requirements and to enable a higher degree of reliability and customer accessibility. Further research should be conducted through surveys and public involvement to determine the optimum number of routes to operate and the stopping pattern. Each route is described below and is shown on Figures 5-10 through 5-12.

²¹ TimHaahs Engineers and Architects, "Parking Strategies for Transit Oriented Development and Smart Growth" presentation, Rail*Volution DC Conference, 2011.

²² This is consistent with the ratio used in Section 5.8 which was based on 100 spaces in parking structured for every 40,000 square feet in land area.



-  Town Line
-  Railroad Line
-  Parks
-  School, College or University
-  Northern Chatham Route
-  Southern Chatham Route
-  Train Station



Morris County NJ 124
Transit Access Study

**Proposed Shuttle Routes
Chatham Station Area**

FIGURE 5-10

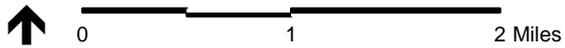
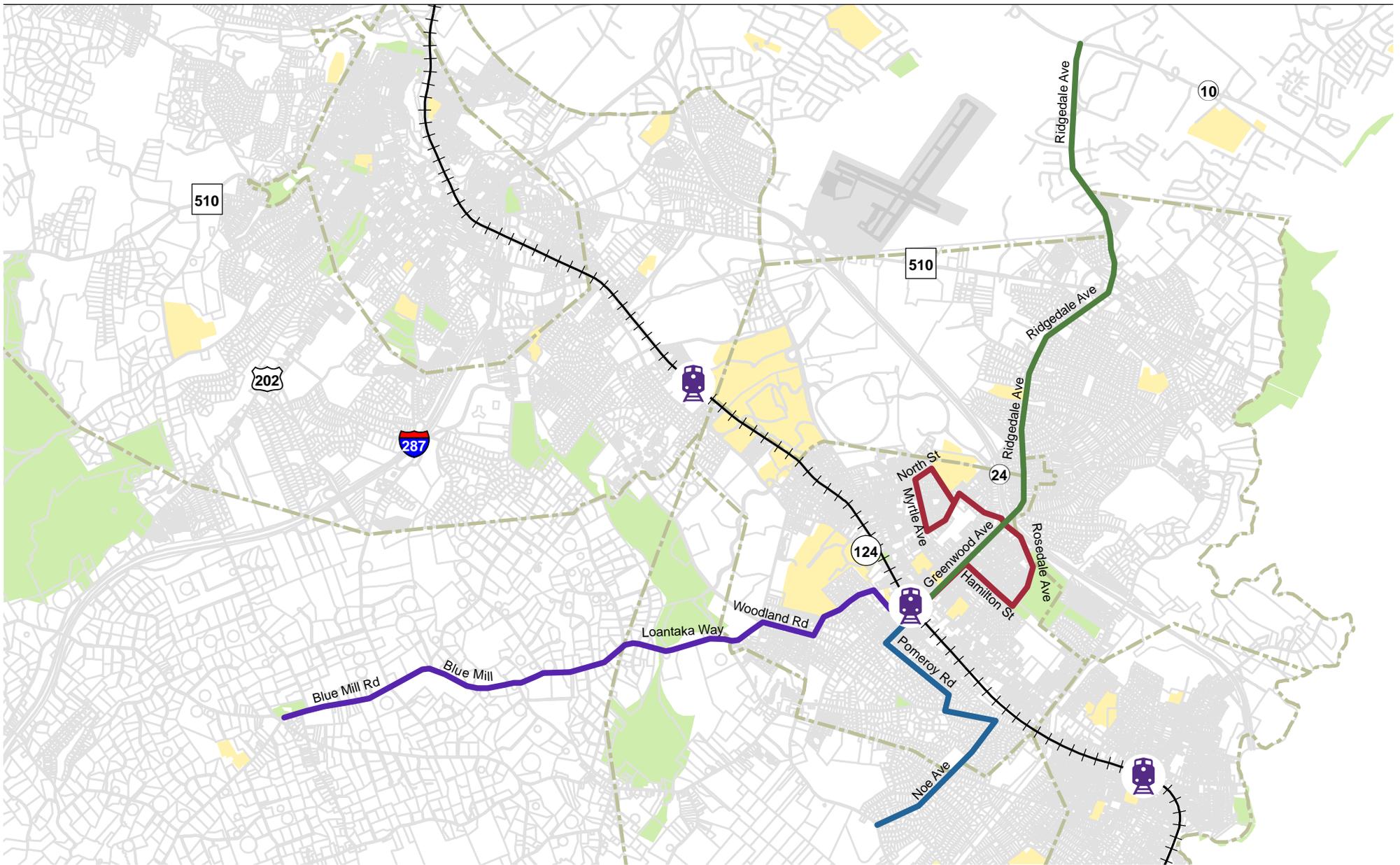


NJ 124 Corridor

Transit Access Improvement Study

Final Report

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-  Town Line
-  Parks
-  Florham Park Route
-  Railroad Line
-  School, College or University
-  Harding Township Route
-  Train Station
-  Northern Madison Route
-  Southern Madison Route



Morris County NJ 124
Transit Access Study

**Proposed Shuttle Routes
Madison Station Area**

FIGURE 5-11

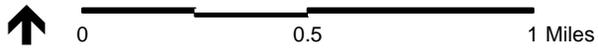
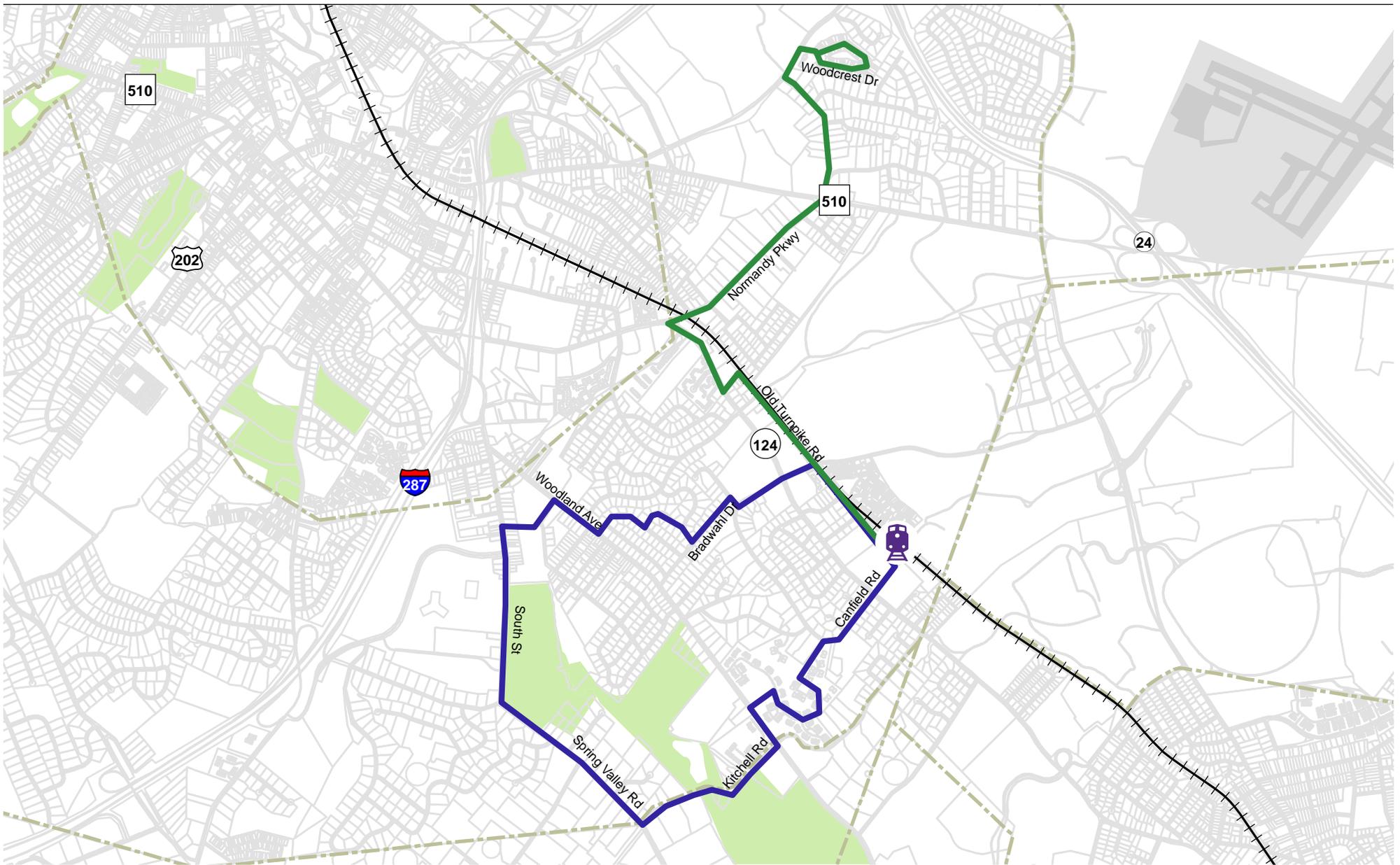


NJ 124 Corridor

Transit Access Improvement Study

Final Report

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- Town Line
- Parks
- Northern Convent Route
- Railroad Line
- School, College or University
- Southern Convent Route
- Train Station



Morris County NJ 124
Transit Access Study

Proposed Shuttle Routes Convent Station Area

FIGURE 5-12



5.5 Improvements by Station Area

The following improvements are recommended at the individual station areas or on the roadways providing access to those stations. The map coding (Ch-1, Ma-1, Co-1, etc.) from Table 5-2 and Figures 5-1 through 5-3 are presented next to the improvement name.

5.5.1 Chatham Train Station

The proposed intersection improvements in downtown Chatham that were included in the 2010 regional traffic study for the potential redevelopment of the former Exxon Research Facility in Florham Park (referred to as the 2010 Exxon Site Report) should be implemented to enhance circulation along NJ 124 and its intersecting streets. The 2010 Exxon Site Report also includes recommendations for corridor-wide signal system improvements that include intersections outside the station area. These improvements would include the upgrade of all signals, video detection, countdown pedestrian signals, and traffic signal coordination. While the corridor-wide signal system upgrade is aimed primarily at addressing regional mobility needs along the NJ 124 corridor rather than access to local sites (including rail stations) within the corridor, the improvements at individual intersections would provide benefits for local access across the corridor.

The area around Chatham Station is a highly walkable, pleasant pedestrian environment. Most streets have sidewalks, and those that do not are residential streets with low traffic volumes that are consistent with a lack of sidewalks. Chatham Borough has already employed many pedestrian safety measures, such as flashing pedestrian-activated signals, Safe Routes to School programs, and crosswalks at all key intersections. The short block lengths create easy connectivity from and between each major street for pedestrians, drivers, and bicyclists. Nevertheless, incremental improvements in the pedestrian environment would enhance station access and safety.

Bicyclists have few amenities within Chatham Borough. There are no signs or markings for any bicycle routes, no bicycle racks except at the NJ TRANSIT station, and no connectivity to the surrounding bicycle routes in adjacent communities. It is notable that the designated bicycle routes in the Borough of Madison along NJ 124 and Woodland Avenue abruptly end at the border of Chatham Borough.

In March 2012, however, Chatham Borough adopted a Complete Streets policy which recommends considering bicycle facilities in all roadway projects.



Importantly, it sets the priority and intention of Chatham Borough to implement future bicycle and pedestrian amenities. The proposed recommendations presented here should be reviewed for consistency with the Complete Streets policy by the Chatham Borough engineering staff prior to implementation.

Roadway Improvements were identified at several intersections, and road safety analysis improvements were identified at eight intersections in Chatham, along with limited additional pedestrian improvements. These recommendations are integrated in the list below. General bicycle recommendations follow the list of intersections, followed by parking and shuttle route recommendations.

- NJ 124 & Hillside Avenue (Ch-1)
 - Restripe the eastbound and westbound approaches from one (1) to two (2) lanes: provide an exclusive left-turn lane and a shared through/ right-turn lane. Although the traffic analysis from a prior study showed that these approaches are operating at acceptable levels of service, field investigations showed that queuing and unsafe maneuvers are occurring at this location. The proposed change may require the displacement of one or two parking spaces on the northern side of NJ 124.
 - Modify signal timing to allow more green time on the northbound and southbound approaches.
- Chatham Borough Intersections (Ch-2)
 - Provide signal timing offsets to coordinate the traffic signals at Fairmount Avenue, Passaic Avenue, and Hillside Avenue to improve traffic flow on Main Street.
- NJ 124 & Passaic Avenue (Ch-3)
 - Restripe eastbound and westbound approaches from a shared left/ through/ right-turn lane to provide one exclusive left-turn lane and one through/ right turn lane. Some parking spaces may be affected on each approach with this improvement.
 - Modify signal timing to decrease overall intersection delay.
 - Install signage to increase the “No Turn on Red” restrictions to all hours and days on the northbound and southbound approaches, remove the “State Law: Stop for Pedestrians in Crosswalk” sign (which is intended for unsignalized locations), and place “Turning Vehicles Yield to Pedestrians” signage and advanced pedestrian or school crosswalk signage on all approaches to potentially improve safety for pedestrians. To address a bicycle crash that occurred at this



location, it is recommended to install “Share the Road” bicycle signs with sharrows approaching Passaic Avenue to potentially increase safety for cyclists on NJ 124. Even when sharrows are placed, there should still be signage included in some locations, particularly along a route like NJ 124. The signs are more visible, especially when moving at higher speeds.

- NJ 124 at Washington Avenue (Ch-4)
 - Add a pedestrian crosswalk across to enable connectivity to the station.

- NJ 124 & Fairmount Avenue (Ch-5)
 - Restripe the westbound NJ 124 approach to provide a left turn lane.
 - Modify signal timing to decrease overall intersection delay.
 - Install signage to increase the “No Turn on Red” restrictions to all hours and days and add this restriction and signage to the westbound and southbound approaches, remove the “State Law: Stop for Pedestrians in Crosswalk” sign (which is intended for unsignalized locations), and place “Turning Vehicles Yield to Pedestrians” signs on all approaches to potentially improve safety for pedestrians. To address a bicycle crash that occurred at this location, it is recommended to install “Share the Road” bicycle signs approaching Fairmount Avenue to potentially increase safety for cyclists on NJ 124.

- NJ 124 & Coleman Avenue / Railroad Plaza North (Ch-6)
 - This is a key intersection for automobile and pedestrian access to the north side of Chatham Station. Considerable traffic queues and delays were observed at this location during the evening peak period after large numbers of passengers disembark from a train and drive or walk through this intersection.
 - Conduct a signal warrant study at this location to potentially upgrade the flashing pedestrian signal and traffic operations. If a traffic signal is not warranted at this intersection, the existing flashers that warn drivers of the presence of the crosswalk should be repaired, “State Law: Stop for Pedestrians in Crosswalk” signs must be placed on the centerline, and advanced school crosswalk signs should be installed to potentially increase pedestrian safety.

- Fairmount Ave & Chatham Station Parking Lot 1 Driveway (Ch-7)



- Conduct a signal warrant study at this location where pedestrian safety is a concern due to the number of turning conflicts at the driveway during peak access and egress periods. This condition would likely be exacerbated if drop-off (“kiss & ride”) activity at the station increases due to constrained parking capacity and increased transit demand. Since the circulation issues at this location are heavily tied to station activity that occurs primarily during morning and evening peak periods, consideration should be given to a traffic signal that operates during peak periods but functions in a flashing operation (stop-controlled) during off-peak periods.
- NJ 124 at Lafayette/ Van Doren Avenues (Ch-8)
 - Install “No Turn on Red” signs to extend restrictions to all hours and days on all approaches.
 - Remove the “Stop for Pedestrians in Crosswalk” sign (which is intended for unsignalized locations) and replace it with “Turning Vehicles Yield to Pedestrians” signage on all approaches to potentially improve safety for pedestrians.
 - To address a bicycle crash that occurred at this location, placing “Share the Road” bicycle signs with sharrows at the transition from a shoulder to no shoulder would potentially increase safety for bicyclists on NJ 124.
- Fairmont Avenue at Watchung Avenue (Ch-9)
 - Remove the “Yield to Pedestrians in Crosswalk” sign (which is not consistent with state law) and place “Turning Vehicles Yield to Pedestrians” signage.
 - Install “Share the Road” bicycle signs on all approaches to potentially increase safety for bicyclists.
 - Install new crosswalks on the north and south legs.
 - Install “State Law: Stop for Pedestrians in Crosswalk” signage on the centerline of Fairmont Avenue.
- Fairmont Avenue at Watchung Avenue (Ch-10)
 - Install ADA compliant pedestrian ramps on the north and south legs of the intersection.
- Fairmont Avenue at Red Road (Ch-11)
 - Install shared lane markings/ sharrows or parking lane stripes to provide a safe riding area for bicyclists next to parked cars.
- Fairmont Avenue at Red Road (Ch-12)
 - Add a streetlight.



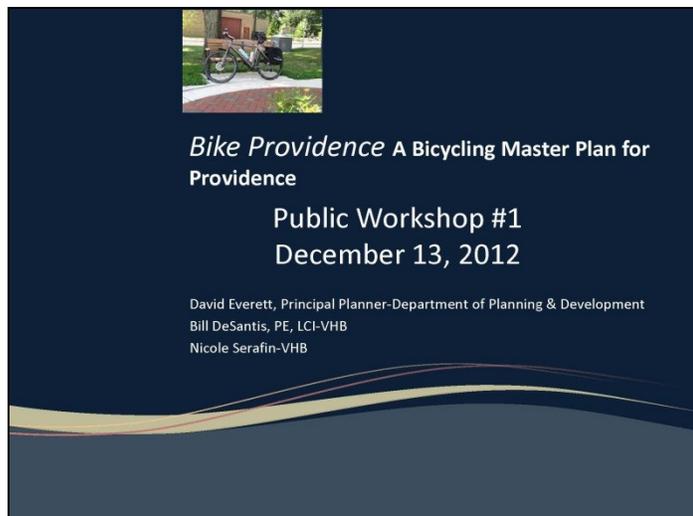
- Fairmount Avenue at 2nd Street (Ch-13)
 - Install a crosswalk on the south leg.
 - Install advanced pedestrian or school crosswalk signage on all approaches.
 - Install “State Law: Stop for Pedestrians in Crosswalk” signage on the centerline of Fairmount Avenue.
 - Install shared lane markings/ sharrows or parking lane stripes to provide a safe riding area for bicyclists next to parked cars.
- Fairmount Avenue at 2nd Street (Ch-14)
 - Install ADA compliant pedestrian ramps on all corners.
- North Passaic Avenue and Weston Avenue (Ch-15)
 - Repair the speed feedback sign.
 - Install shared lane markings/ sharrows or parking lane stripes.

5.5.1.1 Bicycle Recommendations

Because Chatham Borough does not have any designated bicycle routes, it is recommended that Chatham examine bicycle access in detail, including access to Chatham Station, and develop a Bicycle Master Plan. Many municipalities have formalized bicycle plans, such as Morristown, NJ and Providence, RI as shown in Figure 5-13. At a minimum, bicycle routes should be investigated and considered for implementation on key north/ south and east/ west routes near the train station. These roadways, shown on Figure 5-1, could include the following:

- East/ West Roadways (starting from the south): Watchung Avenue, Chatham Avenue/ Red Road, Woodland Avenue, Kings Road, NJ 124/ Main Street, and Weston Avenue.
- North/ South Roadways (starting from the west): Van Doren/ Lafayette Avenues, Washington Avenue, Coleman Avenue, Elmwood Avenue, Fairmount Avenue, North Passaic/ South Passaic Avenues, and North Hillside/ Hillside Avenue.

Figure 5-13: Developing a Bicycle Master Plan



The development of a complete bicycle master plan would typically include at least the following elements:

- Evaluation of existing roadway conditions.
- Public outreach.
- Assessment of potential bicycle routes and location of bicycle amenities (racks).
- Recommendations for implementation of bicycle route type: shared, designated lane, separated bikeway, or trail.
- Recommendations for implementation of route and wayfinding signs and amenities.
- Development of a map and possible public education recommendations.
- Implementation plan including cost estimate and schedule.

Other steps that Chatham Borough should consider include:

- Implementation of the Morris County bicycle map, which shows Fairmount and Watchung Avenues as shared facilities and NJ 124 as a bicycle route (Ch-16).
- Develop bicycle facilities along Kings Road and Woodland Road, after evaluation, to provide continuous bicycle facilities along these roads from Chatham Borough to Madison Township (Ch-17).
- Monitor usage of bicycle lockers and racks (Ch-18). Comments received from stakeholders and the public included requests for additional bicycle lockers and racks. Observations in July 2012 showed



21 of the 44 bicycle parking spaces being used, and TransOptions has reported, in January 2012, that 10 of the 16 bicycle lockers were rented. Based on these numbers, additional bicycle racks and lockers do not appear to be needed at this time, however, with improvements to bicycle facilities within Chatham Borough, bicycling to the station would likely increase. This increase should be carefully monitored and racks and lockers added as appropriate. In addition, with the forecasted increase in ridership by 2020, additional racks and lockers will be needed.

5.5.1.2 Pedestrian Recommendations

As stated above, the pedestrian network in Chatham is very complete. Nevertheless, there are improvements that would enhance connectivity to the station and walkability within the study area.

- Create a pedestrian and bicycle connection across the sports field south of the station to connect with Lum Avenue (Ch-19). This would allow those living to the west a more direct connection to the station. If a portion of this property is reconsidered for parking expansion, the pedestrian accessway should be incorporated in the site design.
- Add coordinated pedestrian activated signals and lighted crosswalks under the railroad trestle to improve pedestrian visibility (Ch-20), as shown in Figures 5-14 and 5-15.

Figure 5-14: Pedestrian Activated Crosswalk Near New Brunswick, NJ Train Station

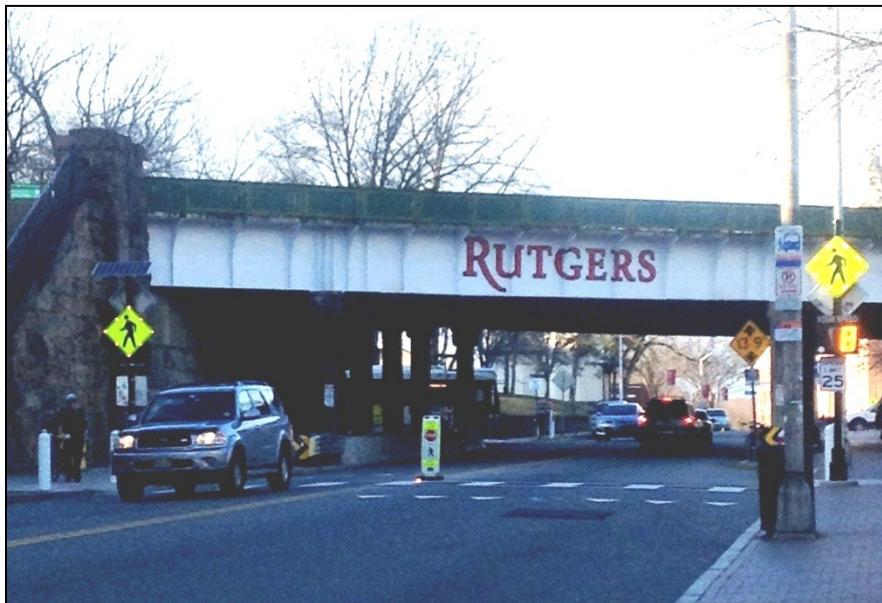
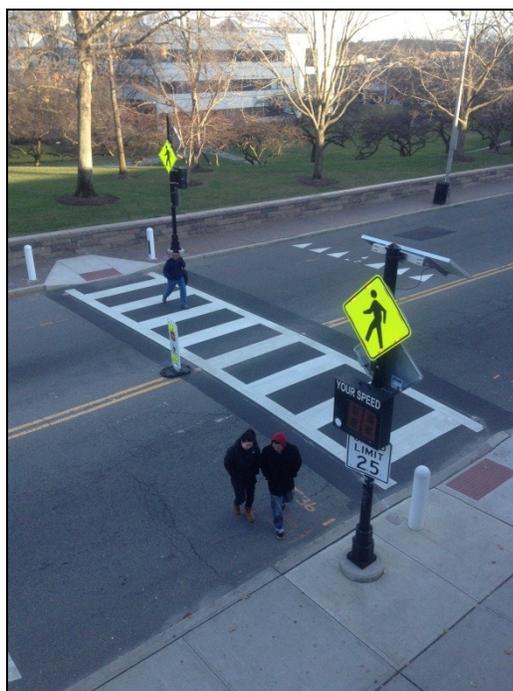


Figure 5-15: View from Above of New Brunswick, NJ Train Station Pedestrian Activated Crosswalk





5.5.1.3 Parking Improvements

Parking at Chatham is currently fully utilized and demand is expected to exceed the capacity of the existing lots. Although additional parking is available for resident permit holders in the municipal lots on Bowers Lane and Center Street East and West when the main commuter parking areas are full, these overflow parking facilities are not well advertised and accessible. A field investigation for this study indicated that those lots are not used heavily, so additional efforts to publicize the availability of those spaces may provide some relief for resident commuters who deal with the overflowing main lots on a regular basis. Information about those auxiliary lots should be included on a station-area parking map to be posted at the station and on the municipal website.

In addition, one of the most common complaints voiced by commuters at Chatham Station during the public outreach process for this study involved the electronic parking pay stations used for daily parking fees. These machines are a convenient and cost-effective way to collect parking fees, but long lines form at them when the equipment malfunctions, resulting in commuters missing their train when waiting on line in the morning. Additional parking machines would be helpful to address this and Chatham Borough is currently procuring new machines.

The athletic field south of Lot 1 has been considered for possible parking expansion in the past. Depending on the portion of the site to be used, this could provide approximately one acre of additional land for surface parking, either as a stand-alone lot or as an expansion of the existing Lot 1. Due to existing grades at the site, where the elevation of the athletic field is several feet higher than most of the adjoining parcel where Lot 1 is situated, construction costs would be lower if the additional capacity were to be constructed as a separate lot with a driveway connecting to Lot 1 at a point where the elevations are closest.

Proposed parking improvements at Chatham Station are as follows:

- Install two additional electronic parking pay stations (Ch-21) to minimize passenger queuing and delays, and to provide additional processing capacity for future parking expansion.
- Provide additional signage at the station to highlight overflow commuter parking availability at nearby municipal parking lots for Chatham permit holders (Ch-22). This could yield an estimated additional 25 spaces for permit holders, based on the size and proximity of these lots.



- Create a new parking lot adjacent to Lot 1 on site of athletic field (Ch-23). This improvement would yield an estimated 145 additional spaces if one full acre is used (43,560 square feet x 300 square feet per space). The site is not Green Acres-encumbered.
- Should the full deficit of 500 spaces be accommodated in Chatham it would require construction of a three-level parking structure on the site of the existing Lot 1 (Ch-24). Lot 1 covers an area of about two acres, and at a ratio of 400 square feet per space this site would yield about 218 spaces per parking level. This calculates to 654 spaces in a three-level facility, which yields more than 350 spaces beyond the existing capacity of Lot 1 (about 300 spaces). The new parking lot on the adjacent parcel, which is described above as an intermediate-term improvement, would remain as a surface lot and would be accessible through the new structure at the level in the structure (first or second level) most appropriate for the different grades at the site. This would allow the entire commuter parking at the station to be accessible through a single access point on Fairmount Avenue, which complements the potential improvements associated with the signal warrant study recommended at this intersection. The recommendations outlined above would provide sufficient parking in Chatham to more than meet the high end of the range of projected (2020) parking space deficit in the corridor (500 spaces). The Chatham Borough Council has indicated that inclusion of such a structure in the Borough is not in keeping with the character of their community and that the local roadway network could not absorb the additional traffic that would be associated with such a large facility.

5.5.1.4 Transit Improvements (Ch-25)

In order to diminish parking demand at Chatham Station and provide accessibility to the station from points outside of the immediate vicinity of the station, two potential shuttle bus routes were conceptualized. These routes would provide AM access to the station and PM access from the station, picking up residents along the route at defined shuttle stops. Figure 5-10 displays these routes.

Chatham North Route: This northern route would operate on the following path (PM):

- Start at Chatham Station
- North on Fairmount Avenue
- Right on Main Street
- Left on North Passaic Avenue
- Left on Sun Valley Way



- Right on North Passaic Avenue
- Right on Weston Avenue
- Left on Rowan Road
- Right on Van Doren Avenue
- Left on Main Street
- Right on Fairmount Avenue to turnaround at station

Chatham South Route: This southern route would operate on the following path (PM):

- Start at Chatham Station
- Left on Fairmount Avenue
- Right on Chatham Street
- Right on Washington Avenue
- Left on Cherry Lane
- Left on Lafayette Avenue
- Left on Longwood Avenue
- Left on Fairmount Avenue
- Right on Watchung Avenue
- Left on Hillside Avenue
- Left on Red Avenue
- Right on Fairmount Avenue to turnaround at station

Using assumed speeds (18 MPH), one way running times for each route were developed. These are shown in Table 5-3 below.

Table 5-3: Proposed Routes with Mileage and Running Time

Station	Route Number	Mileage (One Way)	Running Time (Minutes)
Chatham Station	Chatham North Route	4.51	15 minutes
	Chatham South Route	3.72	12 minutes

New vehicles, drivers, and a maintenance staff would be required to operate this service. A fare could be charged to offset operating costs. In order to minimize the number of vehicles required these routes could be initially operated on half hour headways, using three vehicles. These headways would



not result in each route meeting each train, but the service could be designed so that one bus an hour meets a Hoboken train and one bus an hour meets a New York City train. After an evaluation, those routes which are successful and attract a significant amount of ridership could be continued, with less popular routes being eliminated (allowing for an increase in the frequency in service to 15 minutes, which would meet every train in the peak on the resulting routes).

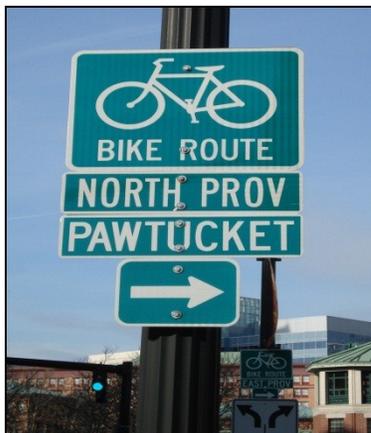
5.5.2 Madison Train Station

The proposed intersection improvements in downtown Madison that were included in the 2010 Exxon Site Report should be implemented to enhance circulation along NJ 124 and its intersecting streets. Some additional improvements in downtown Madison, which were originally proposed in a 2027 Transportation Needs Assessment Study for Florham Park (completed in 2007), are also listed here and are recommended for implementation. The 2010 Exxon Site Report also includes recommendations for corridor-wide signal system improvements that include intersections outside the station area. These improvements would include the upgrade of all signals, video detection capability, countdown pedestrian signals, and signal coordination between adjacent signalized intersections.

The half mile area around Madison Station is very accessible to pedestrians. Most roadways in the area have sidewalks, with crosswalks and pedestrian signals. Madison uses a variety of different traffic calming techniques to slow traffic such as pedestrian bollards, and traffic markings of the word “SLOW” with chevron markings to reinforce pedestrian crosswalks.

The Borough of Madison has a relatively robust bicycle facility network as compared with Chatham Borough and Morris Township. Madison’s bicycle route plan was completed in 2005 and many of the planned facilities have been implemented through striped bicycle lanes, shared lane markings, or “Share the Road” signs. Notable, however, is that designated bicycle routes do not continue to the NJ TRANSIT station, and there are no signs directing bicyclists to the location of the station, as shown in Figure 5-16.

Figure 5-16: Example of Bicycle Wayfinding Sign in Providence, RI



Even with a well-planned pedestrian and bicycling network, there are opportunities for improvements, and those recommendations are presented below. Additional and improved pedestrian crossings would help with access to the station. Currently, the condition of existing bicycle facilities and signage vary throughout the study area, which presents an opportunity for improvements in the network.

Roadway Improvements were identified at several intersections, and road safety analysis improvements were identified at 13 intersections, along with limited additional pedestrian improvements. These recommendations are integrated in the list below. General bicycle recommendations follow the list of intersections.

- NJ 124 & Rosedale Avenue / Cross Street (Ma-1)
 - Restripe the eastbound and westbound approaches from one (1) to two (2) shared lanes: provide a left/ through lane and a right/ through lane. Restripe receiving lanes to two (2) lanes, followed by a right lane merge.
 - Modify signal timing to decrease overall intersection delay.
 - Install pedestrian countdown signals and advanced pedestrian or school crosswalk.
 - Install “Turning Vehicles Yield to Pedestrians” signs, and “No Turn on Red” restrictions on all approaches to potentially increase safety for pedestrians.
 - Install “Share the Road” bicycle signs on all approaches.
- NJ 124 & Greenwood Avenue / Prospect Street (Ma-2)
 - Create eastbound and westbound left-turn lanes.



- Add a southbound left-turn signal phase.
- Add signal actuation for left-turn movements, with pedestrian protection included in the signal phasing as needed.
- NJ 124 between Greenwood Avenue/ Prospect Street and Waverly Place/ Central Avenue (Ma-3)
 - Add mid-block pedestrian crossing (crosswalk, signal) across NJ 124. Pedestrians crossing at midblock were observed at this location and formalizing the crossings is advised. Install a midblock crosswalk and “State Law: Stop for Pedestrians in Crosswalk” signage.
- NJ 124 & Central Avenue / Waverly Place (Ma-4)
 - Create eastbound and westbound left-turn lanes by removing some on-street parking.
- NJ 124 at Central Avenue/ Waverly Place: It is recommended to install “Turning Vehicles Yield to Pedestrians” and advanced pedestrian or school crosswalk signage on all approaches to potentially improve safety for pedestrians.
 - Install “Share the Road” bicycle signs on all approaches.
- NJ 124 between Waverly Place/ Central Avenue and Green Village Road (Ma-5)
 - Add mid-block pedestrian crossing (crosswalk, signal) across NJ 124. Pedestrians crossing at midblock were observed at this location and formalizing the crossings is advised. Install a midblock crosswalk and “State Law: Stop for Pedestrians in Crosswalk” signage.
- NJ 124 & Central Avenue / Waverly Place (Ma-6)
 - Add signal actuation for left-turn movements, with pedestrian phase protection as needed.
- NJ 124 & Park Avenue/ CR-623 (Ma-7)
 - Modify signal timing to decrease overall intersection delay.
- NJ 124 (Madison Avenue) & Kings Road (Ma-8)
 - Modify signal timing to decrease overall intersection delay.
 - Install a west crosswalk advanced pedestrian or school crosswalk and “Turning Vehicles Yield to Pedestrians” signage on all approaches.
 - Install “No Turn on Red” restrictions on the eastbound and northbound approaches.



- NJ 124 (Madison Avenue) & Kings Road (Ma-9)
 - Install pedestrian countdown signals and ramps on all approaches.
 - Continue bicycle lanes on NJ 124 through this intersection and underneath the railroad trestle.
- NJ 124 at Alexander Avenue (Ma-10)
 - Install crosswalks on the east and west legs, and advanced pedestrian or school crosswalk signage on all approaches.
 - Install “State Law: Stop for Pedestrians in Crosswalk” signage on the centerline of NJ 124.
- NJ 124 at Alexander Avenue (Ma-11)
 - Install bike lanes on NJ 124 to increase safety for bicyclists.
 - Install pedestrian countdown signals and ramps on all approaches.
- Central Avenue at Brittin Street (Ma-12)
 - Install a north crosswalk and an advanced school crosswalk sign.
 - Install a “State Law: Stop for Pedestrians in Crosswalk” sign on the southbound approach to potentially increase pedestrian safety.
 - Install “Share the Road” bicycle signs and in-road painted sharrows on all approaches.
- Greenwood Avenue at Brittin Street (Ma-13)
 - Install a north crosswalk.
 - Remove bike lane markings and install “Share the Road” signs and sharrows, or prohibit on-street parking since the existing bike lanes are less than the standard five feet.
- Greenwood Avenue at Brittin Street (Ma-14)
 - Install ADA compliant pedestrian ramps on the north side.
- Greenwood Avenue north of NJ 124 (Ma-15)
 - Relocate the “Share the Road” sign on Greenwood Avenue to improve its visibility since it is currently obscured behind a utility pole.
- Danforth Road and NJ 124 (Ma-16)
 - Install an actuated bicycle signal at this location since Danforth Road is the eastern-most access point to the Traction Line Recreation trail and bicyclists report the signal is difficult to trigger when only a bicyclist is present at the traffic light.



- Kings Road and Waverly Place (Ma-17)
 - Remove the “State Law: Stop for Pedestrians in Crosswalk” sign (which is intended for unsignalized intersections) and replace it with a “Turning Vehicles Yield to Pedestrians” sign.
 - Implement “No Turn on Red” restrictions to the northbound, southbound, and westbound approaches.
 - Install advanced pedestrian or school crosswalk signage on all approaches.
 - Install “Share the Road” bicycle signs on all approaches.
- Kings Road and Waverly Place (Ma-18)
 - Install streetlights adjacent to the north, east, and west crosswalks.
 - Install a west ADA compliant pedestrian ramp.
- Kings Road at Maple Avenue (Ma-19)
 - Install a west crosswalk.
 - Install a “State Law: Stop for Pedestrians in Crosswalk” sign on the west leg, and advanced pedestrian or school crosswalk signs on all approaches.
 - Move the mid-block pedestrian crossing across Kings Road close to Maple Avenue. Currently, the crosswalk is located away from the corner, and connects to the station parking lot at a parked car, rather than a pedestrian pathway to the station. Moving the crosswalk to the corner will connect more directly to a striped pathway that connects to the station.
- Park Avenue at Ridgedale Avenue (Ma-20)
 - Remove the outdated “Yield to Pedestrians in Crosswalk” sign.
 - Install a west crosswalk.
 - Install “Turning Vehicles Yield to Pedestrians” sign.
 - Install advanced pedestrian or school crosswalk signage on all approaches.
 - Implement “No Turn on Red” restrictions on all approaches.
 - Install “Share the Road” bicycle signs on all approaches.
- Park Avenue at Ridgedale Avenue (Ma-21)
 - Install west ADA compliant pedestrian ramps and pedestrian countdown signals.
- Park Avenue at Kinney Street (Ma-22)
 - Install crosswalks and advanced pedestrian signage on all approaches.



- Park Avenue at Kinney Street (Ma-23)
 - Install ADA compliant pedestrian ramps on all approaches.
- Central Avenue at Elmer Street/ Cook Avenue (Ma-28)
 - To increase safety for pedestrians, it is recommended to reduce the speed limit to 25 miles per hour on Central Avenue, install advanced pedestrian or school crosswalk signage on all approaches, and place “State Law: Stop for Pedestrians in Crosswalk” signs on the centerline of Central Avenue in both directions. To address a bicycle crash that occurred at this location, it is recommended to install “Share the Road” bicycle signs with in-road painted sharrows on all approaches to potentially increase safety for bicyclists.

5.5.2.1 Bicycle Recommendations

The condition of bicycle facilities and implementation vary on streets within Madison Borough. Signage and bicycle stencil markings are generally infrequent and the quality of markings varies significantly. Additionally, signage is inconsistent, varying from a standard bicycle route sign to “Share the Road” signage. Recommendations for potential bicycle network improvements are as follows, and are illustrated on Figure 5-2.

- New Bicycle Markings and Signage (Ma-24)
 - Extend existing bicycle routes to the NJ TRANSIT station. These routes are located on Kings Road, Green Village Road, Green Avenue, Prospect Street, Central Avenue, and Greenwood Avenue, and currently stop short of the station. Bicycle lane markings would be ideal; however signage, rather than markings, could also be used, as shown in Figure 5-17.
 - Along NJ 124 east of downtown, the roadway appears to have been resurfaced. Bicycle markings, if previously present, have not been replaced. These markings, along with signage, should be installed along the shoulders of NJ 124 (Ma-25).
- Restriping and Signage of Existing Bicycle Routes
 - According to the MUTCD, bicycle stencils (see Figure 5-18) should be placed after each intersection or signalized driveway. Additional bike lane markings may also be placed in visible locations on the intersection approach.

- Along NJ 124 where markings are currently present (west of downtown), restripe all bicycle stencils and install Share the Road signage (Ma-25).
- Along all other bicycle routes in Madison, restripe bicycle stencils as many are faded and barely visible (Ma-25).

Figure 5-17: Example of Share the Road and Bicycle Route Signs in Bethlehem, NY



Figure 5-18: Shoulder Bicycle Lane on Westbound Woodland Road at Green Avenue in Madison, NJ





Additional bicycle recommendations are as follows.

- Extend the Traction Line Recreation trail to Madison. The extension of this trail by 0.61 miles along the railroad tracks from Danforth Road to Elm Street would allow residents of neighborhoods west of the Madison Station to access the downtown via an off-road trail. This extension has been proposed by the Morris County Park Commission, but is not supported by the Borough of Madison. It is unclear if the project is viable at this time, but, nevertheless, extension of this trail would provide a useful link in the area's bicycle and pedestrian network and improved access to the station area (Ma-26).
- Community stakeholders requested improved access between Drew University and the Madison station. There currently are complete sidewalk connections from Drew's east gate to the station, and striped bicycle shoulders along NJ 124. However, improved pedestrian lighting along NJ 124 would likely improve the experience for those walking and bicycling (Ma-27).
- Relocate the station bicycle lockers from the remote Kings Lane parking lot to a location more proximate to the station and add additional lockers for future demand. These lockers could be located in the station underpass where there may be available space (Ma-29).

5.5.2.2 Pedestrian Recommendations

The main pedestrian recommendation is to improve the pedestrian experience along Kings Road from/ to the Kings Road commuter parking lot through wider sidewalks and additional pedestrian lighting (Ma-30).

5.5.2.3 Parking Improvements

Madison has a combination of permit and daily commuter parking at its lots in the vicinity of the rail station. Lot #1, NJ TRANSIT's crescent-shaped area on the south side of the station, is used by commuters who pay on a daily basis. Municipal Lot #2, across King Road, is restricted to resident permit holders. Municipal Lot #3, a block east on King Road, is the largest of the three lots and is available for both daily parkers and permit holders. During the public outreach effort for this study, a number of commuters parking at the daily spots at this station complained about the cash slot box at Lot #3. It is not a convenient system for users who do not have exact change, and some commuters have indicated that the slot box is cumbersome to use. It is recommended that the parking fee equipment be upgraded to electronic



parking equipment that can handle credit card transactions in addition to cash payments.

At the Madison Station, parking is currently fully utilized and demand is expected to exceed the capacity of the existing lots in the future. Proposed parking improvements at Madison Station are as follows:

- Install 3-4 electronic parking pay stations at Lot #3 (Ma-30).
- Construct a multi-level parking facility on the site of existing Lot #3, yielding approximately 300 additional spaces in a 506-car parking structure. This project would be consistent with the previous proposal that was documented in the *Morris Area GREEN Transit Initiative* report that was prepared by the Borough of Madison for its TIGER grant application in 2009. A detailed analysis of traffic circulation along Kings Road would be required for this proposed improvement, particularly at adjacent intersections along Kings Road to the east and west at Cross Street and Prospect Street, respectively. Right-in/ right-out only access may be needed on Kings Road at the proposed parking structure to eliminate conflicts and congestion with left-turning vehicles.

The 300 net additional spaces accommodated in the proposed parking structure would represent 60 percent of the high end range of the projected corridor-wide parking shortfall of 500 spaces. If it is necessary to address this entire shortfall at Madison Station, the remaining 200 spaces could be accommodated as part of a proposed redevelopment plan for the north side of the NJ TRANSIT alignment, which is documented in Section IV of this report. If a redevelopment plan for that area does not unfold as described, and all commuter parking must be accommodated elsewhere, the most feasible option for providing 200 additional spaces would be to construct a second parking structure on Kings Road directly across the street from the train station at the site of the existing municipal employee lot.

5.5.2.4 Potential Kiss and Ride

Commuter “kiss and ride” (a.k.a. drop-offs) offer the potential to provide access to Madison Station without requiring additional parking. Currently, there is not a formal “kiss and ride” area at Madison Station on the eastbound side. It is proposed that Lot #1 be reconfigured to create a formal kiss and ride to bring visibility to and encourage this access option amongst commuters. Figure 5-19 depicts this recommendation, which maintains the current parking space count in the lot but reallocates the existing green areas adjacent to the parking lot (Ma-31).

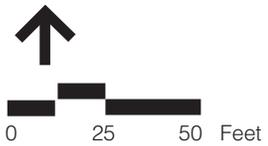


5.5.2.5 Transit Improvements (Ma-32)

In order to diminish parking demand at Madison Station and provide accessibility to the station from points outside the immediate vicinity of the station, four potential shuttle bus routes were conceptually developed to serve population areas around Madison Station, as depicted on Figure 5-11. Two short-distance routes could serve the adjacent neighborhoods and two long distance routes could serve Chatham Township, Harding Township, and Florham Park (the origins of three communities identified as primary users of parking at this station).

Florham Park Route: This route would operate on the following path:

- Start at Madison Station
- Make a left on Greenwood Avenue
- Continue on Ridgedale Avenue
- Turn around at NJ 10 and Ridgedale Avenue



Morris County NJ 124
Transit Access Study

**Madison Station
Parking Concept**

FIGURE 5-19



Since this route is designed to serve Florham Park, it should not make stops between Madison Station and NJ 24. Beyond NJ 124, stops for this route could be located once every half mile (a quarter to half mile distance is the typical spacing between bus shuttle stops), and should be based on visits to sites and input from the local community. Customers destined for locations between the station and NJ 124 could use the Madison North route.

Harding Township Route: This route would operate on the following path:

- Start at Madison Station
- Make a left onto Green Avenue
- Make a right onto Wilmer Street
- Make a left on Green Village Road
- Make a right on Woodland Road
- Make a left on Loantaka Way
- Make a left on Blue Mill Road
- Turn around at Glen Alpine Road

Since this route is designed to serve Harding, it should not stop between Madison Station and Woodland Road. Stops for this route could be located once every half mile, and should be based on visits to sites and input from the local community.

Madison North Route: The northern local route would operate on the following path:

- Start at Madison Station
- Left on Greenwood Avenue
- Right on Hamilton Street
- Left on Rosedale Avenue
- Continue on Fairview Avenue
- Left on Ridgedale Avenue
- Right on Myrtle Avenue
- Right on North Street
- Right on Burnett Road to return

Stops for this route could be located once every half mile, and should be based on visits to sites and input from the local community.

Madison South Route: The southern local route would operate on the following path:

- Start at Madison Station



- Right on Prospect Street
- Left on Pomeroy Road
- Right on Samson Avenue
- Left on Woodland Road
- Right on Noe Avenue to turn around at Southern Boulevard

5.5.2.6 Running Times and Speeds

Using assumed speeds (18 MPH), one way running times for each route were developed. These are shown in Table 5-4 below.

Table 5-4: Proposed Routes with Mileage and Running Time

Station	Route Number	Mileage (One Way)	Running Time (Minutes)
Madison Station	Florham Park Route	4.53	15 minutes
	Harding Township Route	4.74	15.5 minutes
	Madison North Route	3.06	10 minutes
	Madison South Route	2.41	8 minutes

New vehicles, drivers, and a maintenance staff would be required to operate this service. A fare could be charged to offset operating costs. In order to minimize the number of vehicles required, these routes could be initially operated on a half hour headway, using six vehicles. These headways would not result in each route meeting each train, but the service could be designed so that one bus an hour meets a Hoboken train and one bus an hour meets a New York City train. After an evaluation, those routes which are successful and attract a significant amount of ridership could be continued, with less popular routes being eliminated, allowing for an increase in the frequency in service to 15 minutes, which would meet every train.



5.5.3 Convent Train Station

Convent Station is the only one of the three rail stations in the study corridor that is not located in an existing village center. As such, the access issues and constraints for this station are typical of a suburban rail station where auto-based trips are the predominant form of access for rail passengers. The 2010 Exxon Site Report included recommendations for improvements at a number of intersections along the segment of NJ 124 in Morris Township between Madison and I-287. The recommendations that directly relate to station access at Convent Station are those on NJ 124 at Convent Road and at Punch Bowl Road. Convent Road is the main access to Convent Station from NJ 124, and it also serves as a primary access point for the College of St. Elizabeth. Punch Bowl Road serves as a “back door” to and from the station parking areas via Old Turnpike Road, and carries substantial volumes of vehicular traffic during peak periods because it is one of the few connector roads between NJ 124 and Park Avenue (CR 623) in this area. The two NJ 124 intersections are included in the 2010 Exxon Site Report for a corridor-wide signal system upgrade. As mentioned previously, this improvement would include the upgrade of all signals and add video detection capability, pedestrian signals with countdown timers, and signal coordination between adjacent intersections.

The half mile area around Convent Station is an environment that is generally not hospitable to pedestrians and bicyclists. One major multi-use facility, the Traction Line Recreation Trail, connects directly to the Convent Station however; the connections from the trail to neighborhoods within walking and bicycling distance of the station are quite limited. The study area around the Convent Station differs significantly from Madison and Chatham because the station is not located in a town center: however, there are opportunities for increasing pedestrian and bicycling access to the station.

Roadway improvements were identified at several intersections, and road safety analysis improvements were identified at two intersections, along with limited additional pedestrian improvements. These recommendations are integrated in the list below. General bicycle recommendations follow the list of intersections, followed by parking and shuttle route recommendations.

- NJ 124 (Madison Avenue) & Convent Road (Co-1)
 - Modify signal timing to decrease overall intersection delay.
 - Correct and clarify the mismatched sidewalks and crosswalks at the intersection. Currently, the crosswalk across NJ 124 is on the opposite side of the intersection from the sidewalks that lead into the neighborhood to the south and toward the Convent Station to the north, as shown in Figure 5-20.

Figure 5-20: Mismatched Crosswalk and Sidewalk at Intersection of NJ 124 and Convent Road



- NJ 124 (Madison Avenue) & Convent Road (Co-2)
 - Install new pedestrian signals with countdown timers.
- Punch Bowl Road & Old Turnpike Road (Co-3)
 - To improve safety for pedestrians, relocate the existing south crosswalk to be at the intersection (instead of offset approximately 100 feet south).
 - It is recommended that a signal warrant study and safety assessment be performed to identify potential measures to improve sight distance underneath NJ TRANSIT rail bridge.
 - Potentially restrict left-turns from westbound Old Turnpike Road to southbound Punch Bowl Road due to limited sight distance to the north (this would result in higher traffic volumes exiting to NJ 124 via Convent Road, as indicated above).
 - Install bike lanes on Old Turnpike Road and Punchbowl Road if there is adequate width; otherwise, “Share the Road” bicycle signs on all approaches are recommended to potentially increase safety for bicyclists.
- NJ 124 (Madison Avenue) & Punch Bowl Road (Co-4)



- Short-term intersection improvements are underway, including a new eastbound left turn lane on NJ 124 (as this recommendation is underway it is not included in the map or table at the end of the document).
- New traffic signal, minor realignment of northbound approach, and reconstruction of bus turnouts.
- Punch Bowl Road & Old Turnpike Road (Co-5)
 - Install an ADA compliant pedestrian ramp on the south leg of the southwest corner.
 - Install a sidewalk on the south side of the west leg.
- Old Turnpike Road at Convent Road (Co-6)
 - To potentially improve safety for pedestrians, install sidewalks on the east side of the south and north legs, a sidewalk on the west side of the north leg, sidewalks on the north and south sides of the west leg, and ADA compliant pedestrian ramps on all approaches.
 - Old Turnpike Road west of Convent Road functions essentially as a parking lot. There are no sidewalks or travel lane striping, and walking through this road/ lot feels unorganized and unsafe. Old Turnpike Road should be reconfigured to include sidewalk connections from the parking stalls to the station and to sidewalks along Convent Road. This would create a safe space for pedestrians that would not require walking behind parked cars in the middle of the street. Bicyclists should also be accommodated.
- Old Turnpike Road at Convent Road (Co-7)
 - Install crosswalks and advanced pedestrian signs on all approaches.
 - To improve safety for vehicles, place the eastbound approach under stop control, which involves the installation of a stop sign and stop bar.
 - It is recommended to install “Share the Road” bicycle signs with in-road sharrows on all approaches to potentially increase safety for bicyclists.

5.5.3.1 Bicycle Recommendations

Aside from the Traction Line Recreation Trail, there are no bicycle routes near Convent Station, although one sign can be found on Convent Road between the Traction Line Trail and NJ 124. Each of the individual recommendations,



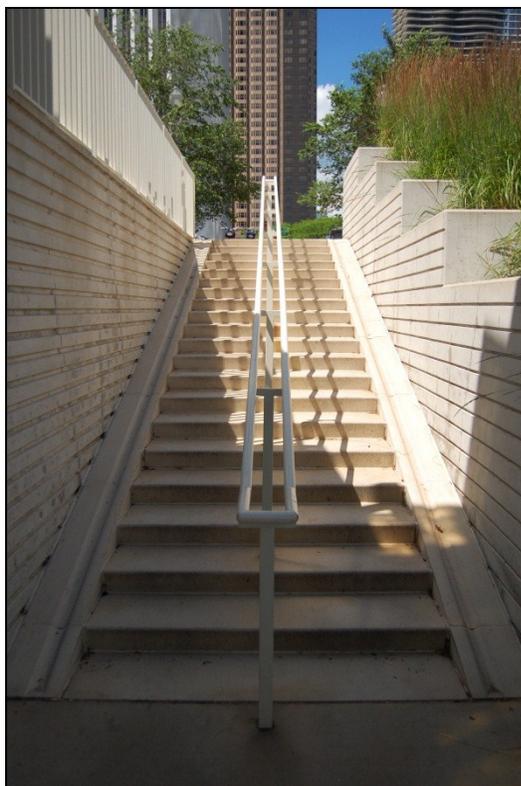
below, should be implemented as part of a complete network of bicycle facilities.

- New Bicycle Markings and Signage
 - The bicycle lane along NJ 124 ends abruptly at the border between Madison Borough and Morris Township. This bicycle facility should be continued along NJ 124, with bicycle markings and adding signage along the paved shoulder (Co-8).
 - Create a bicycle route along Convent Road between the Traction Line Recreation Trail and NJ 124. The route should be, preferably, a striped bicycle lane (Co-9).
 - Implement a bicycle connection from NJ 124 to Woodlawn Avenue and the Loantaka Reservation. The Morris County Bicycle and Pedestrian User Guide map indicates a connection along Fox Hollow Road, however, this roadway would need improvements to be appropriate for a bicycle connection (it is exceptionally steep and narrow without shoulders). Nevertheless, it is the most direct connection from the Loantaka Reservation to Convent Station and the Traction Line Recreation Trail (Co-10).
 - As part of intersection improvements at Old Turnpike Road and Convent Road, recommended above, install bicycle markings and signage, including wayfinding signs to the station (Co-11).
 - Punchbowl Road is an important roadway link within this study area. Currently, the roadway has no sidewalks and is narrow with limited shoulders in some areas. Reconstruction of this roadway to accommodate a bicycle route and sidewalks would provide a significant link in the bicycle network (Co-12).
 - There is no direct connection from Convent Station to Park Avenue. Access to the station could be improved with the addition of a bicycle and pedestrian connection through the College of St. Elizabeth (Co-13).

- Improvements to Existing Bicycle Routes
 - The bicycle route along Woodlawn Avenue, south of Convent Station, is the longest continuous bicycle route in the three-station study area. Within Morris Township, the bicycle stencils should be restriped. According to the MUTCD, bicycle stencils should be placed after each intersection or signalized driveway. Additional bike lane markings may also be placed in visible locations on the intersection approach. (Co - 14)

- Use of the Traction Line Recreation Trail could be improved through elimination of the staircase at Normandy Parkway. Alternatively, a wheel channel (Figure 5-21) should be added along the stairway to allow bicyclists to push, rather than carry, their bicycles (Co-15).
- Additional bicycle lockers should be installed at Convent Station to eliminate the current waiting list and in anticipation of future demand (Co-16).

Figure 5-21: Stairway with Bicycle Wheel Channel in Chicago, IL



5.5.3.2 Pedestrian Recommendations

Around Convent Station, there are currently few pedestrian facilities. Because of the suburban nature of nearby neighborhoods where traffic volumes are low and speeds are slow, there is no need to install sidewalks. However, along the main roadways that connect to the station, pedestrian facilities are recommended. Pedestrian recommendations outside the immediate station area are as follows:



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- Create an additional pedestrian (and bicycle) connection between the Traction Line Recreation Trail and Pilgrim Court and Constitution Way, the multifamily housing development to the north of the trail (Co-17).
- Improve lighting between the station and the Fairleigh Dickinson campus (Co-18).
- Connect the two segments of sidewalk at the west end of the station parking lot, as shown in Figure 5-22. The gap is a driveway to a gravel area which can be paved to complete the connection (Co-19).

Figure 5-22:

Top: Existing Condition at Convent Station

Middle: Example of a Contiguous Sidewalk Crossing at a Driveway (credit: Dan Burden)

Bottom: Location of Proposed New Sidewalk at West End of Convent Station Parking Lot





5.5.3.3 Parking Improvements

Convent Station has the most complex parking restrictions in the study corridor, and a number of complaints about the confusing parking regulations were received during field work and study outreach. The parking lots are owned by Morris Township, and the municipal regulations include four different types of parking: (1) resident permit holders (annual), (2) non-resident permit holders (annual), (3) daily metered parking (open to the public), and (4) daily metered parking for resident permit holders (for those residents who do not use the train station frequently enough to need an annual permit). Adding to this complexity is that there is no specially designated area for the non-residents described in Item (3); rather, the spaces available for these commuters are also available for resident permit holders. The combination of cash and electronic payment systems at the same location can be somewhat confusing.

The parking utilization study conducted for this project indicated that Convent Station has some excess capacity during a typical weekday. Municipal officials who oversee the parking permit system in Morris Township indicated that this might be a temporary situation related to turnover in the parking permits; the municipality was preparing to update its waiting list and release some additional parking permits as this study was being conducted. In addition, Convent Station is a less desirable location for non-resident commuters to park simply because it is the westernmost station of the three in the study corridor and is not as convenient for many commuters who drive to this corridor from Harding and Florham Park.

Proposed parking improvements at Convent Station are as follows:

- *Short-Term*: Review and simplify parking regulations, including the possible elimination of daily/ permit metered parking for residents (minimal cost to remove meters, if necessary). Install two additional electronic parking pay stations. Modify payment system to consolidate all payments (cash and electronic) into one type of machine (Co-19).
- *Intermediate-Term*: Conduct an ongoing review of resident and non-resident waiting lists to possibly re-allocate spaces among the different permit types, depending on demand (Co-20).
- *Long-Term*: Construct a multi-level parking structure on the site of Lot 1. This would involve the displacement of a maximum of 250 spaces, depending on the size and shape of the parking structure and the surface spaces that might remain along Old Turnpike Road due to inefficiencies in the irregularly-shaped land parcel where Lot 1 is



located. The TOD redevelopment analysis documented in the following section includes nearly four acres of land at this location, without that proposed redeveloped it is assumed that a parking structure would cover 2.5 acres in a configuration that provides the most efficient “footprint” for the parking facility. Based on the average ratio of 400 square feet per space in structured parking, a 2.5-acre area would provide 532 spaces in a two-level facility and nearly 800 spaces in a three-level structure. Since as many as 250 existing surface spaces would be displaced by this structure, the three-level structure would be needed to replace the 250 spaces and accommodate the high end (500-space) of the projected long-term shortfall for the three stations in the NJ 124 corridor. Additional traffic analyses would be required to assess the capacity of adjacent roadways to accommodate this proposed structure (Co-21).

5.5.3.4 Transit Improvements (Co-22)

In order to diminish parking demand at Convent Station and provide accessibility to the station from points outside of the immediate vicinity of the station, two shuttle bus routes were developed as depicted in Figure 5-12.

The north route at Convent Station would supplement the existing shuttle service (NJ TRANSIT routes 878 and 879) but would operate via Normandy Parkway, a more residential street in order to attract commuter rail riders who might park at Convent Station. NJ TRANSIT’s routes are primarily distributors of rail passengers from Convent Station. This proposed shuttle route would serve as a feeder; transporting patrons to the station in the morning and returning them home in the evening.

The proposed routing follows:

- Start at Convent Station along Old Turnpike Road
- Turn left on Langdon Lane
- Turn right on Madison Avenue
- Turn right on Normandy Parkway and merge into Normandy Heights Road
- Turn left on Woodruff Road
- Turn right on Whippany Road
- Turn right Woodcrest Drive
- Turn-around via Boxwood Drive

The south route would cover the residential neighborhoods adjacent to the station and would operate on the following route:

- Start at Convent Station along Old Turnpike Road



- Turn left on Punch Bowl Rd straight into Canfield Road
- Turn right on Easley Terrace
- Turn left on Bradwahl Drive
- Turn right on Yorke Road
- Turn right on Bennington Road
- Turn right on Woodland Avenue
- Turn left on Dwyer Lane
- Turn left on South Street
- Turn left on Spring Valley Road
- Turn left on Kitchell Road
- Turn left on Woodland Avenue
- Turn right on Steeple Chase Way
- Turn right on Pippins Way
- Turn right on Canfield Road
- Turn left Old Turnpike Road to turn-around

Using assumed speeds of 18 MPH, one way running times for each route were developed. These are shown in Table 5-5 below.

Table 5-5: Proposed Routes with Mileage and Running Time

Station	Route	Mileage (One Way)	Running Time (Minutes)
Convent Station	Convent North Route	2.66	8 minutes
	Convent South Route	4.38	15 minutes

New vehicles, drivers, and a maintenance staff would be required to operate this service. A fare could be charged to offset operating costs. In order to minimize the number of vehicles required this service could be initially operated on half hour headways using four vehicles. These headways could be designed so that one bus an hour meets a Hoboken train and one bus an hour meets a New York City train. After an evaluation, those routes which are successful and attract a significant amount of ridership could be continued, with less popular routes being eliminated allowing for an increase in the frequency in service to 15 minutes, which would meet every train.



5.6 Implementation and Order of Magnitude Costs for Proposed Improvements

A short-term, medium-term, or long-term implementation time frame has been assigned to each improvement. Each of these categories generally corresponds with an order of magnitude cost estimate with some exceptions as noted below.

Short-term recommendations include striping or restriping of crosswalks, bicycle stencils, and stop bars, as well as signage installation, traffic signal re-timings, and signal warrant studies. The cost of these projects varies by location, but typically these are low cost improvements that would not cost over \$25,000 per intersection, with individual sign and striping projects costing a fraction of this amount. Example costs in this category include electronic parking stations (\$10,000 to \$20,000 each). These projects could be performed under existing operating and maintenance funding. Of the approximately 150 improvements shown on Table 5-2, about two-thirds of the recommendations are short-term, low-cost improvements.

Medium-term recommendations include the addition of shuttle bus routes; changes to signals such as adding actuated signals or additional phases for pedestrians or left turns; installation of new ADA compliant pedestrian ramps and sidewalks, streetscaping or street lighting; completing a bicycle master plan; the addition of bicycle stencils and lanes; creation of a corridor-wide bicycle map; and installation of parking pay stations. It should be noted that bicycle markings are designated as medium-term because they must be studied before implementation. As for cost estimates, the cost of these projects would range from approximately \$25,000 to \$100,000, except for the shuttle bus routes, which are a high-cost item of over \$100,000. Additional information about costs can be found in the following sources:

- According to the Federal Highway Administration Pedestrian Safety Guide (2008) and Countermeasure Selection System website, a pedestrian ramp or curb ramp costs approximately \$800 to \$1,500 per ramp, sidewalks cost approximately \$11 per square foot, and curbs cost approximately \$15 per linear foot. According to the same site, streetlight installation varies depending on the fixture type and service agreement with the local utility. About 30 percent of recommendations fall into this category.
- The operating cost of the proposed shuttle routes would depend on a final routing, the number of stops, and the fares collected. Generally, the operating cost could be anywhere from \$100,000 to \$250,000 per route per year, and funding may be available from several sources, as



discussed in the next section.²³ There would be economies of scale in setting up multiple routes in the same geographic area since a single contractor would be more likely be interested and provide a competitive bid for multiple routes due to common costs like maintenance facilities that would be shared amongst the routes. Costs for the routes could range from \$600,000 to \$800,000 per year. The cost to purchase vehicles can be anywhere from \$80,000 to \$100,000 each; typically municipalities do not own the vehicles, they contract the service out to someone who owns them.

Long-term projects represent less than 10 percent of recommendations and are all high-cost improvements of over \$100,000. These consist of recommendations requiring significant lead time, design, and construction. Projects in this category would include construction of parking facilities; new or reconstructed roadways or trails to create additional pedestrian and bicycle connections; creation of the new kiss-and-ride at Madison Station; and physical intersection improvements. Specific costs for these long-term, high-cost elements are listed below:

- Create a new parking lot adjacent to Lot 1 on site of athletic field at Chatham Station (Ch-23). The estimated construction cost is about \$507,500 (145 spaces x estimated \$3,500 per space).²⁴
- Construct a three-level parking structure on the site of the existing Lot 1 at Chatham Station (Ch-24). The cost of the new parking structure is estimated at \$13.1 million (assuming average cost of \$20,000 per space).
- Construct a multi-level parking facility on the site of existing Lot #3 at Madison Station, yielding approximately 300 additional spaces in a 506-car parking structure. The cost of this measure would be about \$10.1 million, assuming an average cost of \$20,000 per space (Ma-31). If it is assumed that an additional 300-car parking facility would be needed to accommodate both additional commuters, to meet the high end of the projected parking deficit, and the municipal employees. The cost of this measure would be about \$6 million (300 spaces x \$20,000 per space). The cost of this additional garage constructed on the municipal lot across from the train station, would be about \$6 million (300 spaces x \$20,000 per space).
- Reconfiguration of the “kiss-and-ride” at Madison Station. The estimated cost for the reconfiguration is \$600,000 (Ma-31).

²³ <http://www.ezride.org/2-1-2-Whattheycost.asp>

²⁴ Assumes no land acquisition cost, and does not include cost of replacing athletic fields elsewhere in Chatham Borough. There is minimal open space available in the Borough, but one possibility would be to improve/expand the existing athletic fields located east of Parrott Mill Road and adjacent to the utility right-of-way along the Passaic River.



- Construct a multi-level parking structure on the site of Lot 1 at Convent Station. The estimated cost of this parking structure would be about \$16 million (800 spaces x \$20,000 per space). Additional traffic analyses would be required to assess the capacity of adjacent roadways to accommodate this proposed structure (Co-21).

5.7 Potential Funding

Funding for the proposed roadway improvements would likely come from multiple traditional resources. For minimal cost improvements, the cost of the physical improvements should be weighed against the potential cost of providing data, reports, other information in applications for grant funding, since grant funding is intended for capital projects with moderate to high costs. Furthermore, applying for grants increases the implementation time for improvements. For the physical safety improvements recommended in this project, local maintenance funds are recommended for implementation.

Potential funding sources for the proposed traffic, safety, and bicycle and pedestrian improvements would include traditional NJDOT funding, including County, Municipal, and Local Aid funding, and the recently adopted NJDOT Safe Streets to Transit (SSTT) Program. Under the provisions of MAP-21, the Federal transportation law adopted in 2012, some projects may be eligible for Surface Transportation Program (STP) funding. The corridor-length signal system improvements may be a good candidate for STP funding if it can be packaged as part of a multi-modal corridor improvement program that includes mobility, safety, pedestrian and bicycle accessibility, and transit improvements. Depending on the environmental benefits of this proposed improvement, it may also be eligible for Federal funding under the Congestion Mitigation and Air Quality Improvement (CMAQ) program.

Other potential funding sources could include:

- Federal Safe Routes to School funding can be used for pedestrian and bicycle infrastructure improvements within two miles of schools.
- Safe Streets to Transit grants are available through NJDOT.
- The NJDOT Highway Safety Improvement Program has funding for high crash locations.
- The NJDOT Division of Highway Traffic Safety has grants for law enforcement personnel to perform safety enforcement patrols.
- TransOptions has funding for safety education projects.

The Federal Government provides funding for shuttle services through its Congestion Mitigation and Air Quality program. Funds are distributed to the



states based on formulas that take into account population and the attainment status of the region for National Ambient Air Quality Standards. CMAQ funding is available to fund the operation and capital cost of a shuttle (with a local match of 20 percent) for the first two years. After the second year, funds need to be identified to pay for the full operation of the service. If fares are charged for the shuttle service they can offset the operating and maintenance cost but they will not be sufficient to cover the cost. The need to fully fund shuttle services beyond the second year often results in the discontinuation of service. If shuttles are intended to be implemented in this corridor, a stable and continuing local funding source should be established prior to application for CMAQ funding.

In New Jersey, CMAQ funds for shuttle service are distributed through NJ TRANSIT via the Community Shuttle Program. This competitive program evaluates proposed shuttles through New Jersey and provides vehicles and funds a portion of the operating costs. There are multiple municipalities throughout the state that participate in this. The MAD Shuttle is funded through this program and managed by TransOptions.

5.8 Transit-Oriented Development (TOD) Analysis

As described in Chapter 3, there are opportunities in Chatham Borough, Madison Borough, and Morris Township to envision and support implementation of denser development (infill and potentially more substantial development) surrounding the three study area commuter rail stations. Demographic analyses and trends indicate a need to serve a young professional as well as an older adult population in these communities that are increasingly interested in living in walkable and transit-oriented downtowns. Both Chatham and Madison boroughs are substantially transit-oriented environments, though they are still significantly auto-dependent with large parking areas throughout their downtowns and a lack of affordable downtown housing choices. The Convent Station area is the most auto-oriented of the three station areas, lacking a mixed-use and centralized land use composition, and having large parcels of land in use primarily for parking.

In order for any of these station areas to redevelop in a denser, mixed-use, and transit-oriented manner the following general conditions would be required:

- The municipalities would need to embrace a departure from the “status quo” in land use planning and zoning. Revisions to the zoning code in each municipality would be required to support redevelopment.



- Parcels of land for development/ redevelopment would need to be identified.
- The parcels would need to be of sufficient size and layout so that a developer would find them feasible for redevelopment, and that the zoning code would enable sufficiently dense development to support an acceptable return on investment.
- Real estate market conditions in the three municipalities would need to remain favorable.
- The redevelopment would need to secure environmental permits and the surrounding infrastructure would need to be assessed for its ability to support the development.

Also, as mentioned in Chapter 2, a commuter parking space deficit of 121 spaces exists and is forecasted to increase across the corridor stations ranging from 250 to 500 additional spaces. The high end of this forecasted demand cannot be accommodated in existing commuter surface lots. Development of structured parking is extremely expensive (\$20,000 per space), consumes valuable land within walking distance of the station, and is not easily or typically funded by other than local or private sources. While the recommendations and strategies to encourage station access by modes that do not require parking will result in some diminishment of parking demand, it is likely that additional commuter parking will be needed in this corridor in the future.

Given this data, the following alternative land use scenarios have been developed to give a general concept what type of development could be encouraged and supported at each station area. Each scenario was envisioned to occur in such a manner that the developer could also support the construction of structured parking to meet the high end of the forecasted commuter parking deficit. It is important to note that these alternative land use scenarios are highly conceptual and should only be viewed as the earliest step in visioning what the station areas could support. Significantly more detailed analyses would be required to advance any of these concepts. In addition, each of these concepts assumes that the development would need to absorb and support the development-related parking demand, the existing individual station parking demand that would be displaced by the development plus the high end of the forecasted commuter parking deficit. Additional analyses and discussion would be required to assess the actual parking need taking into account revised assumptions for bicycle, pedestrian, carpool, transit, and other access modes (assuming this project's recommendations are implemented), as well as an assessment of whether the entire deficit should be addressed at one station location or distributed among the three stations. The costs of accommodating the demand at three commuter parking structures would be greater than if it was all accommodated at a single, albeit higher, structure.



5.8.1 Background

An in-depth build-out and financial feasibility analysis of hypothetical TOD scenarios around each of the three stations was performed. The principle objectives for performing the build-out and financial feasibility analysis were:

- Objective 1: To determine the minimum dwelling unit density and land-use mix scale (e.g., residential, retail and/ or office) which could be financially viable – that is, a mixed-use development project which would permit a sufficient market rate of return, given associated risks for undertaking a TOD project at each station site.
- Objective 2: To determine a minimum dwelling unit density and land-use mix sufficient to provide a market rate of return to a private developer, given the associated risk inherent with the subject project, while allowing the TOD project to underwrite some portion of rail station infrastructure improvements – the most important of which being on-site structured parking.

It should be understood that objective 1 is independent of objective 2 (e.g., objective 1 is not dependent upon the viability of objective 2) while objective 2 is, necessarily, dependent upon the viability of objective 1, given that a private developer will not consider subsidizing public infrastructure if the underlying private investment returns are inadequate, given project risk. Consequently, this analysis takes into consideration and reports out on the viability of both objectives for all of the hypothetical scenarios examined.

5.8.2 Methodology

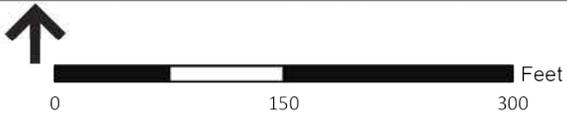
The TOD analysis was approached in the same way that a typical developer would approach it. Land parcels close to each of the three rail stations – within a 1,500 foot radius – were identified and examined for their redevelopment potential. This initial assessment: a) was based on the principle that TOD development typically occurs within a quarter mile of a rail station, b) considered each parcel’s current land use, and c) considered the effective utilization of the parcel (see Figures 5-23 through 5-25 for the land parcels identified). Undeveloped parcels dedicated to parking were considered as a priority.

For these parcels, TOD supportive assumptions regarding permitted land-use zoning within the identified land areas, with respect to building heights (e.g., commercial buildings of not more than five stories (mid-rise), multi-family structures of up to five stories (low- to mid-rise), parking requirements of 1.25 per residential dwelling unit, 3.0 parking spaces per 1,000 square feet (s.f.) of



retail and 3.0 per 1,000 s.f. of office space) were made. These TOD supportive assumptions would require changes in the municipal code as identified in the Analysis of TOD Scenarios with Commuter Parking and Required Zoning Changes section, below. Conventional and locally germane metrics were used for site work and construction costs. Further, assumed pre-development costs were identified and modeled within the financial development pro forma (e.g., estimated property acquisition, demolition, and general site improvements).

Table 5-6 identifies a wide range of land acquisition costs across the three station areas. This range in costs was estimated based on the number and scale of structures needing to be acquired (with commercial buildings and lot areas representing higher values than non-commercial property and/ or unimproved non-commercial land). Further, the share of public land (greatest by far in Convent Station at 76 percent) within a prospective TOD project area also influenced overall acquisition cost, under the assumption that publicly controlled land would be contributed to a TOD project as part of a public/ private partnership. It should be noted that acquisition costs were based on a cursory analysis of existing building types and uses and, therefore, should not be relied upon as a substitute for conducting a professional appraisal for these properties. Therefore, the estimated acquisition costs will need to be refined as specific development proposals are advanced for consideration.



Zoning

B-2
Business District

x.xx Parcel Area (Acres)



Morris County NJ 124
Transit Access Study

**Chatham Station Area
Parcel Ownership**

FIGURE 5-23

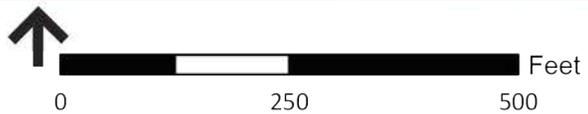
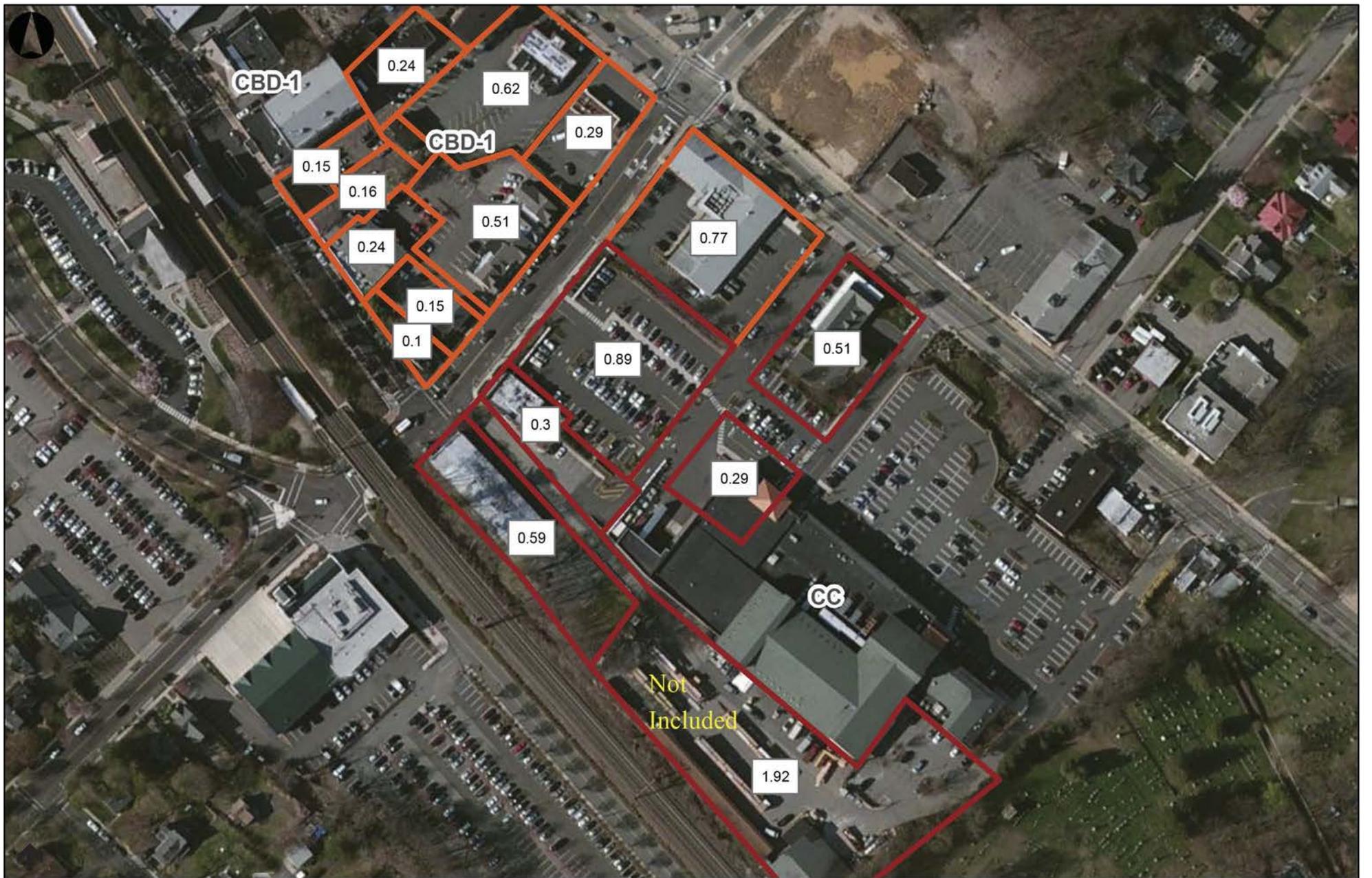


NJ 124 Corridor

Transit Access Improvement Study

Final Report

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- Zoning**
- CC (Community Commercial)
 - CBD1 (Central Business District)
 - x.xx Parcel Area (Acres)



Morris County NJ 124
Transit Access Study

**Convent Station Area
Parcel Ownership**

FIGURE 5-24



NJ 124 Corridor

Transit Access Improvement Study

Final Report

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 OL-5 (Office and Research Lab)

 OS/GU (Open Space Government Use)

 x.xx Parcel Area (Acres)



Morris County NJ 124
Transit Access Study

**Madison Station Area
Parcel Ownership**

FIGURE 5-25



Table 5-6: Key Land Metrics Associated with Prospective TOD Station Sites

	Parcels	Total Acreage	Estimated Acquisition Cost	Public Land Acres	Share of Public Land
Chatham	5	2.76	\$6,000,000	1.21	43.8%
Convent Station¹	6	6.45	\$3,000,000	4.9	76.0%
Madison	15	5.81	\$9,000,000	0.0	0.0%

¹Does not include the MetLife Insurance/Cushman Wakefield and Madison Hotel-Timbers properties (these excluded properties represent 13.32 acres)

5.8.3 TOD Scenarios Modeled and Key Assumptions

Development costs associated with development-related parking were broken out into surface and structured parking, with the scale of development determining the mix of each type of parking (e.g., a low-density, relatively small dwelling unit project would not require structured parking, while a high-density, large scale mixed-use project would likely require structured parking).

The pro forma development models (located at the end of this analysis) assumes no more than 50 surface parking spaces would be located within the near-term TOD target land area parcels, and all other zoning required parking as structured parking. No commuter parking spaces (surface or structured) were included as part of this initial development analysis; however, it is assumed that some portion of a mixed-use development’s parking spaces (surface and/ or structured) could be shared with a public transit use. Analyzing the dynamics of shared parking falls outside of the scope of this assignment and is, therefore, not addressed here. However, it should be explored as a potentially viable strategy.

The financial analysis performed (e.g., development and operating pro forma for each of the TOD scenarios examined) were performed on an unleveraged basis – that is, each development scenario was modeled without the assistance of debt, which is customary when performing a financial feasibility analysis for real estate development. Market area financial benchmarks such as the cash-on-cash rate of return (ROE) or return on equity and the internal rate of return (IRR) were incorporated into the operating pro forma to allow analysis of financial viability (identified financial benchmarks based on experience with similar scale and types of development were used). An assumption was made that a project sale (the entire mixed-use project) would occur in year 15, which is a reasonable hold period for a project of this size.



The financial return rate metrics showed that a seven percent internal rate of return and an eight percent annual average cash-on-cash rate of return over 15 years is needed to satisfy a developer's interest in building investment. Experienced professionals have found that these financial return metrics are reasonable in today's market climate, based on projects which are, principally, multi-family rental led. However, it is recognized that the above financial return rate metrics will vary according to a developer's tolerance for risk, personal interests in the development project, and changing market conditions.

Prior to performing financial modeling, it was necessary to understand the general parameters that should be used for conducting the analysis – that is, what should be the minimum and maximum dwelling unit densities per acre that would be assumed. In order to establish these parameters, a cursory review of TOD zoning regulations found on-line and within various TOD case study analyses, also found on-line, were examined. This examination showed that dwelling unit densities (required or otherwise) within many established or zoned TOD areas, nationally, range from as low as six to as high as 100 units per acre.

Unsurprisingly, the more urban locations featured the higher densities. However, many national studies and zoning regulations reviewed showed 30 units as a typical minimum dwelling unit density for TOD areas. No maximum dwelling unit density standard was identified. Though, based on the development character of each TOD community examined, generally, it is believed that a maximum dwelling unit density of 50 units per acre is at the upper end of what should be permitted.

The Task 4 analysis of zoning regulations in the municipalities surrounding the station areas also informed our dwelling unit density assumptions. For instance, in Madison, the Green Village Road Special Use District allows up to 28 dwelling units per acre with bonuses. By comparison, in the Township of Morris, the RH-20 mixed housing zone allows up to 20 dwelling units per acre. However, empirically, higher dwelling unit densities can have a positive impact on the economic viability of a TOD project; consequently, densities up to 50 dwelling units per acre were included in the model.

Accordingly, an Excel based financial model was developed which allowed for creation of development and operating pro forma associated with two TOD project scenarios modeled for each of the three station areas – a 30 dwelling unit per acre scenario (lower end threshold) and a 50 dwelling unit per acre scenario (upper end threshold).

At each station, each of the two TOD scenarios also included approximately 10,000 s.f. of low-rise professional office building space and approximately



15,000 s.f. of first floor convenience retail and restaurant space. The relatively small amount of office space included in these models reflects current area weakness in the office market (the Morris County office market features an overall vacancy rate of more than 22 percent – among the highest office vacancy rates in New Jersey). However, given the strong presence of large corporate facilities near Convent Station, as well as the relatively large and unimproved land area around Convent Station, it would not be unreasonable to foresee as much as 200,000 square feet of new office built in this corridor in the next ten years, assuming a stronger regional office market.

Much detail was built into the development and operating pro forma, including estimated annual inflation rates, estimated construction and lease costs per square foot, surface and structured parking costs per square foot, estimated acquisition costs, and estimated demolition costs (see Appendix C: Pro Forma Analysis).

The pro forma variables having the most influence on the prospective financial return rates (e.g., cash-on-cash and internal rate of return) are as follows:

- Residential construction costs per square foot
- Number of structured parking spaces
- Property acquisition costs
- Market residential rental rates
- Office and retail lease rates

While adjustments to any of the above variables had a noticeable impact on return rates within the cash-flow model, it should be understood that all of these variables, with little exception, are subject to market forces (and, in the case of parking, prudent zoning requirements) and, therefore, cannot be arbitrarily adjusted for the purpose of achieving the desired financial result. While a limited amount of sensitivity testing was performed by slightly adjusting the values of the above variables, no marked change in return rate was observed.

It was also important to make sure that the input variables were considered as market supportable, based on a prospective TOD project. For example, the average per square foot residential rental rate used in the analysis is \$2.00.²⁵ The estimated per square foot construction cost used in the analysis for the

²⁵ Based on an online review of current market rental rates for new apartment units near to shopping and transit amenities.



residential units is \$185 per square foot, which is inclusive of all hard and soft costs, and includes finishes and fixtures.²⁶

The cost estimates used for structured and surface parking per space are \$20,000 and \$3,500, respectively, based on inquiries with a national parking consulting firm with deep experience in the tri-state region.

Table 5-7 summarizes the expected investment return rates identified for each development scenario using the pro forma model:

Table 5-7: Financial Performance Metrics

Chatham Station	ROE	IRR
30 DU Scenario	6.3%	5.9%
50 DU Scenario	6.6%	6.4%
Madison Station	ROE	IRR
30 DU Scenario	6.4%	5.9%
50 DU Scenario	6.7%	6.5%
Convent Station	ROE	IRR
30 DU Scenario	7.1%	7.2%
50 DU Scenario	7.2%	7.3%

While no scenario achieves both the target eight percent or higher ROE (cash-on-cash rate) and a seven percent internal rate of return rate (IRR) or higher, the Convent Station scenarios come closest – achieving IRRs of 7.2 and 7.3 for the 30 and 50 dwelling unit scenarios, respectively.

Principal cost factors which depress the financial performance for both Chatham and Madison include:

- High estimated upfront acquisition costs since both of these locations feature a number of improved properties in good condition (primarily commercial); and
- Associated demolition costs.

It should be noted, however, that the above financial return findings should not be taken to mean that a TOD would be unsuccessful or impossible to

²⁶ This figure, which was validated by RS Means regional construction data, a number of architects and developers consulted through outreach on previous TOD projects. Based on this information and professional experience, the value is considered a proven number.



implement in Chatham or Madison. To the contrary, there will be a few developers who, notwithstanding the identified low return rates, will still be interested in pursuing TOD at these locations, if in fact alternative development opportunities in the region are not significantly more attractive, financially.

Still, other development interests will seek to close the financial gap (e.g., the difference between the above identified financial return metrics and the return metrics they desire, given project risk) by requesting public financial assistance in the form of real property tax relief or direct financial contribution towards property acquisition and/ or infrastructure improvements (e.g., structured parking). It should be understood that the public sector, while supportive of TOD and amenable to entertaining changes to certain zoning ordinances which would offer the equivalent of financial relief to a prospective TOD project (e.g., reduction in the parking ratios required, increases in dwelling unit density, increases in lot area coverage, etc.), can only influence the financial viability of a TOD by only so much – and the variables used within financial modeling performed for this analysis push the upper limits of that influence.

It is important to note that, while TOD activity is certainly viable (given the above caveats and qualifications), a TOD of any scale or dwelling unit density would be challenged, at best, to contribute any financial assistance towards public infrastructure improvements, such as a new parking structure benefitting commuters (see implications of structured commuter parking below). As stated above, the greater likelihood is that a TOD project that goes forward within any of the municipalities in the study area may require financial assistance from the public sector. Table 5-8 provides a summary of the analysis of each location and scenario.

Table 5-8: Summary of Development Metrics

Station Area	Dwelling Units per Acre	Total Dwelling Units	Office S.F.	Retail S.F.	Structured Parking	Total Project Cost (\$M)	Return Rates	
							IRR	ROE
Chatham								
	30	83	9,618	24,045	204	\$40,268	5.9%	6.3%
	50	138	9,618	24,045	273	\$57,148	6.4%	6.6%
Convent								
	30	194	11,238	25,287	351	\$71,421	7.2%	7.1%
	50	323	11,238	25,287	513	\$110,869	7.3%	7.2%
Madison								
	30	174	10,123	25,308	324	\$72,770	5.9%	6.3%
	50	291	10,123	25,308	469	\$108,304	6.5%	6.6%

Source: 4ward Planning LLC, 2013



5.8.4 Financial Analysis of TOD Scenarios

An order of magnitude analysis of the impacts of the new hypothetical development on the municipal taxable values of the proposed properties to be developed was performed. One of the potential economic benefits of TOD is the generation of additional tax ratables for local municipalities. Table 5-9 indicates the existing property values in each of the three study areas and the estimated increases in values that could be anticipated from redevelopment at 30 and 50 dwelling units per acre. As shown, TOD developments could increase taxable property values in the Convent area by approximately \$29 to \$61 million, in Madison by \$38 to \$68 million, and in Chatham by \$21 to \$40 million, depending upon the number of dwelling units constructed per acre. Therefore, each location could potentially experience a significant increase in property tax collections due to the new, higher density TOD. Taxable values should not be confused with tax revenue.

It is important to recognize that the TOD analysis for Convent Station excluded two of the largest privately held land parcels within the 1,500 foot study area – the MetLife/ Cushman Wakefield low-rise office building and adjacent surface parking lot, and the Madison-Timbers Hotel Conference Center and adjacent surface parking lot. These two properties, combined, represent slightly more than 13 acres (more than two times the acreage included in the Convent Station analysis). While it should be assumed that the inclusion of the aforementioned properties within a Convent Station TOD would require in-depth negotiations with the current property owners and, likely, a public/ private partnership involving ground leases on existing surface parking areas, in order to permit mixed-use development and structured parking, the financial and real property tax implications of such an expanded project would be significantly greater than that of the analyzed scenarios (estimated to be more than two times greater than the analyzed 50 dwelling-unit Convent Station Scenario). For example, assuming a total of 16 buildable acres (as opposed to 6.45 buildable acres under current development scenario), the total number of dwelling units under a 50 unit per acre scenario would increase from 323 to 800 units. Retail square footage would likely expand from approximately 25,000 s.f. to just over 67,000 s.f. Office square footage would remain relatively constant, given current and near-term office market weakness metrics. Total development costs associated with the increased residential and retail square footages would rise from \$111 million to \$270 million (a 143 percent increase).



Table 5-9: Taxable Value Analysis

CONVENT TOD STUDY AREA			
Land Use	Existing Taxable Value¹	30 Dwelling Units/Acre Projected Taxable Value	50 Dwelling Units/Acre Projected Taxable Value
Residential	\$0	\$48,955,500	\$81,592,500
Commercial	\$25,713,000	\$5,408,519	\$5,408,519
Total	\$25,713,000	\$54,364,019	\$87,001,019
	Difference from Existing Value:	\$28,651,019	\$61,288,019
MADISON TOD STUDY AREA			
Land Use	Existing Taxable Value¹	30 Dwelling Units/Acre Projected Taxable Value	50 Dwelling Units/Acre Projected Taxable Value
Residential	\$147,600	\$44,097,900	\$73,496,500
Commercial	\$10,710,400	\$5,188,214	\$5,188,214
Total	\$10,858,000	\$49,286,114	\$78,684,714
	Difference from Existing Value:	\$38,428,114	\$67,826,714
CHATHAM TOD STUDY AREA			
Land Use	Existing Taxable Value¹	30 Dwelling Units/Acre Projected Taxable Value	50 Dwelling Units/Acre Projected Taxable Value
Residential	\$0	\$20,948,400	\$39,914,000
Commercial	\$5,294,600	\$4,929,250	\$4,929,250
Total	\$5,294,600	\$25,877,650	\$44,843,250
	Difference from Existing Value:	\$20,583,050	\$39,548,650

¹ Existing taxable values are sourced from Morris County tax assessor data records.

However, the inclusion of the additional properties under the Convent Station scenario would only slightly raise the key return rates examined (IRR and ROE) for a development sponsor. This does not take into consideration the cost associated with the development of additional commuter rail parking or



another scenario which would include only the parking portions of the MetLife/ Cushman Wakefield and Madison-Timbers Hotel sites.

5.8.5 Implications of Structured Commuter Parking on TOD Financial Return Rates

The financial performance of the modeled TOD projects was reassessed with the assumption that commuter parking was included as part of the developer's investment. Specifically, the two key return rates examined (IRR and ROE) were reexamined to determine how they would respond if the additional project cost of structured commuter rail parking were to be included in the development and operating pro forma of the scenarios modeled.

This issue was analyzed by increasing the cost of structured parking associated with project development (residential, retail, and office) in \$1,000,000 increments. It was further assumed that the commuter parking fees charged would be no more than an equal offset to annual maintenance costs for the structured parking (under the assumption that structured parking yields little profit).

The findings suggest that for each \$1 million increase in the cost of structured parking, financial return rate performance decreases by approximately a tenth of a percentage point. Consequently, a \$10 million dollar structured parking garage would likely lower both key return rates by a full percentage point – making it less likely that private investment would underwrite the cost of the commuter structured parking, without substantial financial assistance. A \$1 million structure would yield only 50 parking spaces; a \$10 million structure would yield 500 spaces. At Chatham and Convent stations, the proposed TOD would displace existing commuter parking which would need to be re-captured in the TOD-supported parking structure. At all three stations, the financial performance assessment was performed assuming that the entire high end of the forecasted parking deficit range (500 spaces) was incorporated into the TOD structure at each station. This is the worst case scenario and was used to show the maximum impact per site. More realistically, the access improvements recommended earlier in this chapter would reduce the high end deficit and some of the needed parking at each station location. Table 5-10 summarizes the impact of adding the commuter parking to each TOD. The change in financial return is the smallest at Madison Station due to the fact that existing commuter parking was not displaced by the potential TOD.



**Table 5-10: Financial Performance Metrics with Commuter Parking
(displaced spaces plus 500 additional spaces)**

	ROE without Commuter Parking	IRR without Commuter Parking	Commuter Parking Needed*	Cost of Parking Structure	ROE with Commuter Parking	IRR with Commuter Parking
Chatham Station						
30 DU Scenario	6.3%	5.9%	613	\$12.5M	5.1%	4.7%
50 DU Scenario	6.6%	6.4%	613	\$12.5M	5.4%	5.2%
Madison Station						
30 DU Scenario	6.4%	5.9%	500	\$10.0M	5.4%	4.9%
50 DU Scenario	6.7%	6.5%	500	\$10.0M	5.7%	5.5%
Convent Station						
30 DU Scenario	7.1%	7.2%	1,089	\$22.0M	4.9%	5.0%
50 DU Scenario	7.2%	7.3%	1,089	\$22.0M	5.0%	5.1%

*Does not include development parking needs; development parking needs already captured in ROE and IRR without parking rates

5.8.6 Analysis of TOD Scenarios with Commuter Parking and Required Zoning Changes

The analyses of potential transit oriented developments at or near the three stations indicate that all would require some adjustments to the current zoning in order to be achievable. Most importantly, densities and heights above what is permitted by the existing zoning in each of the locations, which cover three separate municipalities, would need to be increased in order to permit the amount of development needed to make each scenario financially feasible. In addition, depending on how parking is to be provided on a particular property, permitted uses might need to be specified in a way such that public parking is allowed as an accessory or free-standing use.

The zoning revisions that would be required, and the general outline of what development they might result in, are discussed below. The scenarios were selected to be representative of possible developments for analysis purposes, but are not intended to be proposals for development. Other configurations could, for example, utilize larger building footprints, resulting in additional first floor commercial space and allowing the residential units to be accommodated within a shorter building. Any selection of an alternative to pursue would require consideration of a range of factors including financial, market, design, and public policy considerations.



5.8.6.1 Chatham Borough TOD

The area identified in Chatham as a possible TOD site is zoned B-2 Regional Business District. Permitted uses include offices, services, retail, and restaurants, among others. Apartments are a conditional use as is commercial recreation. The potential uses likely to be included in a mixed use TOD are, therefore, already permitted in the zone.

In keeping with Chatham’s planning policies, the scale of permitted development in the B-2 is relatively low with a maximum height of two stories or 35 feet and a Floor Area Ratio (FAR) of 30 percent. Thus, on the 2.76 acres identified for possible development, only 36,000 square feet of floor area could be developed with the existing code, or, approximately 36 apartments, which is significantly less than what would be needed for economic viability.

Chatham’s B-4 Community Business District permits more dense developments: three stories, 90 percent lot coverage, and no FAR. Residential units are permitted as conditional uses. As in the B-2, the Financial Feasibility analysis indicates that it would not be possible to achieve the density required to make a TOD feasible on the subject properties.

Since Chatham does not have a zone that would permit the necessary density in to achieve viability, the zoning of the properties would need to be adjusted, either by revisions to the B-2 code or through creation of a new TOD zone.

The requirements of new zoning could, for example, include the following:

- Height of five to nine stories
- FAR value of 0.9 for the mixed use building plus additional for any above-ground parking structure as per Chatham’s Code
- 1.25 parking spaces per residential unit; three spaces per 1,000 square feet of commercial space (lower numbers to reflect adjacency to the railroad and downtown)

With these basic controls, the 2.76 acre lot could accommodate a range of building layouts and sizes. For example, the lot could accommodate a five-story building containing approximately 21,500 square feet of first floor commercial space and four stories of residential space above, containing a total of 86 units. This is comparable to the 30 unit per acre scenario in the TOD Financial Analysis. With the indicated controls, the development alone would need to provide 172 parking spaces. It is assumed that the building would be constructed in the portion of the site closer to NJ 124, providing good street frontage for the first floor commercial uses.



If the plan were to develop at 50 units per acre, the higher range in the Financial Analysis, the building would have 138 units and would need to have at least six floors of apartments above the first floor commercial space, resulting in a seven-story building. Parking for the mixed use building would need to total 237 spaces.

The proposed development would displace approximately 113 public parking spaces. Added to the spaces needed for the new development, this would give a total of 285 for the 30 unit/ acre scenario, and 350 for the 50 units/ acre scenario. In addition, the objective is to also provide commuter spaces on the site. If that number is 500 (the high end of the forecasted parking deficit), it would bring the required total spaces to 775 and 850 for the two scenarios (a \$15.5 million and a \$17 million structure respectively). A free-standing parking structure with a 40,000 s.f. footprint can typically accommodate approximately 100 cars per floor, depending on its dimensions and design. Then, an estimated eight or nine floors of parking would be needed. Depending on soil conditions and other engineering considerations, it is possible that one or more levels might be provided below grade, but at greater expense. The structured parking might be fit on the site in various ways, such as one long structure parallel to the tracks or two separate structures to serve: (1) the development; and (2) commuters/ shoppers. Overall, this development scenario would result in approximately one acre of building, one acre of parking and ¾ acre for circulation, open space, pedestrian areas, etc., recognizing that there are multiple ways in which the various elements could be arranged on the site. As an alternative, some or all of the parking could be located within the mixed use building, which would leave more open space while requiring a substantially taller structure. However, it would not be necessary to accommodate all 850 parking spaces in the shared parking structure if additional commuter parking was constructed on the south side of Chatham Station adjacent to the existing Lot #1, as described previously.

Table 5-11 summarizes the potential building heights for the proposed TOD at Chatham Station. A more detailed analysis of building layout and available lot percentage (100 percent was assumed) would be needed to formalize the potential building heights since multiple arrangements are possible.

Table 5-11: Chatham TOD Potential Building Heights

TOD Scenario	TOD Structure	Parking Structure*
30 Units per Acre	5 stories	8 stories
50 Units per Acre	7 stories	9 stories

*Includes development and commuter parking

Figures 5-26 and 5-27 depict an alternate to the building arrangement described above. The alternative layout depicts two five-story residential



buildings, one additional five-story building with two floors of residences atop one floor of office, and two floors of retail. In these depictions, a five-story parking garage would accommodate the development parking requirement as well as the displaced commuter parking, but it does not depict the additional 500 spaces to meet the corridor's forecasted parking deficit. These figures visualize the potential massing of TOD at each of the station areas and represent the current commuter parking demand as well as the parking needed for the new development. It is assumed that the future demand would be distributed amongst the municipalities and any future parking allocation would be in addition to what is depicted here.

5.8.6.2 Madison Borough TOD

The properties identified for TOD in Madison are located in two zoning districts: CBD-1 and CC Community Commercial. Though neither would permit the typical density required for a viable TOD, the Town's Green Village Road Special Use District (GVRSU) does provide some elements that are potentially more supportive of the development scenarios being considered. Most importantly, with bonuses the residential density in the GVRSU, which was designed to encourage TOD on a specific site, can go as dense as 28 units/ acre with heights limited by application of a sky exposure plane but potentially permitting five stories with a mix of uses. In order to realize the TOD potential around Madison Station at 30 or 50 units per acre, creation of a new zone permitting higher densities and a mix of uses would be needed.

The Madison properties, a total of 5.81 acres, are divided by Prospect Street. The properties to the west total 2.46 acres; and 3.35 acres to the east. No commuter parking would be displaced in developing those properties, so parking would only be needed to serve the development plus additional commuter parking that is needed to meet the projected study area demand.

A variety of building arrangements and heights could accommodate the requirements of the TOD. For instance, on the 2.46 acre west site, zoning at 30 units to the acre would result in 74 units. This would be slightly higher than the 28 units/ acre allowed in the GVRSU with bonuses. The units could be placed within a five-story building – four stories of apartments over a first floor of commercial. The building footprint would be approximately 18,500 s.f. and the total floor area would be 92,500 s.f. Thus, a FAR of 0.9 would be necessary to accommodate this structure; additional FAR would be needed to accommodate any structured parking in accordance with the definition in Madison's code. At 50 units per acre, 123 units would be produced; a six-story building with a footprint of 24,600 s.f. could accommodate first floor commercial plus five stories of apartments.

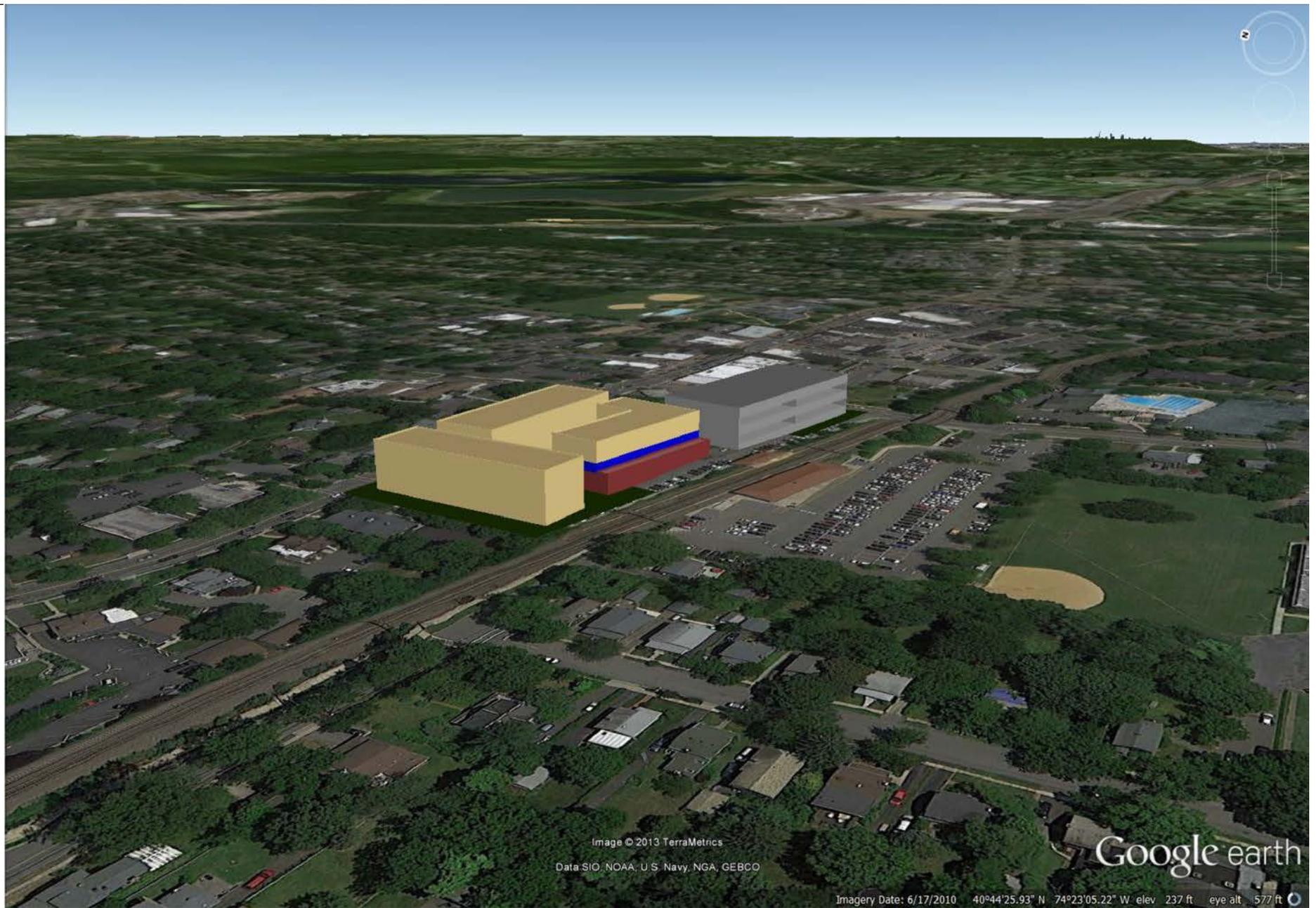


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**Massing Analysis, Chatham Station
Isometric View - Looking East**

FIGURE 5-26



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**Massing Analysis, Chatham Station
Street View**

FIGURE 5-27



Required parking for the 30 and 50 units per acre scenarios would be 148 and 228, respectively. The high end of the projected commuter parking deficit range is an additional 500 spaces. Assuming 200 spaces are provided on the smaller west site, this would require approximately 348 spaces or 448 spaces in the two development scenarios (a \$7 million and \$9 million parking structure, respectively). With a 40,000 s.f. level of parking providing approximately 100 spaces, these space totals would translate into three or four stories of structured parking (Garage 1). There is sufficient acreage on this site to accommodate a free-standing structure (approximately one acre for the parking, a half acre for the building, one acre for driveways, open space). Alternatively, the parking could be provided beneath the building (and perhaps partially below grade), which would leave more open space but result in a taller building.

On the east side of Prospect Street, the identified parcels total 3.35 acres. Taking an approach similar to the analysis done for the west side, a development at 30 units per acre would yield about 100 units. In a five-story building, with 25 units per floor, the building footprint would provide for approximately 25,000 s.f. of commercial space and require 200 parking spaces. In the 50 units per acre scenario, a similar five-story building would hold 167 units and 42,000 s.f. of first floor commercial space. The parking requirement would be 335 spaces. Adding in the 300 remaining commuter spaces projected high-end deficit (in addition to the 200 proposed for the west side of Prospect Street) would create a need for 500 and 635 spaces (\$10 million and \$13 million parking structure respectively) for the two scenarios respectively. Assuming one acre for the building, 0.5 acre for open space and circulation would leave approximately 1.85 acres for a parking structure. At approximately 185 spaces per level, a three- or four- story garage would be needed (Garage 2). This parking could possibly be split into two smaller structures or sections to separate the development parking from that provided for commuters, although this could increase construction costs. Splitting the parking in this fashion and into separate structures on either side of Prospect Street might enable an acceptable rate of return on the development plus partial commuter parking scenario for a developer, thereby having at least some of the parking deficit met by private developer investment.

Table 5-12 summarizes the potential building heights for the proposed TOD at Madison Station. A more detailed analysis of building layout and available lot percentage (100 percent was assumed) would be needed to formalize the potential building heights since multiple arrangements are possible.



Table 5-12: Madison TOD Potential Building Heights

TOD Scenario	TOD Structure	Parking Structure*
30 Units per Acre	5 stories	Garage 1: 3 stories Garage 2: 3 stories
50 Units per Acre	6 stories	Garage 1: 4 stories Garage 2: 4 stories

*Includes development and commuter parking

Figures 5-28 and 5-29 depict an alternate to the building arrangement described above. The alternative building arrangement would include eight individual residential structures. One of the two buildings would also accommodate retail development while another would accommodate retail and office development. As depicted, one of the buildings would wrap around the six-story parking garage on two sides, concealing the garage when viewed from NJ 124. The garage as depicted would accommodate the development parking but it does not depict the additional 500 spaces needed to meet the corridor’s forecasted demand. These figures visualize the potential massing of TOD at each of the station areas and represent the current commuter parking demand as well as the parking needed for the new development. It is assumed that the future demand would be distributed amongst the municipalities and any future parking allocation would be in addition to what is depicted here.

5.8.6.3 Convent Station TOD

The area proposed for possible TOD near the Convent Station totals 6.45 acres and is zoned Open Space/ Government Use by Morris Township. To the west of Convent Road there are 3.94 acres predominantly utilized for commuter parking. To the east, the 2.51 acres includes both a Township-owned commuter parking lot and a portion of the parking owned by the adjacent church, some of which is made available to commuters. As a result, development of these parcels would require replacement of approximately 589 commuter spaces in addition to the 500 additional spaces needed in the area and those required for the new development.

The highest density residential zone in the Township, RH-20, which provides for 20 units per acre, is intended to meet affordable housing obligations. Across the railroad tracks from the potential TOD parcels is a townhouse development that is zoned TH-8 with a maximum density of eight units per acre. There is no zone designed specifically for TOD. In order to realize the TOD potential



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**Massing Analysis, Madison Station
Isometric View - Looking East**

FIGURE 5-28



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**Massing Analysis, Madison Station
Street View**

FIGURE 5-29



around Convent Station, the creation of a new zone permitting higher densities and a mix of uses would be needed.

A variety of building arrangements and heights could accommodate the requirements of the TOD. For analysis purposes, the two sides of Convent Road were initially considered separately. On the 3.94 acre west site, zoning at 30 units to the acre would result in 118 units. If these were placed within a five-story building – four stories of apartments over a first floor of commercial, the building footprint would be approximately 30,000 s.f. and the total floor area would be 92,500 s.f. Thus, a FAR of 0.9 would be necessary to accommodate this structure. Since the Township Code’s definition of Floor Area excludes areas devoted to parking, no additional FAR would be required for a parking structure. At 50 units per acre, 197 units would be produced. A six-story building with a footprint of 39,000 s.f. could accommodate first floor commercial plus five stories of apartments.

Required parking for the 30 and 50 units per acre scenarios would be 208 and 314, respectively. In addition, assuming that 350 of the 589 displaced commuter spaces would be accommodated on this site. Moreover, an additional 500 commuter spaces would be required to meet the high end of the forecast parking deficit range. Assuming that 300 of these are provided on the west site, which is larger than the east site, the total requirement on the west site would be approximately 858 or 964 in the two scenarios (\$17 million and \$19 million parking structure, respectively). With a 60,000 s.f. level of parking typically able to provide approximately 150 spaces, this would translate into six or seven stories of parking (Garage 1). While 3.94 acres would theoretically be sufficient to accommodate the TOD building plus a parking structure with a 60,000 s.f. footprint and accessory open space and circulation, the configuration of the west parcel, which is triangular in shape, could substantially inhibit the possibility of achieving all of those elements in a realistic and efficient manner. Making the building taller and narrower and placing some of the parking below grade are possible design solutions that would need to be explored if such a TOD were advanced on this site.

The east parcel, though substantially smaller at 2.51 acres, has the advantage of being more regularly shaped. A five-story development at 30 units per acre would provide 75 units with a 19,000 s.f. first floor accommodating commercial space. At 50 units per acre, a six-story building would provide for 125 units and 25,000 s.f. of first floor commercial space. The parking required for these two scenarios would be 132 and 200 spaces, respectively. Combined with the remaining 239 replacement spaces and the 200 spaces needed for additional demand, the parking space totals would be 571 (\$12 million structure) and 639 (\$13 million structure), respectively. With a one acre footprint, this would require five to six story structured parking (Garage 2). It appears that the 2.51 acres could accommodate a development of that size.



Table 5-13 summarizes the potential building heights for the proposed TOD at Convent Station. A more detailed analysis of building layout and available lot percentage (100 percent was assumed) would be needed to formalize the potential building heights since multiple arrangements are possible.

Table 5-13: Convent TOD Potential Building Heights

TOD Scenario	TOD Structure	Parking Structure*
30 Units per Acre	5 stories	Garage 1: 6 stories
		Garage 2: 5 stories
50 Units per Acre	6 stories	Garage 1: 7 stories
		Garage 2: 6 stories

*Includes development and commuter parking

Figures 5-30 and 5-31 depict an alternate to the building arrangement described above. This alternate layout would include six individual five-story residential structures. One of the two buildings would also accommodate retail development while another would also accommodate retail and office development. As depicted, one of the buildings would wrap around the five-story parking garage on two sides, partially concealing the garage when viewed from NJ 124. The garage as depicted would accommodate the development parking as well as the displaced commuter parking. These figures visualize the potential massing of TOD at each of the station areas and represent the current commuter parking demand as well as the parking needed for the new development. It is assumed that the future demand would be distributed amongst the municipalities and any future parking allocation would be in addition to what is depicted here.

In looking at the Convent Station area, the large surface parking lots for the adjacent hotel and office building are obvious features that could, potentially, be incorporated into a TOD at this prime location. While any such development would need to be carried out in partnership with the two property owners and their tenants, the substantial acreage of their properties (13.32 acres in total), and the fact that the at-grade lots represent underutilization of a key site, suggests that further exploration of their use would be warranted. Including either one or both of these properties within the TOD planning could provide much greater flexibility in designing a realistic, achievable development that includes the desired level of parking.



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**Massing Analysis, Convent Station
Isometric View - Looking North**

FIGURE 5-30



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Morris County NJ 124
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**Massing Analysis, Convent Station
Street View**

FIGURE 5-31



5.8.7 Traffic Implications of the TOD

For all three stations, the TOD redevelopment scenarios that have been analyzed in this study provide an opportunity to incorporate complementary mixed uses in the immediate vicinity of the rail stations. This will allow for “shared trips” that effectively reduce the person-trips associated with the proposed land uses compared to the net person-trip generation rates that would be associated with each of the land uses if they were not located in close proximity to each other. For example, a 50-unit apartment building will generate X person-trips on a daily basis, while a coffee shop will generate Y person-trips during the course of the same day. If these two land uses are located far apart they will have their own separate trip-making characteristics. If, however, the coffee shop is located on the ground floor of the 50-unit apartment building, then many of the person-trips associated with each land use will actually involve the same person. Locating these two land uses in close proximity to a rail station such as those along the NJ 124 corridor provides an even greater opportunity for shared trips (e.g., a person who leaves his apartment in the morning and stops at the coffee shop downstairs before walking down the block to the train station is counted as three separate person-trips for the separate land uses but has little impact on the transportation network). Given that the scenarios in Chatham and Madison are already TODs, complementary trip-making with existing uses in a non-automotive fashion will also occur. In this way, each of the municipalities could increase their ratables without the typical increases in trip-making. However, each of the developments would accommodate some parking and with the added allowance for commuter parking, trip-making from these sites will increase and will have implications that would need careful consideration, as described below.

5.8.7.1 Chatham Station Area

The location of the aforementioned redevelopment option at Chatham Station will require careful consideration of traffic circulation along Railroad Plaza North. The existing Fairmount Avenue intersection may require upgrades, particularly in light of the close intersection spacing along Fairmount between the Lot #1 driveway, Railroad Plaza North, Fire House Plaza, and Main Street (NJ 124). Converting Railroad Plaza North to a one-way westbound street at this location might reduce turning conflicts at these closely-spaced intersections. Regardless of whether Railroad Plaza North functions as a one-way or two-way street, the signal warrant study recommended and described previously for the intersection of NJ 124 and Railroad Plaza North / Coleman Avenue will be critical under the proposed TOD redevelopment plan.



5.8.7.2 Madison Station Area

Traffic circulation along Prospect Street could be impacted considerably by the proposed development. To the extent possible, the main vehicular access point on the east side of Prospect Street should be fixed as a fourth leg of the existing intersection of Prospect Street and Lincoln Place. Feasible access options on the west side of Prospect Street may be constrained by existing driveway locations on both sides of Prospect Street, and some consideration should be given to restricting access to right-in/ right-out only for any new parking structures that connect to the local street network between existing intersections.

5.8.7.3 Convent Station Area

Traffic access is limited to Convent Road and Old Turnpike Road, and the intersections of these two roadways with NJ 124 and Punch Bowl Road, respectively, will likely require substantial improvements. One issue of note at this station, which has been discussed previously in this report, is that the irregular shape of these parcels may not be ideal for large parking structures. To optimize the use of land and provide as many parking spaces as possible in a reasonably-sized parking structure, it may be feasible to re-align Old Turnpike Road along its approach to Convent Road to provide a more efficient rectangular shape to the area between Old Turnpike Road and the NJ TRANSIT rail alignment. This would require the acquisition of property on the south side of Old Turnpike Road that is now occupied by the parking areas for the Madison Hotel and the adjacent office building to the west.

5.8.8 Key Findings of the TOD Analysis

The financial and other analyses of TOD scenarios was performed to assess if a combined TOD and commuter parking scenario could exist at any of the three corridor station areas, incorporating private investment to provide the needed commuter parking. Based on these analyses the following key findings result:

- Viable TOD could be implemented at each of the three stations, without the added investment of commuter parking. Even with commuter parking added, the rate of return on the investment might be attractive to a developer if provided with public assistance or if other regional investments were not more attractive.
- The analyses with commuter parking by station assumed that the high end of the corridor-wide parking deficit range would need to be accommodated at that station (500 spaces). This is the worst case scenario and it was used to show the maximum impact per site. More



realistically, the access improvements described earlier in this chapter would reduce the high end deficit and some of the needed parking would be developed at each station location. Thus the impact of commuter parking to the developer and to each site would be less than described herein and would need to be quantified should any of the TOD scenarios progress.

- Development at each of the proposed station sites would require revised and denser zoning codes and allowances. At each station area, the heights of the proposed development would exceed those in the immediate vicinity. Heights ranging from five to seven stories would be required.
- Development of the properties at each of the sites would result in improved taxable values for those properties. Additionally, the quality of the urban design and architecture, and how well parking could be concealed, would determine whether the development impact on adjacent properties would be positive. Development at each station location would result in increased trip-making which would result in impacts upon the street network. A detailed traffic analyses and investment in the roadway network would be required. Should these improvements be imposed upon the developer, their rate of return would be diminished, which could impact the attractiveness of development at any of the sites.
- Chatham Station's TOD scenario would result in a similar rate of return for a developer as the proposed TOD at Madison Station (both with and without the commuter parking), and thus similar ability to attract the investment. However, meeting the forecasted parking demand at Chatham would result in the highest parking structure of the three scenarios (eight stories). The proposed development would range from five to seven stories which would be a departure from the character of the Chatham Station area.
- The Madison Station TOD scenarios are the only scenarios that would not displace existing commuter parking, and require the lowest structured parking cost. Madison Station offers the greatest potential to attract private investment to meet the needed parking. While the developer's up-front costs for acquisition and demolition would be higher at Madison, the height of the proposed structures would be more consistent with the character of the Borough and the adjacent TOD zoning.
- Convent Station would provide for the densest and most attractive investment for a developer with the inclusion of commuter parking. Of the three sites, this location would have relatively easy land assemblage and low property acquisition costs. However, the shape of the parcels could present a challenge. Of the three considered TOD sites, development at Convent Station would displace the highest amount of existing commuter parking, which when combined with



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provision of spaces needed to meet the high end of the projected commuter parking deficit range in the corridor, results in the largest parking investment. Constructing two projected structured parking garages at this location (with a combined high end cost of \$32 million) diminishes the chances of the entire parking investment being funded by the private developer. However, adjacent properties were not considered in the financial analysis. Should these properties be considered, an overall profitable mixed-use public-private solution could be viable.



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6

Conclusions

The NJ 124 Corridor is a highly used, heavily congested region. Limited parking availability at three area NJ TRANSIT commuter rail stations – Chatham, Madison, and Convent – prompted this transit access study to investigate potential measures to improve mobility in the region and preserve the corridor’s value.

The parking data collection conducted provided a detailed understanding of parking operations at the three commuter rail stations. It was found that commuters typically arrive early and park for extended periods of time (ten hours or more) at all three stations. Parking at Chatham and Madison Stations is nearly at capacity; however, Convent Station has some excess parking capacity in its various lots.

Pedestrian and bicycle traffic accessing the stations is minimal in comparison to automobile traffic. Sidewalks and crosswalks in the study area are less than optimal, and there is little well-established bicycling infrastructure.

Multiple deficiencies have been identified that hinder safe, efficient, and reliable access to the stations. These deficiencies can be classified as either minor or major deficiencies with the majority of them being simple problems that can be easy to fix.

Some examples of minor deficiencies that could be mitigated with low cost, high impact improvements:

- Pedestrian and bicycle safety issues that could be solved by restriping or adding signage.
- Pedestrian and bicycle connectivity that could be enhanced through additional signage or short extensions of trails/ sidewalks.
- Parking shortages that could be alleviated through improved parking management.
- Schedule inconsistencies between connecting transit services that could be rectified through minor adjustments to schedules and operations.



Examples of major deficiencies which could require more medium to long term and expensive improvements:

- Provision of new sidewalks, roadway turning lanes, or dedicated bike lanes.
- Parking shortages that would require major modifications to the parking lot (in ground construction or modification of the lot's geometry) to resolve.
- The need for additional transit connectivity that could be solved through the introduction of a new feeder-bus service.

Moreover, an analysis of existing and future land use was performed in order to evaluate the potential for transit-oriented development (TOD), a long-term strategy to minimize existing station access issues. It was found that Chatham and Madison Stations have the highest potential for TOD without the inclusion of commuter parking due to the proximity to their respective town centers, existing land use patterns, and demographic and economic factors. Convent Station offers a developer the best location for TOD with commuter parking.

Over 150 access-related improvements have been developed and recommended for the NJ 124 study area, based on analysis of existing transportation conditions and land use as well as stakeholder and public feedback. These improvements, ranging from low cost/ early implementation strategies to high cost/ long term strategies would make a significant improvement in the accessibility of Chatham, Madison, and Convent Stations while also improving the safety and mobility of the NJ 124 corridor and surrounding roadways. As described in this report, not only do deficiencies exist with respect to station access in the study corridor, but future forecasts indicate that there will continue to be a parking capacity problem amongst the three study area stations.

It is recommended that the three host municipalities, Chatham Borough, Madison Borough, and Morris Township, review the potential improvements included in this report. Significant effort should be made to increase access to stations by non-automotive modes, including pedestrian, bicycle, carpool, transit, and kiss and ride improvements. Each of these improvements would require additional study and development prior to implementation. In addition, a coordinated effort amongst the study area municipalities would be required to achieve the improvements' full potential. Improvements that encourage non-automotive access to stations should be implemented while more significant improvements, including the addition of parking within the corridor, are planned and funded.

Ultimately, new parking capacity will be required in the study area and a coordinated approach between not only the station-hosting municipalities but also the adjacent municipalities is recommended. Since parking structures are difficult to publicly fund, it is recommended that the host municipalities consider the TOD scenarios that were developed as a potential funding source. While the analyses presented in this report assumed a "worst case" scenario in which each municipality provided for the full high-end forecasted deficit range of parking spaces (500 spaces),



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it is likely that this forecast deficit will not only be diminished by the implementation of the non-automotive access improvements, but that the remaining parking demand may be divided among the three station areas. As such, before further action on adding parking capacity is taken, it is recommended that all strategies be considered.



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Appendix A: Existing Reports



Introduction

This appendix summarizes the existing reports and data that were reviewed by the VHB team for the NJ 124 Corridor Transit Access Improvement Study. Reports and data were received from Morris County, the North Jersey Transportation Planning Authority (NJTPA), TransOptions, the New Jersey Department of Transportation (NJDOT), NJ TRANSIT, Morris Township, Chatham Borough, Madison Borough, and Harding Township.

The reports and data were reviewed for pertinent material in the five major subject areas listed below:

- Highway Transportation adjacent to the train station and Train Station Parking
- Bicycle and Pedestrian
- Roadway and Transit Safety
- Transit Infrastructure and Operations
- Planning and Zoning

Table A-1 details the reports and data that were reviewed. Overall, the reviewed information documented and reinforced a need to improve access to the three stations (Chatham, Madison, and Convent) along the Morristown Line. A summary of the data in each of the five major subject areas follows Table A-1.



NJ 124 Corridor Transit Access Improvement Study

Final Report

TABLE A-1: Reports and Data Reviewed

Report Title	Author	Date	Highway Transportation and Parking	Bicycle and Pedestrian	Roadway and Transit Safety	Transit Infrastructure and Operations	Planning and Zoning/TOD
2010 Development Activity Report, Morris County, NJ	Morris County	2010		X			
2027 Transportation Needs Assessment Study, Florham Park, NJ	Greenman Pedersen, Inc.	2007	X	X			
2030 Parking & Ridership Forecast for Chatham/Madison/Convent Stations	NJ TRANSIT	2009	X				
Bicycle Route Plan	Borough of Madison	2005		X			
Borough of Chatham Zoning Ordinance	Borough of Chatham	As of February 2012		X			
Borough of Madison Master Plan	Borough of Madison	1992		X			X
Borough of Madison Zoning Ordinance	Borough of Madison	As of February 2012		X			X
Borough of Madison: A Center for Transit, the Arts, Lifelong Learning and Health & Recreation	Rutgers/NYU	2003				X	
Bulletin #7, "Life, Liberty, and the Pursuit of a Parking Space"	Morris County	2008	X				
Bulletin #8, "All Aboard Public Transportation"	Morris County	2008				X	
Bus Stops by Route	NJ TRANSIT	2012				X	



NJ 124 Corridor Transit Access Improvement Study

Final Report

TABLE A-1: Reports and Data Reviewed

Report Title	Author	Date	Highway Transportation and Parking	Bicycle and Pedestrian	Roadway and Transit Safety	Transit Infrastructure and Operations	Planning and Zoning/TOD
Bus Stop Safety Toolbox	NJTPA	2011			X	X	
Chatham Borough Business Zones Study/Presentation	Taylor Design Group	2009		X			X
Chatham Borough Master Plan Reexamination Report	Taylor Design Group	2006		X			X
Chatham Borough Open Space & Recreation Plan	Morris Land Conservancy	2002		X			
Chatham Borough RR Parking Spaces	Borough of Chatham	2012	X				
Concept Report Summary Morris & Essex Line Expansion of Shuttle Service and Park and Rides	NJTPA	As of January 2012				X	
Convent Station Parking Status Report	Township of Morris	2012	X				
Convent Train Station Parking Lots	Township of Morris	2006	X				
Evaluation of Pedestrian Improvements in the Vicinity of New Jersey Transit Rail Stations – Final Report to: Transportation Coordinating Council (TCC)/Federal Transit Administration (FTA)	Rutgers University	As of June 2012			X		



NJ 124 Corridor Transit Access Improvement Study

Final Report

TABLE A-1: Reports and Data Reviewed

Report Title	Author	Date	Highway Transportation and Parking	Bicycle and Pedestrian	Roadway and Transit Safety	Transit Infrastructure and Operations	Planning and Zoning/TOD
Final Report for Review of Existing & Future Conditions to Various Intersections within the Borough of Florham Park, Borough of Madison, Hanover Township, Morris Township, Chatham Borough and the Town of Morristown Due to the Potential Redevelopment of the Former Exxon Research Facility in Florham Park	Louis Berger Group	2010		X			
Land Development Standards for Morris County, NJ	Morris County Planning Board	2004		X			
Lincoln Place: Making Lincoln Place a "Place" in Downtown Madison, NJ	Project for Public Spaces	2009	X	X			X
Madison Avenue Direct Shuttle Ridership	TransOptions	2011, 2012				X	
Madison Avenue Direct Shuttle Schedule	TransOptions	2012				X	
Means of Transportation to Work by Municipality 2006-2011 (Five-Year Estimates)	US Census Bureau	2006-2011		X			
Minibus Daily Ridership, NJ TRANSIT, March 2012	NJ TRANSIT	2012				X	
Minibus Monthly Ridership, NJ TRANSIT, March 2012	NJ TRANSIT	2012				X	



NJ 124 Corridor Transit Access Improvement Study

Final Report

TABLE A-1: Reports and Data Reviewed

Report Title	Author	Date	Highway Transportation and Parking	Bicycle and Pedestrian	Roadway and Transit Safety	Transit Infrastructure and Operations	Planning and Zoning/TOD
Morris & Essex 2005 Origin-Destination Survey	NJ TRANSIT	2005	X	X			
Morris and Essex Line Rail Schedule (11/16/11)	NJ TRANSIT	2011				X	
Morris Area GREEN Transit Initiative	Borough of Madison	2009	X	X			X
Morris County Bicycle and Pedestrian User Guide	Morris County	2004		X			
Morris County Transit Guide	Morris County	2011				X	
Morris Township Tax Map	Township of Morris	1977					
Municipal Design Standards	Various	Unknown	X				
New Jersey Department of Transportation Bureau of Safety Programs (BSP) Program Methodologies	NJDOT	As of 1/26/12			X		
NJ TRANSIT Bike Rack Locations	NJ TRANSIT	2012		X			
NJDOT and Morris County Traffic Count Data (Various)	Morris County DOT, NJDOT	1995-2011	X				
NJTPA Crash Data	NJTPA	2006-2010			X		



NJ 124 Corridor Transit Access Improvement Study

Final Report

TABLE A-1: Reports and Data Reviewed

Report Title	Author	Date	Highway Transportation and Parking	Bicycle and Pedestrian	Roadway and Transit Safety	Transit Infrastructure and Operations	Planning and Zoning/TOD
Open Space and Recreation Plan Update for Township of Morris	Township of Morris Open Space Committee and Morris Land Conservancy	2004		X			
Park and Ride Data	TransOptions	Received 2/17/12	X	X			
Plan4Safety Crash Data Analysis	Plan4Safety	2006-2010			X		
NJ TRANSIT 873 Bus Schedule (9/5/11) ²⁷	NJ TRANSIT	2011				X	
NJT TRANSIT 878/879 Bus Schedule (1/14/12) ²⁸	NJ TRANSIT	2012				X	
Smart Transportation Guidebook	NJDOT/ PennDOT	2008		X		X	
Structured Parking Reference Material	NJ TRANSIT	2005		X			
Sustainable Living in Madison, NJ and Sustainable Commuting in the Region	Borough of Madison	2010		X			X
Township of Morris Master Plan	Morris Township Planning Board	1994					X

²⁷ New schedule issued on April 7, 2012; bus stop at Livingston Mall was relocated.

²⁸ New schedule issued on April 7, 2012 coordinates with new Morris & Essex Line rail schedule



NJ 124 Corridor Transit Access Improvement Study

Final Report

TABLE A-1: Reports and Data Reviewed

Report Title	Author	Date	Highway Transportation and Parking	Bicycle and Pedestrian	Roadway and Transit Safety	Transit Infrastructure and Operations	Planning and Zoning/TOD
Township of Morris Master Plan Reexamination	Morris Township Planning Board	2007		X			X
Township of Morris Parking Information	Township of Morris	As of March 2012	X				
Township of Morris Zoning Ordinance	Township of Morris	As of February 2012		X			X
Traffic Impact Study, General Development Plan: The Green at Florham Borough of Florham Park Morris County, NJ, March 2008.	Stantec	2008		X			
Transit Oriented Planning Map	Borough of Madison	As of February 2012					X
Bike Locker Inventory	TransOptions	2012		X			
Madison Avenue Direct Shuttle Brochure	TransOptions	As of February 2012				X	
Crossing Inventory Information (Convent Road)	U.S. Department of Transportation	2010	X	X	X		
Highway-Rail Grade Crossing Accident Report (Convent Road)	U.S. Department of Transportation	2010			X		



Highway Transportation and Parking

Convent Station

2027 Transportation Needs Assessment Study, Florham Park, New Jersey, GPI, 2007

The study includes a detailed traffic analysis and recommended improvements for the area bound by NJ 124, Park Avenue (623), Ridgedale Avenue (632), and Columbia Turnpike (510). This area is located immediately north of the NJ 124 Study area and is a major redevelopment site including a hotel, a sports medicine facility, age restricted housing, and commercial office space. The specific work elements included in this study are as follows:

- Evaluation of 2007 traffic operations on all study area roads
- Traffic projections for the year 2027
- Analysis of traffic operations for the year 2027 on all study area roads
- Determination of improvements required to mitigate future traffic operation problems

Traffic Issues

Issues identified in the report are shown below:

- The intersection of Columbia Turnpike and Park Avenue operates at or close to capacity during both morning and evening peak hours.
- During the morning peak hour, the westbound left and southbound through movements operate at unacceptable levels of service. During the evening peak hour, the northbound approach operates at marginal levels of service.
- There is a high volume of traffic exiting from NJ 24 eastbound onto Columbia Turnpike westbound, and merging several lanes over to turn left onto Park Avenue southbound during weekday mornings. There is inadequate transition room for this movement to operate efficiently. This creates congestion that occasionally backs up the ramp onto NJ 24 mainline during the morning peak.
- Several movements at the intersection of Park Avenue and Punch Bowl Road operate at marginal or unacceptable levels of service in peak hours.
- Queuing for the jug handle at the intersection of Park Avenue and Campus Drive creates problems during the morning peak hour.
- Critical movements at the intersection of Park Avenue and Danforth Road operate at unacceptable levels of service during peak hours.
- The southbound left turn lane at the intersection of Columbia Turnpike and Vreeland Avenue operates at unacceptable levels of service during the evening peak hour. The eastbound left turn lane operates at marginal levels of service during peak hours.
- The eastbound through and left turn lane to the intersection of Ridgedale Avenue and James Street operates at an unacceptable level of service during peak hours, due to left turning vehicles.



- The southbound approach to the intersection of Main Street (124) and Central Avenue (608)/ Waverly Place operates at marginal levels of service during the evening peak hour.
- The southbound left turn movement at the intersection of Main Street (124) and Greenwood Avenue/ Prospect Avenue operates at unacceptable levels of service during the evening peak hour.

In addition to the above problems, some regional access issues exist for the various commercial developments in Florham Park and the vicinity of key interchanges along NJ 24. NJ 24 westbound backs up at the lane reduction just west of the Mall at Short Hills in the morning, while NJ 24 eastbound backs up at the lane reduction to two lanes just before the Whippany Road (511) on-ramp. The westbound NJ 24 bottleneck begins at approximately 7:30 a.m., and peaks at 190 vehicles. This leads to approximately three minutes of additional delay at 8:30 a.m. The eastbound NJ 24 bottleneck begins long before 7:30 a.m. By 7:30 a.m., the queue is approximately 200 vehicles long. By 8:30 a.m., the queue reaches nearly 350 vehicles before beginning to subside. This leads to approximately six minutes of additional delay at its maximum.

Parking Issues

“The proposed Route 24 interchange is an ideal location for a park and ride lot. If combined with transit service, traffic from Route 24 would have an opportunity to exit the highway and park their vehicles without having to travel on lower class roads. Considering the shortage of available parking at the nearby rail stations, this strategy has an excellent chance of success (Page 48).”

Convent Station Parking Lots, Morris Township Division of Engineering, 2006

This is an AutoCAD drawing with the locations of the parking lots surrounding the Convent Train Station. There are no issues discussed in written text. This AutoCAD drawing color-coordinates the types of parking found around the station. The breakdowns are:

- Resident Permit Parking
- Resident Meter Parking with ID Tag
- General Meter Parking
- Non-Resident and Resident Permit Parking
- Handicap Parking



Convent Station Parking Status Report, Morris Township, 2012

Table A-2 is a numerical listing of the types of parking spaces at Convent Station for the 2011/2012. The list states that there are 358 “Permit Parking” spaces at Convent Station; however the document states that 546 existing parking permits have been sold and 44 people are on the waiting list.

Table A-2: Convent Station Parking Spaces (2011/2012)	
Parking Lot 1	
Resident Permit Parking	110
Resident Meter Parking (With ID)	30
General Meter Parking	130
Resident and Nonresident Permit Parking	78
Handicap Parking	9
Transit Ticket Agent	1
<i>Subtotal</i>	358
Parking Lot 2 - Old Post Office Lot	
Resident and Nonresident Permit Parking	115
Parking Lot 3 – St. Thomas More Lot	
General Meter Parking	68
Convent Road Resident Permits	45
Convent Road Resident Permits	10
<i>Subtotal</i>	238
Total	596

Multiple Stations/General Items

2030 Parking & Ridership Forecast for Chatham/Madison/Convent Stations, NJ TRANSIT, 2009

This report presents parking and ridership forecasts for 2030 for stations along the Morristown Line including Chatham, Madison, and Convent Stations. This 2030 forecast assumed the completion of the Access to the Regions Core (ARC) Project, and as such is out-of-date. The results are presented below for informational purposes only.



Parking Issues

Based on the 2030 forecast, a projected shortfall of about 320 spaces at all three stations was estimated:

- Chatham Station would only have a need for an additional 10 spaces.
- Madison Station would have a need for an additional 230 parking spaces.
- Convent Station would have a need for an additional 80 spaces.

Non-residents of the area would be hit with the brunt of the parking shortfall because of the imbalance between residential and non-residential parking demand and supply. Further investigation would be needed to implement some method of bus shuttle service to reduce parking demand and also for possible expansion for non-residents.

Bulletin #7, "Life, Liberty, and the Pursuit of a Parking Space," Morris County Division of Transportation, 2008

Bulletin #7 discusses the shortage of parking spaces at bus and rail transit stations. During the county's municipal outreach to elected officials, planners, engineers, and residents, the lack of parking spaces near transit was identified as an ongoing problem:

- The ARC Project would have expanded passenger rail service to Manhattan, attracting more riders.
- However, parking lots at many train stations in Morris County are already near or at capacity and would not have been able to handle the increased demand.
- Providing more parking spaces is one approach but is not always practical or the best use of land in close proximity to train stations.

The discussion in this bulletin focuses on providing sufficient transit parking through efficient use, planning, and development practices and management to meet commuters' needs.

Parking Issues

According to a 2005 park and ride inventory conducted by TransOptions, Morris County's Transportation Management Association, existing parking was at or near capacity at most of the rail stations in the County. Chatham, Dover, Madison, Morris Plains, and Mt. Olive train stations were at 100 percent capacity, and the parking lots at Morristown, Convent Station, Denville, and Gillette train stations were approaching maximum capacity. Also, park and ride lots serving bus transit to NYC, located in Dover, Parsippany, and Rockaway, were operating at 100 percent capacity.

Proposal topics discussed in this Bulletin:

- Update the Morris County Rail Access Improvement Study. This should include an inventory of parking spaces, bike racks, ADA (Americans with Disabilities Act) compatibility, and other amenities at railroad stations.



- Explore the creation of an overflow parking plan to identify shared parking opportunities at locations adjacent to or close to transit. Consider properties with reduced weekday activity such as houses of worship, movie theatres, and shopping malls.
- Create a long range parking demand plan for Morris County that forecasts expected future demand for parking at public transportation facilities. The plan would take into account current shortages, expected population growth, transit improvements, and potential development.
- Review the results of NJ TRANSIT's Station Car Program. This 2-year test program will evaluate the viability of leasing parking spaces at train stations to businesses that provide membership-based car sharing services to the public.
- Consolidate and centralize parking management to allow for consistent pricing and policies.
- Develop a centralized Advanced Traveler Information System (ATIS) that permits commuters to check parking availability through their phone, email, or personal digital assistant (PDA).
- Limit parking permit availability only to those who use transit. Businesses in proximity to transit stations that do not utilize those facilities would not be able to purchase reserved parking.
- Reconfigure existing parking facilities to maximize efficient use of space.
- Expand structured parking near train and bus park and rides.
- Require parking lots to include compact vehicle parking to maximize the number of spaces.
- Offer state grants to municipalities to construct new parking at or near transit.
- Dedicate an impact fee on new residential units towards the construction and improvement of transit parking. This impact fee must be based on the projected number of residents that will use transit parking.
- Develop off-site parking lots and provide shuttle service from these sites to the train station.

Final Report for Review of Existing & Future Conditions to Various Intersections within the Borough of Florham Park, Borough of Madison, Hanover Township, Morris Township, Chatham Borough and the Town of Morristown Due to the Potential Redevelopment of the Former Exxon Research Facility on Park Avenue in the Borough of Florham Park, Louis Berger Group, 2010

The purpose of this study was to examine the traffic impacts associated with redevelopment of the former Exxon site, located in the westernmost area of Florham Park between NJ 24 and NJ 124. This development site is located immediately to the north of the NJ 124 study area. Since the release of the study, the training facility for the New York Jets has been constructed and is in operation on the site, and the office space is under construction or has been recently completed. At full build-out, the potential improvements to the site would also include:

- 250-room Hotel with 75,000 SF fitness center/ health club
- 100,000 SF Sports Medicine Institute
- 600,000 SF Office Repopulation
- 130,000 SF of General Office Space
- 425 Age-Restricted Residential Units (55 years of age and above)



This report references the **2027 Transportation Needs Assessment Study and General Development Plan: The Green at Florham Park (GDP)** as current studies that examine traffic patterns within the former Exxon Research Facility area, but no reexamination will be done for this study.

Traffic Issues

The operational analysis results showed that the majority of intersections in Chatham Borough are operating at or over capacity with poor service levels. All but one intersection is located in the main commercial business district of Chatham Borough. During the peak periods, Main Street (124) traffic travels at slow speeds with congested conditions and vehicular queues exceeding beyond the study intersections. Field observations revealed long queues during the morning, evening, and Saturday study periods, primarily attributed to frequent parking maneuvers, left turning traffic, and vehicles and buses blocking traffic.

Madison's business district is primarily situated along Main Street. Similar to Chatham Borough, Main Street in Madison experiences some traffic conflicts with frequent parking maneuvers and insufficient storage lanes for left turning vehicles resulting in long queues. Although most intersections operate at acceptable Level of Service (LOS), queues are excessive on several intersection approaches.

Generally, most of the Morris Township intersections operate at acceptable levels of service. Several movements at the East Hanover Avenue and Whippany Road, and Madison Avenue and Punch Bowl/Canfield Road intersections exceed capacity and queue lengths. The Madison Avenue and Punch Bowl intersection also has heavy eastbound left turn traffic in the morning peak period, which causes sudden stops and unsafe maneuvers.

The analysis results show that there were no major existing operational issues at the studied intersection locations in Hanover Township.

For a more thorough intersection and approach detail for all municipalities included in the study, Table 3-5 through Table 3-9 of the report (pages 29-35) have AM/PM/Saturday peak hour volume/capacity ratios, delay in seconds, and LOS for signalized and un-signalized intersections.

Parking Issues

Chatham Station could benefit from the following potential improvements:

- Americans with Disabilities Act (ADA) compliant facilities.
- Signs to reduce speed and cut-through traffic along Bond Street at the western side of the rail station.
- Improved signage directing commuters from Main Street (124) to the station.
- Reconfiguration of the vehicular entrance at Front Street. This entrance currently has a narrow turning radius and low visibility of pedestrian movement.

Convent Station could benefit from the following potential improvements:

- Additional signage directing commuters to the rail station from Madison Avenue (124) and Park Avenue.



- Reorganization of the parking area in front of the station to allow better flow of vehicles. Currently, the lanes within the parking lot are narrow and back-up during rush hour.
- Repair or replace sidewalks towards the northern end of the parking lot to fill gaps in sidewalks between Old Turnpike Road and the rail station.
- Reconfiguration of the passenger drop-off area to improve queuing for cars, including designating an area for shuttles, buses and taxis.

Madison Station could benefit from the following potential improvements:

- Improved signage directing commuters from Main Street (124) to the station.
- Mid-block crosswalk in front of the station entrance on Lincoln Place. This will allow safe and direct pedestrian access from the station to the retail located on Lincoln Place.

LINCOLN PLACE: Making Lincoln Place a “Place” in Downtown Madison, NJ, Project for Public Spaces, 2009

There is minimal traffic or parking information in this document, but the summary of time-lapse images taken on Lincoln Place included traffic, bicycle and pedestrian activity at the train station during a 3:30-8:30 PM period which could prove to be useful in the analysis.

Morris Area GREEN Transit Initiative, Borough of Madison, 2009

Parking, traffic flows, and access points around the station are inadequate and discourage potential train ridership. Non-residents that live north and south of Madison Station between Morristown and South Orange are denied the ability to purchase annual parking permits, while residents of Madison are allowed the opportunity to purchase a limited number of annual permits. This report’s main purpose was to secure TIGER funds to:

- Build a 506-space parking deck structure at the existing municipal parking lot on Kings Road (a net increase of 306 spaces); and
- Improve access in the town of Madison and to the train station with traffic signal optimization, and infrastructure enhancements at the outbound (north) side of the station at Lincoln Place.

(Note: The Borough of Madison was unsuccessful in its application for these funds.)

Traffic Issues

The segment of NJ 124 that bisects the Central Business District of Madison is often congested with poor levels of service at many of its intersections. The application identified the following signalized intersections around Madison Station that would be negatively impacted during peak commuter periods by increased traffic associated with planned developments, as well as the proposed parking structure:

- Ridgedale Avenue and Park Avenue
- Madison Avenue and Main Street
- Community Place and Main Street



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- Green Village Road and Main Street
- Green Village Road and Kings Road
- Green Avenue and Main Street
- Green Avenue and Kings Road
- Prospect Street and Kings Road
- Greenwood Avenue and Main Street
- Cross Street and Main Street

All intersections along the NJ 124 corridor will have failing levels of service during the peak hour with wait times exceeding two to three minutes without any improvements to the signals.

Parking Issues

Expansion of Madison Station parking by 306 additional spaces will benefit the town of Madison and NJ TRANSIT by generating annual revenue from additional annual parking and train passes. The report listed various other environmental and financial benefits associated with the proposed parking lot structure including benefits associated with people taking the train (rather than driving) and jobs created through the construction of the parking lot. The report highlighted other stations in the area that do not allow non-residents to purchase annual parking permits, including Summit, Short Hills, Millburn, and Maplewood Stations (the report incorrectly states that Convent Station does not issue non-resident permits). Some parking constraints are so serious at other stations that valet parking has been used to increase capacity. Other stations have resorted to creating two to three year waiting lists for available annual parking permits.

Morris & Essex 2005 Origin-Destination Survey, NJ TRANSIT, 2005

No specific traffic-related questions were included in this survey, but it did include information about access mode and subjective ratings for a number of elements related to station access and parking.

Municipal Design Standards (Various)

Design standards for Chatham Borough, Madison Borough, and Morris Township were reviewed. For traffic and parking considerations, the most relevant items in these standards include design details for various street types, and parking ratios for various land uses around the station sites. These standards have no direct bearing on current traffic and parking conditions, as the three train stations are in largely built-out areas (particularly in the central business districts of Madison and Chatham) and the standards would be relevant to this study only for future recommendations for access improvements that may require upgrades in streets, sidewalks, parking lots, etc. In general, many of the privately-owned properties around the train stations in the two CBDs do not have sufficient off-street parking to meet the standards under the pertinent municipal codes (e.g., one space for every 200 square feet of retail space under both §165-25 of the Chatham Borough Code and §195-35 of the Madison Borough Code). In both of these cases, these existing parking deficiencies relate to this study insofar as parking for the local businesses competes for space with the station parking needs.



NJDOT and Morris County Traffic Count Data (1995-2011)

The project files include several data resources with historical 24-hour Average Annual Daily Traffic (AADT) figures throughout Morris County. There are a number of count locations in the study area, and this data can be supplemented with more recent count station data from NJDOT. None of the locations have been counted on a regular basis, so this information is mostly useful for historical reference.

Parking Permit Data and Ridership Forecasts (Various)

Detailed parking data have been provided by Chatham Borough and Morris Township, including permits, utilization, regulations by user type (resident vs. non-resident permit, general meters, etc.), municipal codes, and other pertinent data. TransOptions has provided detailed information about permits and pricing structure for all three stations.

U.S. DOT Highway-Rail Grade Crossing Accident Report (Convent Road), U.S. DOT, 2010

U.S. DOT required accident reports prepared by New Jersey Transit Rail Operations (NJTRO) for the two at-grade rail crossing accidents in the study corridor include Federal Railroad Administration (FRA) codes for the crossings and detailed information about the crossing protection systems. None of the crossing protection systems appears to be tied to a nearby traffic signal for signal pre-emption purposes.

Bicycle Transportation and Pedestrians

Madison Station

Bicycle Route Plan, Borough of Madison, 2005

This document provides a plan for bicycle routes throughout the Borough, consisting of three levels of route designations: those with proposed striping, stenciling of a bicycle icon, and signage; those with stenciling and signage; and those with signage only. The following recommendations were made:

- NJ 124 was designated at the highest level, with recommendations for bicycle lane striping, stenciling of the bicycle icon in the bicycle lane, and signage, on both sides of the roadway.
(Note: it was recently observed that many of the bike stencil markings on NJ 124 are in place, however in segments where the road appeared to have been resurfaced, the bike markings are no longer present.)
- Other roadways such as Central Avenue (608) and Greenwood Avenue, which connect to the train station, were also proposed for the highest level of treatment, which, in this plan, includes striping, stenciling, and signage on both sides of the road.”



Borough of Madison: A Center for Transit, the Arts, Lifelong Learning and Health & Recreation, Rutgers/NYU, 2003

This capstone project makes a variety of livability recommendations for Madison, including pedestrian connections along NJ 124 from the train station to Drew University, and bicycling to the Great Swamp, a distance of 2.5 miles south.

LINCOLN PLACE: Making Lincoln Place a “Place” in Downtown Madison, NJ, Project for Public Spaces, 2009

Located a block from NJ 124, Lincoln Place is the street adjoining the Madison Train Station on its north-western side. The goal of this study was to help transform Lincoln Place from a street people walk along and through, to one that is a destination in itself.

The report details:

- Qualities of great public spaces and great streets, including active street life, strong linkages, pedestrian uses, a place that is walkable and siteable. Great streets are also great walking environments.
- Fundamental qualities of pedestrian friendly downtowns.
- Challenges to connecting assets of this area which include the train station, architecture, restaurants, and parks.
- Recommendations including the following overarching ideas:
 - Make Lincoln Place a destination to walk “to” rather than “through.”
 - Enhance the Pedestrian Environment through the widening and addition of sidewalks, lighting, and other specific short and long term recommendations.
 - Provide pedestrian wayfinding, orientation and access.
 - Expand the role of the train station presence on Lincoln Place.
 - Increase public amenities through more seating, landscaping, flowers, drinking fountains, bike racks, lighting, trash/ recycling, and WiFi.
 - Add Seasonal Activities.
 - Highlight businesses on the street.
- Detailed short and long-term recommendations for pedestrian improvements for three sites:
 - Western Lincoln Place – from crossing on Waverly Place to Post Office on Lincoln Place
 - Central Lincoln Place – in front of train station, Post office, & movie theater
 - Eastern Lincoln Place – area between movie theater & Prospect Place

Morris Area GREEN Transit Initiative, Borough of Madison, 2009

Page 8 notes the following: “The Friends of the Madison Train Station (FMST) have long advocated and supported the station, recognizing it as a transit hub for the area. With their help, over \$140,000 in donations were received through an engraved paver program to support repair of pedestrian walkways.”



Sustainable Living in Madison NJ and Sustainable Commuting in the Region, Borough of Madison, 2010

This report is a TIGER II and HUD Sustainable Community Grant application. The original application is used as backup and it promotes planning for complete streets and access for all modes to the Madison train station.

Convent Station

2010 Development Activity Report, Morris County, 2010

This report does not focus on general bike and pedestrian issues, but does mention the approval of the development of a pedestrian trail at a major office park in Florham Park, located off Park Avenue and Campus Drive. Although not within a half mile of Convent Station, and intended just for users of the office complex, development of these amenities could encourage walking in and around the area.

2027 Transportation Needs Assessment Study, Florham Park, New Jersey, GPI, 2007

This report assesses general transportation needs in Florham Park, the community located just northeast of Convent Station. Pedestrian and bicycling recommendations were to consider a “bicycle and pedestrian bridge over Route 24 ... to connect the housing on the Exxon site to the municipal complex and other portions of Florham Park. Further, new office and other developments should have sidewalks, and showers and bicycle lockers” (p. 50).

Open Space and Recreation Plan Update for Township of Morris, Township of Morris and Morris Land Conservancy, 2004

This plan inventories and recommends open space preservation and a series of greenway connections:

- The existing Traction Line Trail is a paved multi-use trail that runs parallel to the NJ TRANSIT Rail line near the Convent Station. It provides excellent connectivity to the station and to Route 124.
- The Greenway Map shows existing and proposed trails, with a note that this is not comprehensive and does not show all trails.
- One proposed Greenway Connection is shown within this project study area. It would connect the Convent Station and the Traction Line with Loantaka Brook Reservation, where a number of trails currently exist. The proposed connection is mapped from the Convent Station south on Convent Road, crossing Route 124 and continuing along Canfield Road to Fox Hollow Road and then left into the parkland. This route is through a residential neighborhood along local streets, and would assist with bicycle and pedestrian connectivity to Convent Station.



Final Report for Review of Existing & Future Conditions to Various Intersections within the Borough of Florham Park, Borough of Madison, Hanover Township, Morris Township, Chatham Borough and the Town of Morristown Due to the Potential Redevelopment of the Former Exxon Research Facility on Park Avenue in the Borough of Florham Park, Louis Berger Group, 2010

Traffic Impact Study: General Development Plan: The Green at Florham Park, Stantec, 2008

This site is located somewhat proximate to Convent Station. Although these reports were not reviewed completely for bicycle and pedestrian connections, it should be noted that the site is within relatively short distance of the Convent Station, and robust pedestrian and cycling connections would help limit vehicular traffic and boost ridership at the station.

U.S. DOT Crossing Inventory Information (Convent Road), U.S. DOT, 2010

This document is the USDOT Crossing Inventory Information as of 1/ 29/ 2012. It describes the at-grade rail crossing at Convent Road at Convent Station. Cyclists and pedestrians (and motorized vehicles, of course) cross the tracks at this location and elements important to bicycle and pedestrian connectivity and safety are noted as follows:

- The grade crossing is not a Quiet Zone, and there are two tracks.
- The crossing is illuminated but does not have Crossbucks, Advanced Warning, Pavement Markings, Highway Stop Signs, Wigwags, or Hump Crossing Signs.
- There are two signs “R15-2P” indicating there are two tracks.
- There are two gates – they are not four quad or full barrier (Pedestrian gates are present as observed in the field, but are not mentioned in this document).
- Total Number Flashing Light Pairs: 5
- Bells: 2
- Two traffic lanes cross the railroad.

Chatham Station

Chatham Borough Business Zone Study/Presentation, Taylor Design Group, 2009

This study included recommendations for “Illuminance Uniformity Ratios for Roadways and Walkways,” including a 4:1 average to minimum lighting ratio for pedestrian walkways and bikeways (Appendix, Table II).

Chatham Borough Master Plan Reexamination Report, 2006

- Traffic congestion locations may provide insight into pedestrian safety issues (Part 1 PDF p. 11).



- Goal 6 supports the creation and maintenance of a balanced transportation network, including “viability as a place safe for pedestrians and cyclists.”

Chatham Borough Open Space & Recreation Plan, Morris Land Conservancy and Borough of Chatham Open Space Committee, 2002.

This plan recommends, among other things, a system of greenways to protect the Passaic River and its floodplain:

- The plan calls for a system of trails, incorporating both walking and biking, that link the existing municipal parks with local neighborhoods (p. 26).
- The Greenways Map in the report illustrates that although the Greenways would improve walking and biking opportunities in Chatham, they are not proximate to the rail station. The Passaic River trail would cross NJ 124 just west of the interchange with NJ 24, and the curve of the river could allow for a connection into the neighborhoods south of NJ 124 along Summit Avenue. This could become part of a wider bicycle and pedestrian network throughout the Borough.

Multiple Stations/General Items

Land Development Standards for Morris County, Morris County Planning Board, 2004

- Section 514 states that “Each land development subject to County approval shall provide a sidewalk within the County road right-of-way if such is required,” and states they should be a minimum of 4-feet wide.

Morris County Bicycle and Pedestrian User Guide, Morris County, 2004

This is a map illustrating all existing and proposed bicycle and pedestrian facilities within Morris County. This includes mapping of Multi-use Paths or Trails, Walking Trails, Bicycle Lanes, and Shared Roadways, along with passenger rail stations, and open space as of 2004.

Morris & Essex 2005 Origin-Destination Survey, NJ TRANSIT, 2005

This is a summary presentation of the 2005 NJ TRANSIT Origin-Destination Survey. On the slide “How did you get to the train station...” (slide 4), it shows that 31.4% walked or biked only; and 15.9% and 4.6% were dropped off or took a bus/shuttle, respectively, both of which result in pedestrians.



Means of Transportation to Work by Municipality, US Census, 2006-2010

A summary of US Census travel statistics indicate that the corridor residents travel to work by public transportation and walking though these are not the predominant modes of travel:

- Chatham Township: 17% public transportation; 1.3% walking
- Madison: 14.3% public transportation; 5.8% walking
- Morris Township (Convent Station): 5.4% public transportation; 0.9% walking

Park and Ride Data (TransOptions, 2012)

- Provides inventory including bike racks and lockers at each station.

Smart Transportation Guidebook, NJDOT/PennDOT, 2008

This publication provides guidance on many types of street design, including standards for bicycles, sidewalks, and complete streets. This document will be consulted, in addition to national design standards, when planning for non-motorized transportation elements along NJ 124.

Township of Morris Master Plan Reexamination, 2007

This plan recommends a sidewalk priority program “to include sidewalks, where practical, on all arterial and most major collector roads...” (p.32) and lists roadways that should be prioritized for construction of sidewalks. It also recommends a review of open space and bikeway trail system to link to those in adjacent communities.

TransOptions Bike Locker Inventory, TransOptions, 2012

This inventory indicates the presence of bicycle lockers at each of the three stations, although at Madison Station they were observed in the Kings Lane Lot by the VHB project team. The inventory shows that there are 16 lockers at Chatham Station, 10 at Convent Station and six at Madison Station. There is a waiting list for lockers at Convent Station.

Structured Parking Reference Material, NJ TRANSIT, 2005

This document is a checklist of considerations for the design of structured parking, including bicycle and pedestrian elements. Bicycle and pedestrian elements to consider include:

- Planning, Programming Economic Considerations:
 - Vehicular and pedestrian circulation should be concurrently addressed to ensure balance.
 - Central point of pedestrian access to transit system.
 - Clearly defined internal paths of travel for all users.
 - Parkers become pedestrians so parking aisles should be oriented toward the primary access
 - Locate Drop-off/ Pick-up close to facility. These areas create conflict and congestion with significant pedestrian activity, so design carefully.



- Design, Engineering & Construction Considerations
 - This section covers design specifications and is not relevant to this study.

Zoning Ordinances for Madison, Morris Township, and Chatham Borough

A review of the ordinances indicates that:

- Bicycles are included in general provisions;
- No complete streets policies are in place;
- In Madison, several requirements exist for bike storage or parking associated with development of parking facilities or new development;
- In Chatham Borough’s and Morris Township’s ordinances, there is no discussion of non-motorized bicycles.

Roadway and Transit Safety

Crash summaries at the Chatham, Madison and Convent Stations are presented below. NJTPA provided crash data from 2006-2010 within one-half mile of each station (this is generally accepted as the maximum distance from which pedestrians would typically walk to transit). In the next phase of this project, crash analyses will be performed at up to 25 stations to determine the predominant crash types, patterns and causes so that the client, consultant team, and stakeholders can subsequently make roadway, pedestrian, and bike safety recommendations based on needs at high crash locations adjacent to stations.

Chatham Station

General Safety Data

There were 448 crashes within a half mile of Chatham Station from 2006-2010, or about 90 per year. Of those, about two percent involved cyclists and two percent involved pedestrians. The majority of pedestrian crashes and about half of the bicycle crashes occurred at intersections on NJ 124. Therefore, pedestrian and bicycle facility improvements would have the maximum benefit at intersections along NJ 124 within a half mile of Chatham Station.

Evaluation of Pedestrian Improvements in the Vicinity of New Jersey Transit Rail Stations – Final Report to: Transportation Coordinating Council (TCC)/Federal Transit Administration (FTA), Rutgers University, as of June 2012.

According to this study, there were no pedestrian crashes within 250 meters of Chatham Station during the 2005-2008 study period. The results of the roadway safety audit conducted at Chatham showed:



Positive Safety Attributes:

- Parking lots are directly adjacent to the station – therefore driving commuters are not required to cross any roadways to reach the platforms.
- The crosswalk at Coleman and NJ 124 had beacons which can be activated by pedestrians.
- The sidewalk network is relatively extensive and is well streetscaped.
- Un-signalized crosswalks at the train station are enhanced with centerline pedestrian signage.
- Vehicle operating speeds are relatively slow. Posted speed limits along Fairmount Avenue and Main Street (NJ 124) are 30 MPH. Traffic volumes along Fairmount Ave are relatively low.
- All roadways are two-lane roads (one in each direction) and many include parallel parking.
- The intersection of Main Street (124) & Fairmount Avenue (638) is signalized with pedestrian signal heads.

Negative Safety Attributes:

- Main Street (124) & Coleman Ave crosswalk markings are not uniform. The enhanced flasher beacons are not signed in accordance to Manual on Uniform Traffic Control Devices (MUTCD) recommendations, and push buttons to activate the system are only located on two of the four corners.
- Some locations are lacking federal ADA accommodations (under PROWAG) failing to meet modern standards.
- The area is subject to sign clutter.

The conclusions of the roadway safety audit pertaining to stations such as Chatham were:

Stations with low crash counts shared many of the same positive attributes:

- Relatively low operating speeds,
- Low volumes,
- Lack of parallel vehicle passing – i.e. two-lane, bi-directional cross-sections,
- Pedestrian accommodations were well marked with signage and/or pavement markings,
- Pedestrian accommodations were well maintained, and
- Visible streetscaping differentiated area to drivers as one with pedestrians.

General recommendations:

- Recommendation 1: Promulgate Complete Streets in the vicinity of train stations - roadways should be designed for slower speeds and to accommodate all users.
- Recommendation 2: Proper maintenance is important to safety.
- Recommendation 3: Upgrade traffic control devices to meet current engineering standards and best practices.
- Recommendation 4: Ensure a complete and accessible sidewalk network which is attractive for pedestrian use.



Madison Station

There were 442 crashes within a half mile of Madison Station from 2006-2010, or about 88 per year. Of those, about two percent involved cyclists and three percent involved pedestrians. Just over half of the pedestrian crashes and nearly all of the bicycle crashes occurred at intersections on NJ 124. Therefore, pedestrian and bicycle facility improvements would have the maximum benefit at intersections along NJ 124 within a half mile of Madison Station.

Convent Station

There were 100 crashes within a half mile of Convent Station from 2006-2010, or about 20 per year. There was one pedestrian crash and two bicycle crashes, none of which occurred on NJ 124. However, with improved transit service and increased residential density near the station potentially in the future, pedestrian and bicycle exposure to vehicular traffic would increase, which could cause an increase in pedestrian and bicyclist crashes.

Multiple Stations/General Items

New Jersey Department of Transportation Bureau of Safety Programs (BSP) Program Methodologies, NJDOT, As of February 2012

This document lists NJDOT methods for further evaluation/study. These methods are used to identify high crash locations for their bureau of safety programs.

Bus Stop Safety Toolbox, NJTPA, 2011

Recommendations:

- Consolidating driveways through access management reduces potential pedestrian and motorist crashes; NJDOT recommends driveways no closer than 100 feet from the nearest signalized intersection.
- Bus stop signage and markings, and pedestrian warning signs and ladder crosswalks are effective, low-cost improvements.
- To identify traffic calming candidate locations, municipalities should first identify high pedestrian crash locations at and near bus stops.
- Curb extensions and reducing the corner curb radii are ways to slow turning vehicles through crosswalks to decrease crash conflicts.
- Use crash data analysis to prioritize bus stop needs and safety improvements.
- Safety audits and bus stop safety checklists should be part of the plan for bus stop evaluations.
- Use Plan4Safety for pedestrian crash data analysis.



- Other safety recommendations include safe access via sidewalks, bike lanes, and one-way to two-way conversions, pedestrian islands at channelized right-turn lanes and medians, midblock crosswalks, ADA curb ramps to meet crosswalks, adequate signal timing for pedestrians, fixed pedestrian signals instead of actuated/ push button, leading pedestrian intervals (LPIs), and pedestrian-level lighting near shelters for safety and security.
- Safety improvements should be paired with enforcement and education.

Transit Infrastructure and Operations

Convent Station

Minibus Daily Ridership, NJ TRANSIT, March 2012
Minibus Monthly Ridership, NJ TRANSIT, March 2012

The daily ridership report documents ridership by route for the NJ TRANSIT 878 and 879 buses. Average passengers per trip is 5.9 for the 878 bus and 3.3 for the 879 bus.

The monthly ridership documents the combined monthly ridership for the two routes since January 2010. Ridership on both routes has been falling from approximately 3,000 in January, 2010 to approximately 2,000 in March 2011.

Multiple Stations/General Items

Borough of Madison: A Center for Transit, the Arts, Lifelong Learning and Health & Recreation, Rutgers/NYU, 2003

This report identified three potential shuttle routes from Madison Train Station. These three routes would largely serve the business areas to the north of Madison Station.

Bulletin #8, "All Aboard Public Transportation", Morris County Division of Transportation, 2008

This report identified the importance of public transportation in Morris County and made the following recommendations:

Improving Public Transportation Service

- County Actions
 - Work with NJ TRANSITTRANSIT to better coordinate bus and train schedules to improve transfers.



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- Encourage NJ TRANSIT to increase off-peak Montclair-Boonton Line service between Dover and NYC during weekdays and add weekend service to the line.
- Encourage NJ TRANSIT to transition to energy efficient modes of transportation such as electric or hybrid buses.
- Increase operational efficiency of MAPS through technology and coordination of existing services.
- General Actions
 - Study the possibilities of Bus Rapid Transit in areas of high congestion. Commuter buses could be allowed to use the shoulder of the highway to circumvent traffic.
 - Continue to expand “Bike Aboard” program to allow bicycles on trains at all times and make NJ TRANSIT’s entire bus fleet bike friendly.
 - Utilize community shuttle services to connect neighborhoods and businesses to rail stations and bus stops.
 - Install bus shelters where practical to give riders a safe and protected location.
 - Explore the feasibility of giving buses signal pre-emption.

Transit Network Expansion

- County Actions
 - Investigate the potential to increase peak period service and expand the service area of Morris County Metro urban routes. (Since this document was release, the bus routes known as the Morris County Metro have been reconfigured and rebranded so that they are now known as NJ TRANSIT buses. The routes are no longer identified as Morris County Metro.)
 - Evaluate the possibility of expanding and increasing service for Morris County Metro 4, the only daily rural bus route. Operating from Morristown to Dover, through Mendham and Chester, it has the highest ridership among rural bus routes. (Since this document was released, the Morris County Metro 4 bus, along with the other two rural buses, was discontinued.)
 - Work with NJ TRANSIT and neighboring counties to study potential new inter-county bus routes to improve connections between population and employment centers.
 - Support passenger rail restoration of Lackawanna Cutoff, which will alleviate automobile congestion on I-80.
 - Support NJ TRANSIT’s reactivation of NYS&W Bergen-Passaic railroad passenger service.
 - Identify locations where new park-and-rides could be located to best reduce commuter traffic from highway corridors.
 - Provide technical assistance to municipalities interested in adding community shuttle services.
 - Explore route expansion, possibly into adjacent counties, for Morris On the Move (MOM). Currently, there is one route that runs from Mount Olive to Dover. MOM is funded through the Job Access Reverse Commute (JARC) program. JARC’s goal is to improve access to employment for low-income individuals.



- General Actions
 - Study the feasibility of adding bus or rail transit lines to provide service along or adjacent to north-south highway corridors such as I-287.
 - Determine the need for providing fixed-route bus service to age-restricted communities.
 - Consider the mobility needs of residents in the development of age restricted housing, assisted living, and nursing homes in Morris County.

Bus Route and Rail Schedules (Various)

The NJ 124 Transit Study Area is served by NJ TRANSIT’s Morris and Essex Line, stopping at Chatham, Madison and Convent Stations, and four bus routes, NJ TRANSIT 873, 878, and 879 buses, and the Madison Avenue Direct (MAD) Shuttle. The 873 bus runs parallel to the rail corridor along Route 124 and stops at, or in close proximity to, each of the three stations in the study area. The 878 and 879 buses are loop routes designed to distribute and collect rail passengers. These two bus routes both serve the Convent Station. The MAD shuttle is a downtown circulator which serves the three colleges in the NJ 124 Corridor, along with Madison and Convent Stations.

Timed transfers between existing bus service and the rail line are limited. This is particularly an issue for the 878 and 879 buses, which are designed to feed the rail line. Additionally, the existing timetables do not show potential transfers from the bus routes to the rail lines.

Table A-3 summarizes the percent of total trips that meet the train within 15 minutes (in each direction). In some cases, the percent of total trips that meet the train is higher for the peak hour, but not consistently across all bus routes and stations. While there are numerous variables involved in the scheduling of bus service, creating connections by scheduling buses in concert with rail service would improve station accessibility.

TABLE A-3: Summary of Bus to Rail Trip Connections						
		873		878	879	MAD
		<i>EB</i>	<i>WB</i>	<i>Loop</i>	<i>Loop</i>	<i>Loop</i>
Convent Station	From NYC/HOB	33%	67%	41%	38%	
	To NYC/HOB	44%	22%	82%	75%	
Madison Station	From NYC/HOB	44%	33%			25%
	To NYC/HOB	44%	56%			38%
Chatham Station	From NYC/HOB	22%	44%			
	To NYC/HOB	44%	56%			



Bus Stop Safety Toolbox, NJTPA, 2011

This report documents NJ TRANSIT's bus stop policies. Included in this are the optimal spacing of bus stops (between 600-1,250 feet); the placement at intersections (near-side, mid-block, or far-side); and potential amenities (benches, signs, real-time information).

Concept Report Summary Morris & Essex Line Expansion of Shuttle Service and Park and Rides, NJTPA

This report identified the need for connections to three stations in the study area. Demand increased tremendously with the implementation of Midtown Direct service. However, there is a lack of available land to expand parking facilities at these stations. This is caused by existing development as well as due to environmental regulations related to being in the Highlands District.

The study recommended the following feeder services (either for businesses or homes) for each rail station:

- At Madison Station both a residential and employer shuttle could be possible at this station given the land use.
- At Convent Station expansion of the existing employer shuttle could be possible at this station, given the land use. A residential shuttle is not advisable.
- At Chatham Station residential shuttles are preferred for this station. An employer shuttle would not be advisable given the land use.

Northwest New Jersey Bus Study, 2010

This study conducted by NJTPA includes Convent Station in its study area. Although the majority of the study area is to the north of the NJ 124 corridor, the recommendations it makes are pertinent to this study:

Need 1: Strengthen transit service along the major study area corridors

- Increase the frequency of off-peak service on commuter
- Restructure local routes in Morris County
- Increase span and frequency to key Morris County local routes
- Improve coverage
- Integrate local and New York commuter service

Need 2: Improve connectivity through shuttles and linkages to rail stations, transit hubs, and employment centers

- Improve community circulators
- Improve railroad station connections
- Improve service to major transit hubs

Need 3: Integrate private carrier services and locally run services into the area's transit network through service and fare coordination and transit information improvements

- Accept local fares and passes on commuter buses operated by private carriers



- Integrate private carrier route, schedule and fare information with NJ TRANSIT

Need 4: Implement improvements to bus passenger facilities and running ways to support service proposals, upgrade system image and improve passenger comfort

- Improve passenger information, safety and amenities at existing park-and-rides and major bus stops
- Add commuter park-and-ride facilities and capacity
- Initiate a bus bypass lanes pilot project
- Create new and enhanced transit hubs

There was one specific recommendation pertaining to Convent Station:

- **Modify Wheels 966 Shuttle Route:** NJ TRANSIT operates two shuttles from Convent Station (Wheels 966). Route 1 offers six trips from the station in the morning and five trips to the station in the evening. Route 2 offers five trips in the morning and four in the evening. The Wheels 966 shuttle has sufficient ridership to justify the service, particularly on Route 1. In this concept, a few unserved office complexes on Park Avenue would be added to the route. The two 966 routes are completely separate and should be numbered separately. The route should be rebranded as a rail connection shuttle (distinct from other types of Wheels service which typically are local community circulators). The service should be noted on the Morristown Line train schedule. The new schedule for the service should include arrival and departure times of connecting rail trips at Convent Station. (Since this study was completed, the two 966 shuttle routes have been rebranded and numbered separately as the NJ TRANSIT 878 and 879 buses.)

Smart Transportation Guidebook, NJDOT/PennDOT, 2008

This report identified the importance of transit in designing a transportation project. Wider sidewalks and pedestrian friendly elements support both pedestrians as well as transit users. Grid networks, and streets with adequate geometry support transit use. Important elements for transit services (particularly bus and other non-fixed guideway service) include:

- Easily identifiable bus stops that are located at:
 - intersections and where convenient transfers between routes can be provided and sufficient curb area for bus operations and passenger queuing exists
 - in a consistent pattern (e.g., all nearside or all farside) to enable transit patrons to readily comprehend where they need to board a bus;
 - close to major passenger generators;
- Bus Stops Should Have the Following Amenities:
 - Passenger Waiting Shelters
 - Seating
 - Information Kiosks/Boxes
 - Trash receptacles, bicycle racks, public telephones, lighting, and landscaping



Planning and Zoning/TOD

Chatham Station

Borough of Chatham Zoning Ordinance

The following is a summary of the key zones presented in the ordinance:

- B-1 Business Service District: small scale business and professional offices compatible with residential uses.
- B-2 Regional Business District: general goods and services on a regional scale.
- B-3 General Business District: business, office and retail for local community in scale with historic buildings; more vehicular and less intensive than B-4.
- B-4 Community Business District: Pedestrian-oriented shopping in the downtown. Retail and personal services on ground level; offices and business services on upper levels.
- B-5 Office District: Large scale office use and research laboratories.

Chatham Borough Business Zone Study/Presentation, Taylor Design Group, 2009

This study examined Chatham Borough Zones B-1 through B-5, with a focus on the relationship between development build-out and parking availability. A parking utilization analysis for the two municipal lots near the railroad station was included and found the parking supply to be adequate. The Study suggested issuing commuter parking permits at the Bowers Lane lot. The focus of the study appeared to be more on preserving scale and character of the business areas rather than in encouraging higher density Transit Oriented Development (TOD) in Chatham. It was noted that the Master Plan called for business development “compatible with the predominant historic period.”

Chatham Borough Master Plan Reexamination Report, 2006

This report presented an update of *2000 Chatham Borough Master Plan*. The following are items relevant to the NJ 124 Transit Study:

- The 2006 Reexamination noted that the 2000 Plan included the following:
 - Identified the “short supply of parking for commuters in downtown” as a major problem/ issue.
 - Recommended “promoting bus ridership” and “use of vans for transportation to the railroad station” as possible solutions to identified problems.
 - Expressed the goals of “Preservation and enhancement of the small-town character of the Borough” and “Minimize conflicts between shopper and commuter parking, and between circulation needs for local vs. regional traffic.”
- Stated that the opening of Route 24 had only partially alleviated heavy traffic on Main Street (NJ 124).



- The 2006 Reexamination included the following new goals, objectives, and implementation strategies:
 - “Consider common regional issues, such as...transportation...as opportunities for cooperative regional solutions.”
 - “Continue to pursue planning and zoning rules and procedures, including development incentives that will protect and enhance the historic character of the downtown and of the residential areas.”
 - “Balance transportation needs of residents, workers and transients as they move within and through the Borough.”
 - “Encourage land planning that incorporates safe pedestrian and bicycle pathways.”
 - “Continue involvement with regional traffic management and regional municipal organizations relative to traffic and development issues.”

Madison Station

Borough of Madison Master Plan, Borough of Madison, 1992

The Borough prepared a Master Plan in 1992. More recently, Reexamination Reports were prepared in accordance with State Law in 2004 and 2011. Madison also prepared a *Master Plan Land Use Amendment* in 2009. The following is a summary of key points presented in the 2011 Reexamination Report which builds on the earlier work and suggests revisions where appropriate.

Relevant goals and objectives for Madison that appear to have remained consistent from 1992 through the recent updates include:

- “To permit multi-family residential use at appropriate densities in locations accessible to major highways, commercial services, and public facilities.”
- “Encourage the use of mass transportation.”

The 2004 report noted several problems that would require planning efforts in order to address them, including “Addressing parking demand in the downtown.”

The 2009 Amendment noted that the Borough had been utilizing shared parking and parking management to deal with parking demand in the downtown and identified new objectives including:

- “To encourage development opportunities that incorporate transit-oriented design principles in locations within a ¼ mile of the NJ TRANSIT train station with densities, amenities and uses reflective of the specific neighborhood context and site-related features and opportunities.”

The 2011 Reexamination reported on progress towards reaching previously stated goals issues including that the borough had reduced the maximum downtown building heights to three stories, consistent with the existing scale, and lowered non-residential parking requirements in the downtown to reflect its “mixed-use, transit accessible nature.” And, it reiterated the 2009 report’s newly added objectives.



Borough of Madison Zoning Ordinance

Madison’s downtown area, which includes the railroad station, is zoned CBD-1, CBD-2, CC (Community Commercial), and OSGU (Open Space/ Government Use). The objectives of each are as follows:

- CBD-1, CBD-2, Central Business District Zones: Intended to promote a vital, mixed use downtown core – residential, retail, office, institutional, theaters, etc. - designed to encourage street-level pedestrian activity. Each has similar regulations, except that one and two-family housing is not permitted in CBD-1. Allows for 20% reduction of non-residential parking requirements; additional 10% reduction is possible with demand management. Shared parking is permissible.
- CC (Community Commercial) Zone: Intended to provide commercial uses to serve local residents rather than regional demand. Permits retail, office, institutional and other uses, plus apartments over commercial. This zone is generally located adjacent to NJ 124.
- OSGU Open Space/Government Use Zone: Intended to recognize and preserve open space and government uses, including the train station.

In December 2010, the Borough adopted regulations for the Green Village Road Special Use (GVRSU) District and mapped it on a former school site located adjacent to the downtown. The purpose of the zone is “to encourage development of the area, consistent with transit-oriented design and sustainable design principles...” The District includes two sub-zones. In Sub-Zone 1, townhouse and multi-family developments are permitted uses and a boutique hotel is a permitted conditional use. With bonuses, residential densities can go as high as 28 units per acre with maximum heights governed by the sky exposure plain and topographic elevations. In Sub-Zone 2 permitted uses include boutique hotels along with ground floor retail, restaurants, and various cultural facilities. Upper levels can accommodate commercial, offices, apartments, live/work artist lofts, and institutional/educational uses subject to various regulations. The borough recently issued a Request for Qualifications from developers interested in developing the GVRSU zoned property in accordance with the Borough’s *Redevelopment Plan for the GVRSU Area*.

LINCOLN PLACE: Making Lincoln Place a “Place” in Downtown Madison, NJ, Project for Public Spaces, 2009

- Identified improvement ideas for Lincoln Place which is across the railroad tracks from the Madison Station.
- Focus was on making Lincoln Place a destination by: improving the pedestrian environment through physical improvements to streets, sidewalks and buildings; expanding the mix of businesses and activities; and attracting more people.
- Study noted the “significant commuter ridership on trains” and recommended expansion of the role of the station beyond just being a transit station to make it a “central hub from which activities spill onto the street.”

Morris Area GREEN Transit Initiative, Borough of Madison, 2009

The report projected that the proposed parking garage would allow 306 additional commuters to take the train to New York City. It also highlighted the need to improve traffic operations, particularly in light of proposed and



approved developments in the area, including the redevelopment of the Exxon tract in Florham Park. Finally, it posited that improving station access by implementation of the recommendations for Lincoln Place from the 2009 Project for Public Spaces study (see above) “is critical to increasing usage” of the train station.

Sustainable Living in Madison, New Jersey and Sustainable Commuting in the Region, Borough of Madison, 2010

In August 2010, the Borough of Madison applied for a USDOT TIGER II and HUD Sustainable Community Challenge Grant to prepare a Transit Oriented Development Action Plan. The focus of the Plan was to link land use and transportation planning efforts to enhance the borough’s long-term “sustainability and community livability.” The three major components of the Plan were to be: (1) Maximize sustainable access to transit for the region; (2) Enhance community livability through transit-oriented mixed use development; and, (3) Implementation of transit oriented development action plan. The application indicated that Madison had the support of:

- Borough of Florham Park
- Harding Township
- Morris Township
- Chatham Township
- Morris County Freeholders

The application included the Morris Area Green Transit Initiative as an attachment.

Convent Station

Township of Morris Master Plan Reexamination, 2007

The reexamination does not specifically address the Convent Station area or transit service in general. Policies that are relevant to the NJ 124 Transit Study include the following goals and objectives:

- “Maintain established patterns of density both for single-family and multi-family uses...”
- “Maintenance of existing commercial areas and restriction of new commercial development”

The report also noted that the Township was participating in a regional traffic study that was to include intersections of Madison Avenue (124) with Punch Bowl Road, just west of Convent Station, and with Normandy Parkway further to the west. The Town suggested that the Madison/Punch Bowl intersection be considered for

signalization and that the signal at Normandy Parkway should be reviewed to reduce congestion in Madison. Madison Avenue was also listed as a priority for sidewalk construction.

Township of Morris Zoning Ordinance

The ordinance contains three Mixed Housing Zones, RH-5, 16, and 20, which are aimed at meeting Mt. Laurel obligations with maximum densities of 5, 16, and 20 units per acre. Zoning of areas around the Convent Station are a mix of Open Space/Government Use (OS/GU), Office and Research Laboratory (OL-5), University (U), various single-family residential zones, and an area of Town House Residential (TH-8) with a maximum density of eight units per acre.



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Appendix B: Outreach



Stakeholder Interview Notes



Date: April 4, 2012

Meeting Name: Stakeholder Meeting – NJ TRANSIT

Attendees:

Name	Representing	Name	Representing
RJ Palladino	NJ TRANSIT	John Del Colle	NJ TRANSIT– Government and Community Relations
Ken Beitel	NJ TRANSIT	Jim Gilligan	NJ TRANSIT – Bus Planning
Alan Budde	NJ TRANSIT – Bus Planning	Tom Marchwinski	NJ TRANSIT – Forecasting
Janice Pepper (2 nd half of the meeting)	NJ TRANSIT – Market Research	Lisa DiTaranti	VHB
Susan O’Donnell	VHB		

The following are the meeting highlights:

- A project overview was provided to the attendees. The Study seeks to provide recommendations to improve access to transit. NJ TRANSIT noted that Morris County is leading this Study because most parking in the Study area is not owned by NJ TRANSIT.
- Lisa DiTaranti discussed some of the NJ TRANSIT-related findings from the earlier stakeholder meetings:
 - During a meeting with College representatives, the idea of distributing a “transit information package” to incoming students was discussed. The Colleges also asked why the Student Weekly Pass was discontinued. The Colleges would like to see a mechanism for parents to purchase transit passes for their students at new student orientation. The Colleges would also like to see a “day pass” allowing unlimited use of transit for a day or a multi-pass pack. NJ TRANSIT has had success working with other Colleges and Universities during the student orientation process. During orientation at other colleges and universities, NJ TRANSIT has spoken with students and, most importantly, with the parents about NJ TRANSIT services. This has been successful but NJ TRANSIT has not been able to do this with the colleges/universities in this corridor. A “One-stop shop” of transit information for students on campus is critical as learned from the Northwest New Jersey Bus study.
 - The Colleges indicated that kitchen and maintenance staffs appear to use transit in addition to students.



- At the College of St. Elizabeth, cut-through traffic is reported as a problem; vehicles use the main campus roadway to travel between Park Avenue and NJ 124. Additionally the College is concerned about pedestrians crossing the tracks unsafely when the guard rails are down on Convent Road. The College would be interested in an Operation Lifesaver presentation.
- Students attending evening classes at Drew University have had travel difficulties reaching campus because NJ TRANSIT does not provide evening bus service.
- Harding Township residents would like to have access to more parking for their residents; however, residents are finding alternative parking at church lots or on-street, or they are driving to stations further east.
- The municipalities along the NJ 124 corridor are working on economic development and reoccupying the vacant buildings/offices.
- Representatives from Pfizer, located at 5 Giralda Farms, indicated that a corporate shuttle is provided as an employee benefit. The shuttle is not promoted because, while there is a contingent that wants to maintain it, and there are also those who want it be discontinued. The existing NJ TRANSIT bus service does not travel into the Giralda Farms Campus, so some of the buildings with long access driveways further into the campus are not directly served by NJ TRANSIT.

NJ TRANSIT Bus Routes in the Corridor

- NJ TRANSIT discussed the history of bus service in the corridor:
 - The 873 bus route connects the Livingston Mall to Morristown and to the Morris County Human Services Facilities in Parsippany, operating six days per week. The route has been restructured twice in the last two years (fall of 2010 and in 2011). Through the fall of 2010 the route ran hourly; after that the midday service was reduced to run up to every two hours. In 2010, NJ TRANSIT originally proposed eliminating the route but there was substantial public outcry for service to continue. The 873 was eventually routed through Morristown Station to further enhance the station's role as a transit hub.
 - As part of the restructuring, NJ TRANSIT examined routing the 873 bus into the Drew University's and Fairleigh Dickenson University's campuses. However, it was determined that these diversions would result in an unacceptable increase in the bus line's travel time through the corridor.
 - Most of the bus ridership market that is served by NJ TRANSIT's routes is local. Eighty percent of the passengers are non-English speaking passengers traveling to jobs and shopping opportunities. The remaining 20 percent are mostly seniors trying to move about for shopping or medical appointments. Very few students use NJ TRANSIT's buses in the corridor.
 - The two other routes that NJ TRANSIT operates in the study area are an outgrowth of the Wheels 966 shuttles and were rebranded as the 878 and 879 routes. The Wheels 966 shuttles were also slated to be eliminated in 2010, but the corporate community "saved" them. As the trains arrive from the east the shuttles pick up passengers to



circulate them to the corporate sites. Recently, NJ TRANSIT added an official stop at St. Anne's Villa because drivers were stopping there by request. The 879 stop at the old Verizon site (which was closed and will be reopened by the Realogy Corporation) was discontinued. Both the 878 and 879 routes operate in the weekday peak AM and PM periods. There are no observed reverse peak riders, such as residents using these shuttles to access the train, on these routes.

- Bohler Engineering has contacted NJ TRANSIT on behalf of BASF to inquire about adding transit service to their new site. BASF would like the bus to serve their site because they are pursuing LEED Gold certification.
- The 878 and 879 routes have about 75 total riders per day (both directions). NJ TRANSIT has some ride check information that will be provided to the project team.
- NJ TRANSIT had utilized cut-away vans for the 878 and 879 routes until last year when they switched to 30 foot passenger transit buses with bicycle racks. The 30 foot passenger buses have been a problem because the vehicles' mirrors were hitting trees. NJ TRANSIT will be switching back to "big mini-buses" with 20 to 25 seats but probably without bicycle racks.
- Realogy will be opening an office at the former Verizon site on Park Avenue. The company contacted NJ TRANSIT a few months ago because they are also pursuing LEED certification and are interested in transit service to their building. NJ TRANSIT will re-instate the stop on the 879 route to serve their site when Realogy opens.
- NJ TRANSIT's buses also turn into a few businesses' driveways on Madison Avenue such as Crum and Forster, and others like Honeywell where the bus must pass through security gates. Some companies prefer front door service while others are satisfied with stops within walking distance of their buildings.
- The NJ TRANSIT buses that serve the study area generate nearly zero revenue for NJ TRANSIT Bus Operations because most of the bus riders are also rail riders with monthly passes who are entitled to a free one zone bus transfer. Revenue for these riders goes to the rail side of NJ TRANSIT.
- The 873 route once had the \$0.50 reduced fare, but with the restructuring it went back to the \$1.50 fare for one zone trips.
- Each of the routes is served by a single bus, so increasing service or making additional stops would be costly. The train to bus connections are closely spaced (without much cushion) because of train schedule modifications.
- At Convent Station, a food truck and several taxis are usually occupying the bus stop area or the handicapped spaces on the eastbound side of the tracks. NJ TRANSIT has spoken with Morris Township to request a designated space for the food vendor, but this has yet to be accomplished.
- The Giralda Farms shuttle was originally funded through the Congestion Management Air Quality (CMAQ) program and managed by TransOptions. When CMAQ funds were expended, TransOptions asked NJ TRANSIT to take over the shuttle but NJ TRANSIT had no funds to run the service. TransOptions secured corporate sponsors to fund the



service, however the sponsors shortly pulled their money and the route was terminated.

- NJ TRANSIT said there is a new route in Mercer and Middlesex counties (the 655 Healthline from Princeton to Plainsboro) that is primarily funded with CMAQ money, and partially subsidized by County and local governments. CMAQ only funds these shuttles for three years after which they have to be self-sustaining or funded through other sources. NJTPA requests that the shuttle service applicants have a plan for continual funding after the three year CMAQ funds are no longer available. The policy requires that 1.5 years before the funding ends, the various parties will negotiate to continue the supporting the shuttle so that it can be continued, provided that the route is successful.
- The 871 through 880 NJ TRANSIT bus routes, with the exception of the 878 and 879, are partially funded by Morris County Freeholders through an annual cash contribution. NJ TRANSIT is still lobbying for more support.
- NJ TRANSIT was contacted within the last year by a large company that wants to locate in Morris Township near I-287 and Convent Station. The company needs transit service for its many transit dependent employees.
- Bayer International is relocating to a new corporate headquarters on Whippany Road, near NJ 10 in Hanover Township. The corporation is interested in shuttle service for its employees. The redevelopment of the site will consist of a commercial phase, which will be followed by residential development. The redevelopment is designed to accommodate transit buses.
- NJ TRANSIT has also received a request for bus service from Atlantic Health. NJ TRANSIT is encouraging them to design their site in a transit-friendly way.
- If NJ TRANSIT funding is reduced again, these shuttles could also be subject to cuts.

Madison Avenue Direct Shuttle (MAD)

- The MAD Shuttle service, managed by TransOptions and funded with CMAQ dollars, provides service along the NJ 124 corridor, and follows a route similar to the NJ TRANSIT 873 route. To not undercut existing NJ TRANSIT service, NJ TRANSIT required that the shuttle fare be equal or greater than the fare on the NJ TRANSIT routes.
- Additionally, the shuttle service could only operate at times that do not compete with the NJT services. This explains why the MAD shuttle operates with restricted hours. The MAD Shuttle service will probably be refined as more rider needs are identified. Customers have expressed concerns about the shuttle's "look" indicating it appears unsafe or unofficial. The identity and branding of the shuttle are issues that should be addressed.
- NJ TRANSIT is willing to drop the 873 bus and let the MAD shuttle take over the 873 route. However, if the 873 route or any of the other NJ TRANSIT buses or shuttles were taken over by another operator, then rail customers with monthly passes would have to pay a bus fare; currently, rail passengers with monthly passes ride for free on NJ TRANSIT buses for a certain number of zones indicated on the pass.



Other Discussion

- There is an interest in bus service to the offices in the corridor. Although Morris County has one of the highest office-vacancy rates in the state, there is a lot of redevelopment proposed along Park Avenue such as on the former Exxon Site and the former Verizon site, which Realology will move into. A representative from Realology attended this project's Public Open House expressing interest in transit service for company employees.
- NJ TRANSIT cautioned that when additional parking is made available to non-residents the actual demand is not as always as high as expected.
- NJ TRANSIT predicts some increase in ridership as phases of the World Trade Center redevelopment are completed.
- NJ TRANSIT cautioned that when VHB is given ridership demand by NJ TRANSIT, VHB needs to look closely at what the demand is showing. NJ TRANSIT suggested VHB examine if improvements in parking management and bicycle and pedestrian infrastructure could address parking demand.
- VHB has conducted a comparison between the bus schedules and the rail schedules and has also spoken with bus riders.
- NJ TRANSIT believes there is an unmet demand to provide transit service between the Lyons VA Hospital and Morristown. If that route was developed, it could possibly run through Harding on the way to Morristown during rush hour. This route would primarily be focused on serving the hospital.
- NJ TRANSIT discussed whether there is a need for more bicycle racks and lockers. Regular bicycles are currently prohibited from boarding trains at low level platforms. The commissioner has asked NJ TRANSIT to revisit the bicycle regulations. Further actions may occur at the June board meeting.²⁹ For updated information on the NJ TRANSIT's bicycle policy, refer to the following website:
http://www.njtransit.com/rg/rg_servlet.srv?hdnPageAction=BikeProgramTo
- TransOptions was considering relocating bicycle lockers from underused stations to stations with demand in this corridor. TransOptions noted that bicycle lockers occupy a lot of space and are expensive.
- Information is another key element for transit users. A static or electronic kiosk is needed with information regarding "how to get somewhere from here." A kiosk has been installed in Morristown and NJ TRANSIT will provide a picture of one. Typically, TransOptions or the municipality would need to take on ownership of the kiosk.
- Madison Station is owned by NJ TRANSIT.
- NJ TRANSIT stated the importance of installing bus stops proximate to the stations. NJ TRANSIT will provide a list of bus stops along the corridor from Morristown to Livingston.
- NJ TRANSIT tested a station Zipcar program, but it was unsuccessful. If the study area municipalities were interested in pursuing a program, NJ TRANSIT would be willing to help

²⁹ NJ TRANSIT revised its bicycle policy at the June Board meeting. Bicycles are now allowed on trains from any station, except during peak hours on weekdays and weekends.



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- promote the program. Drew has a Zipcar program. Zipcar will locate a “pod” car anywhere as long as it generates revenue.
- Ongoing conversations are needed between the NJTPA, Morris County, NJ TRANSIT, TransOptions, and the Colleges.

Action Items

- NJ TRANSIT to provide ridership forecasts next week.
- NJ TRANSIT will provide existing rail ridership at the stations and a complete Morris County bus operation map.
- NJ TRANSIT will follow up with real estate and ownership and confirm that at Convent Station, Morris Township owns the eastbound station building and NJ TRANSIT owns the westbound station building.



Date: March 26, 2012

Meeting Name: Stakeholder Meeting - TransOptions

Attendees:

Name	Representing	Name	Representing
John Ciaffone	TransOptions	Lisa DiTaranti	VHB
Donald Watt	TransOptions	Susan O'Donnell	VHB
Daniel Callas	TransOptions		

The following are the meeting highlights:

- A project overview was provided to TransOptions.
- TransOptions has not run many feeder shuttle routes which provide service for residents to train stations. They have mostly assisted with station to employer site shuttles.
- Chatham Township had a community shuttle through the NJ TRANSIT “Wheels” shuttle program around 2002. The shuttle became a political issue with town infighting. Since it was a Chatham Township shuttle, borough residents were not permitted to ride the shuttle. The Township also had to hire an employee with benefits to help manage the shuttle, which added to the overall cost of the service.
- TransOption’s “Last Mile” shuttle served two stations and provided 53,000 rides over its three year run. It cost \$125,000 to \$200,000 per year to operate. It was CMAQ funded and after the three year funding period ended neither NJ TRANSIT nor the communities wanted to take it over. The shuttle was taken over by Maersk, Quest Diagnostic, and Bausch & Lomb in Giralda Farms; service is provided only to their employees, not the general public. The fares for employees are as follows:
 - Quest - \$3/ride
 - Bausch & Lomb - \$2/ride
 - Maersk - free
- BASF has about 90 employees who ride the train and get picked up.
- Giralda Farms began their employee shuttle to reduce the demand for parking at the office park. Only underground parking spaces could constructed, which is very costly, so the property owner started the shuttle to avoid the more expensive expenditure. Now that there are empty offices on the campus, and less parking demand, Giralda Farms would prefer to eliminate the shuttle. However, the office park is concerned about the negative perception that may arise if they were to cancel the shuttle.
- TransOptions conducted passenger surveys on the Last Mile shuttle and Wheels route that were going to be eliminated about three years ago. Around 80 percent of the riders indicated that they would drive to work if the shuttles were to be eliminated. The Wheels 966 shuttle was not terminated and became the NJ TRANSIT 878 and 879. These shuttles help bring low income workers to jobs in the corridor. Many employees from Dover, which has a large



Hispanic population, use these NJ TRANSIT shuttles. These shuttles also have a large contingent of Hoboken riders, who have a transit affinity and larger proportion of residents under 30 years of age than other communities.

- The MAD shuttle is CMAQ funded which provides three years of financial support. The two year application process and paperwork are very onerous.
- In addition to CMAQ funding, the Madison Downtown Development Commission and the colleges in the corridor to help fund the MAD Shuttle. The ridership is primarily comprised of college students traveling to Madison, to home on weekends, and to take classes at the other universities in the corridor. The real driving force for this shuttle was the colleges.
- The MAD Shuttle is not permitted to serve the businesses that the Last Mile Shuttle had been designed to serve. The CMAQ program will not provide new funding to operate shuttle service similar in design to previous CMAQ funded routes. (After the initial three-year CMAQ funding period ends, the sponsor is responsible to secure funding from other sources for the shuttle's operation.)
- The MAD Shuttle runs with one 15-passenger van. These smaller vehicles provide maneuvering flexibility to access office park sites. The NJ TRANSIT operated employee shuttles are typically also 15 passengers.
- There are some operating requirements because the MAD Shuttle service the same corridor as the NJ TRANSIT 873 bus. The MAD Shuttle is required to charge the same NJ TRANSIT one-zone fare of \$1.50. The MAD Shuttle also cannot serve College of St. Elizabeth during the same hours that NJ TRANSIT's buses serve the College.
- TransOptions does not want to keep eliminating successful shuttles due to lack of funding; however, the local communities are not willing or able to take on the cost burden.
- TransOptions feels that NJ TRANSIT moves slowly because there is a lack of flexibility to assess and correct problems in part due to their slow approval process.
- During a discussion of why the Maplewood shuttle is successful, several things were identified including: culture (New York City Transplants who are comfortable with using transit), younger demographics, proximity, and municipal support.
- According to TransOptions, the employer shuttles are pretty well used. TransOptions will provide the ridership numbers for the shuttles.
- TransOptions conducted a NJ 124 study several years ago with Bob Vogel in Madison. Parking at the Madison train station was identified as a major issue. Residential permits are not transferrable; new residents will need to join the waiting list for permit parking space. Many choose to drive and park at another station like Summit where parking may be more available. There should be better bicycle amenities. In Madison, the bike path stops before it reaches the downtown. Local bicycle shops should become partners to develop a bike share program.
- There has not been a new bike locker installed in the region in 12 years, so TransOptions has tried to relocate unused bike lockers to stations with greater demand. However, due to limited space at some stations, TransOptions cannot always move unused bike lockers. They consider the potential demand for locker usage, beyond the number of bicyclists. For example, Dover has a lot of bicyclists, however many are low income who are less likely to



- rent bike lockers. Bicycle lockers have been moved because of security concerns of having them close to the station platform.
- TransOptions cannot propose new transit services. They can only promote existing services.
 - TransOptions encounters many misconceptions or different beliefs regarding transportation through their interaction with employers and the public. One misconception is that the private sector is interested in taking over public transportation. While employers believe that transportation is a government issue, not a private sector issue. A belief held by some is that roads should be free and transit should be paid for by the rider. TransOptions noted that for transit fares to fully pay for the cost of the service, also referred to as the fare box recovery, the fare would be \$14 per ride, which no one would pay. TransOptions feels that corporate parks should be required to implement an employee shuttle as part of their development/lease, and these shuttles would help attract tenants.
 - There is about a 25 to 30 percent office vacancy rate in Morris County. There is also a significant amount of space where tenants have vacated but their lease is not terminated, which is not included in the 25 to 30 percent. So after 2012 the vacancy rate may go up significantly. Additionally, many office buildings in the region are old and not up to current standards, and therefore they have low potential for re-occupancy when their tenants leave. These obsolete buildings tend to be too far west, too far from transit, and too costly to upgrade.
 - Generally, there has been a change in corporate philosophy. In the early 2000's, unemployment was very low and employers were doing well so they provided many employee amenities. Now with a 7.5 percent unemployment rate, employers feel less need to provide as many amenities in order to keep their employees from switching to another company. Also, with all the corporate mergers and acquisitions many companies are operated by entities headquartered outside of the County and the State, so there is less interest and concern about their traffic impact and less support for local community efforts. Employers feel obligated to provide benefits across the company and not necessarily provide special benefits to New Jersey employees.
 - TransOptions is currently developing a private shuttle to take people from Livingston to South Orange Station on the NJ TRANSIT Morris and Essex Rail Line.
 - The opening of NJ 24 many years ago diverted some truck traffic off of NJ 124. NJ 124 has a combination of local and through traffic. Turning movements at intersections and driveways, and parking contribute to the congestion.
 - TransOption reported that a bicyclist heading to downtown was killed on Woodland Road in Madison.
 - TransOptions suggested that the police need to enforce the "stop and stay stopped" law for vehicles while pedestrians are within crosswalks, and simultaneously enforce laws for pedestrians such as regarding jaywalking. The complete streets design approach should be promoted.
 - TransOptions would prefer that CMAQ funding for shuttles not end after three years. Instead, they would recommend that ridership metrics be developed to determine whether funding



- for each shuttle should be continued. As part of the CMAQ bidding process, TransOptions must develop a plan for identifying sources of funding for continuing any proposed shuttle.
- The Rockefeller group has expressed interest in an employee shuttle but they have not determined a means to fund it. TransOptions has developed traffic mitigation plans for the Rockefeller Group, Honeywell, and BASF. TransOptions will provide copies of the traffic mitigation plans.
 - TransOptions is primarily funded through four revenue streams. The largest amount is now through the NJTPA in a defined work program. Up until 2011, this funding was administered by the NJDOT. They also receive smaller grants through NJ TRANSIT to promote and support TransOptions' existing services which include managing the bicycle locker rental program and vanpool sponsorship program. TransOptions also receives a Highway Traffic Safety grant focused on bicycle and pedestrian safety (not on enforcement) including crosswalk, immigrant bicycle programs, and senior programs. The final funding stream is a Safe Routes to School (SRTS) which is in its last year. They also receive funding through much smaller corporate sponsorships and County subsidies.

Action Items

- TransOptions to provide copies of the Honeywell and Rockefeller Group traffic mitigation plans.
- TransOptions to provide ridership data for the MAD, Maersk, and Wyndham shuttles.



Date: March 26, 2012

Meeting Name: Stakeholder Meeting – Planning Officials

Attendees:

Name	Representing	Name	Representing
Richard Crater	Borough of Chatham Planning Board	Jim Slate	Township of Morris Engineer/Planning Board Engineer
Astri Baillie	Borough of Madison Planning Board	Marshall Bartlett	Harding Township Mayor and Planning Board
David Schiff	VHB	Todd Poole	4Ward
John Hayes	Morris County	Gerald Rohsler	Morris County

The following are the meeting highlights:

- A project overview was provided to the attendees.

Convent Station

- Parking was expanded at Convent Station about five or six years ago.
- Space is leased from St. Thomas More Church.
- Recently there have been more non-resident parkers.
- Traffic in the evening on NJ 124 towards Morristown is heavily congested at Normandy Parkway. A traffic signal is needed at Punch Bowl Road.
- Luxury transit oriented development (TOD) townhomes were built on Old Turnpike Road near the station but they were priced high and have not sold.
- The station building closes at 8 PM. Students waiting on the station platform to travel home by train after evening classes are exposed to the elements.
- Morris Township maintains the station.
- The path from campus is not lighted so students are walking in the dark at night.
- Parking demand is not currently as high as in the past due to the economic downturn.

Madison

- A number of parking spaces were lost when the Police and Fire Building was recently constructed on parking lot #2.
- Madison applied for a TIGER grant to construct a parking deck over lot #3 but was unsuccessful.
- Harding residents are not having a problem finding parking. They are paying to park at the Presbyterian Church or on side streets near the YMCA.
- The Green Village Road school site is being redeveloped for residential and mixed uses.



- Vans operated by various companies have been observed at the Madison Station picking up and dropping off passengers.
- Fairleigh Dickinson University is building a new library.

Chatham Borough

- Chatham Borough has about 50 residents on the waiting list for parking.
- Chatham Township residents utilize the daily parking spaces.
- The NJ TRANSIT owned lots are open to non-residents. NJ TRANSIT-owned lots cannot be designated for residents-only.
- Chatham Borough Council is considering paving an area near the existing lots for additional parking. The municipality has also examined converting some of the shopper parking to commuter parking.
- The Chatham Borough Planning Board representative indicated that the town does not want to be a transit hub and does not want a parking deck. Stakeholders representing other Chatham organizations (like economic development) that attended other stakeholder interview meetings expressed more of an interest in transit-oriented development.
- There is not enough access to NJ 24.
- There is very little development activity before the planning board recently since Chatham Borough is fairly built-out.
- The public schools are operated jointly between the Borough and Township so there is a lot of traffic activity when parents drop off and pick up their children.
- The Walgreens being built at Greenwood Avenue includes office space over the retail space. It previously was a gas station, so there is no residential.
- Some Stop & Shop employees use the train to get to work, and some commuters park in the Stop & Shop lot.
- Chatham Borough needs to improve bicycle and pedestrian access to encourage people who live nearby to give up their parking permits and walk or bicycle to train.

Harding Township

- Harding Township has no train station but about 100 residents are train commuters who prefer using the Morris and Essex line over other train lines.
- The Township would like better access to the train station on the Morris and Essex line but Harding Township residents do not want a park-and-ride lot in Harding, with a shuttle connection to the train station, because it will extend the commute time.
- It takes about five to seven minutes for Harding residents to drive to Madison Station.
- Harding is willing to work with Madison to build parking provided there would be a guaranteed number of spaces for Harding residents. This was discussed with a previous Mayor of Madison.



Regional

- Fees for parking vary. Parking in Morristown is high; Morris Township charges double for non-residents.
- The Park Avenue corridor has a lot of redevelopment activity such as the Jets facility on the Exxon site. Public transit access is needed to reduce the number of vehicles traveling to the Exxon site. Additionally, the aquifer needs to be protected and parking on the site should be reduced. The NJ TRANSIT bus shuttles need to continue in order to encourage transit access to the site.
- The Honeywell development is a regional issue. The developers are going before the Morris Township planning board for a master plan amendment to allow mixed office and residential land uses.
- NJ 24 needs another travel lane because it is at capacity.



Date: March 26, 2012

Meeting Name: Stakeholder Meeting – Chambers of Commerce and Economic Development

Attendees:

Name	Representing	Name	Representing
Peter Fife	Chatham Area Chamber of Commerce	Rebecca Feldman	Morris County Economic Development Corporation
Laura Cole	Madison Downtown Development Commission	Tim Quinn	Morris Township Administrator
David Schiff	VHB	Lisa DiTaranti	VHB
Susan O’Donnell	VHB	Todd Poole	4Ward
John Hayes	Morris County		

The following are the meeting highlights:

- A project overview was provided to the attendees.

Chatham

- Most of the parking in Chatham Borough’s downtown is reserved for commuters.
- More free parking is needed to support businesses.
- The Chatham Area Chamber of Commerce serves both the Borough and the Township, and needs to address issues from both municipalities’ perspectives, as well as from a business and commuter perspective. The challenge is to accommodate the needs of both towns.
- People drive to Summit and other communities like Berkeley Heights and New Providence to do their shopping because those communities have available parking. There is no metered parking in Chatham Borough.
- There has been discussion about adding some additional commuter parking in Chatham Borough.

Madison

- Economic development is what drives people to downtown Madison. The Chamber’s goal is to attract people shop at local businesses.
- There are three demands for parking – merchants, commuters, and shoppers.
- The MAD (Madison Avenue Direct) Shuttle began operating in September to serve the three colleges/universities.
- College students use the NJ TRANSIT buses to travel to the mall.



- There is a walking access problem and the train trestle serves as a physical barrier between sections of town.
- Kings Road along the train station is a problem. It has a narrow sidewalk, but there are not enough trees to block out the glaring sun. The existing car traffic is dangerous and gives pedestrians a sense of vulnerability.
- There has been a strong interest in mixed use/transit oriented development at the Green Village Road School site. Fifteen developers have expressed interest in the redevelopment of the site.
- Short term parking in downtown deters people from staying in town because of fear of getting a parking ticket.
- Downtown is doing well and has only limited vacancies which are primarily due to landlord issues rather than lack of demand for space.

Morris Township

- Residents are concerned that the post office may close.
- Parking is a problem. Residential and non-residential permits are always oversold since all permit holders do not necessarily park every day.
- The Township rents a parking lot from St. Thomas Moore Church. In the past there has been a two year lease between the Township and the Church but more recently it has changed to a yearly lease. There is concern over the loss of about 100 parking spaces should the leased lot be converted to new parish center.
- A Condo project was built near the station, but it went bankrupt and the owner is going before the town to change it to a rental development.
- The Liberty Greens townhouses are located north of the station. The Liberty Greens townhouses have been around for about 25 to 30 years and are a stable community.
- Constructing a parking deck near the train station may face objections from St. Elizabeth and St. Thomas More Church. The Township would also likely get pushback from the community because of traffic concerns and changing the landscape.
- Train noise is perceived as an issue.
- There are only a few railroad grade crossings along the Morristown Line. One crossing is located at the back gate of Honeywell and one is located at Convent Station at the entrance to the College of Saint Elizabeth.
- Quiet Zones have been examined for both at grade crossing locations to estimate cost and liability.

Morris County

- It is in the best interest of the surrounding towns that Morris County stays suburban.
- A TOD development at Convent Station would be successful because it would draw from other towns. There is a need for affordable housing.
- Traffic diminishes the desirability for businesses to come into the area.
- The Atlantic Health Shuttle is good.
- The rail line is underutilized because it is only used primarily for commuting to New York City.



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- The County has a 25 percent office vacancy rate. It is the highest office vacancy rate in the State. Many buildings are in need of redevelopment.
- The Morris County Economic Development Corporation (MCEDC) has shown how shared parking can work.
- Traffic is bad from 3:30 PM to 6PM between Giralda Farms and I-287. Roadway improvement recommendations have not been addressed.



Date: March 26, 2012

Meeting Name: Stakeholder Meeting – Public Works and Parking Enforcement

Attendees:

Name	Representing	Name	Representing
Randy Williams	Morris Township	Dave Powell	Morris Township Police Department Traffic Safety
Robert Sweetin	Chatham Borough Police Officer	Janice Piccolo (for Vince DeNave)	Chatham Borough Engineering
Connie Phillips	Madison Police Department	Lisa DiTaranti	VHB
Susan O’Donnell	VHB	Thomas Phelan	VHB
Matt Carmody	VHB	John Hayes	Morris County

The following are the meeting highlights:

- A project overview was provided to the attendees.

Chatham Borough

- Chatham Borough has 9,000 residents.
- The train station’s 282 parking spots are typically filled every day.
- The Borough has commuter parking as well as parking on Main Street.
- A study has been conducted that included surveying businesses in town to determine how many employee permit spaces are needed.
- Police Officer Sweetin indicated that he handles traffic and crossing guard training.
- There are ongoing discussions regarding adding parking near the train station. If additional parking spaces are constructed, Borough residents on the waiting list will most likely be accommodated first, and then the new spaces will be offered to Chatham Township residents.
- The daily parking spaces at the station are usually fully occupied by 6:45 AM.
- The municipality has received some complaints about vehicles blocking handicapped parking spaces while dropping off or picking up passengers. There is no designated area or spaces for drop-offs and pick-ups, but generally there is ample space to drive around waiting vehicles.
- Some permit spaces are available at times during the day.
- There is a small amount of over sale of permits. About 40 people are on the waiting list. There is very little turnover of permits so people are on the waiting list for years.
- Enforcement is conducted daily in the commuter parking lots. A multi-space meter is used to enforce daily parking.



- There is minimal illegal parking; when it does occur, typically the police encounter a daily parker in a permit spot or shoehorned in parking.
- The station's bicycle parking fills up with bikes and scooters. Additional bike racks and lockers are needed. Additional lockers could be placed adjacent to the existing locations.
- Bike theft is minimal.
- The Police Department and NJDOT are reviewing the intersection of Coleman Avenue and Main Street with respect to pedestrian traffic. There are a high number of pedestrians crossing the intersection at night and drivers are not able to see them to stop in time. The Police are unsure whether or not it will warrant a traffic signal.
- There have been no recent traffic accidents at the entrance or exits to the station.
- Under the railroad trestle there is an attenuator with a warning stop sign to alert drivers of pedestrians in the cross walks. The Borough would like to add in-pavement lighting to the crosswalk.
- The borough has not received any complaints regarding NJ TRANSIT buses. NJ TRANSIT buses work fine.
- During weekday mornings, traffic is heavy starting from 5 AM. After the morning peak period, traffic is light mid-day and then builds approaching the evening peak period. Traffic is a little more diluted during the evening peak period than the morning, but is still pretty heavy at 6 PM.
- The Borough established a parking task force about a year ago. A survey was conducted to determine where people are parking and how many spaces are needed. An under usage of parking was discovered and parking spaces have been re-allocated. The merchants can use the permitted lots for their employees. Parking violations are monitored by parking enforcement agents.
- Some rail commuters who use the station are from Berkley Heights. There is some illegal parking at Kings or Stop and Shop parking lots, and the swim club lot. In the summer, the swim club spots are in use by club members but this potential conflict is usually offset because rail ridership is typically lower during the season.
- There are voice activated pedestrian signals at Hillside Avenue and Main Street. The municipality would like to install two additional voice activated pedestrian signals.
- All businesses are required to have employee vehicles registered.
- The Borough would like to offer concierge services at the station.
- Bowers Lane is an option for at TOD pilot project because Chatham owns the land.
- Chatham wants to relocate the USPS sorting facility to a different location.
- With respect to development, there is an area with access off Commerce Street that the Borough would like to be redeveloped. There have been some DEP issues. The Borough has been discussing redevelopment in the Commerce Street area with a Fortune 500 Company. To proceed, a substation of some sort would need to be constructed.
- Chatham recently passed a Complete Streets Policy. As part of the complete streets program, the Borough is going to look at each road individually to see if bikes can be accommodated.



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- The Borough has voiced an interest in being designated as a Transit Village (note this contradicts statements made by the town planner in other stakeholder group meetings). The Borough has discussed the potential for this designation with Main Street New Jersey.



Madison

- Madison Station has plenty of bike racks. However, abandoned bicycles that are left on the racks are a problem.
- Bicycle theft is an issue around the station.
- The Kings Road parking lot is full most of the time.
- The length of the parking permit waiting list fluctuates. Last year there were approximately 100 people on the waiting list. Currently there are only three people on the waiting list. When the public calls about train station parking availability, the municipality recommends using the Summit parking garage. Nonresidents who call, mostly those who call are Florham Park and Harding Township residents, are not aware of alternatives to parking at Madison.
- There are no major issues with traffic accessing the stations. There have been no major crashes.
- The Madison parking lots are scattered around the station so there is not a major influx or out flow from one location.
- The pedestrian underpasses are now well lit.
- Madison provides “stop in the crosswalks” signage at various intersections; the signage is removed when inclement weather occurs and they would be damaged by snow plows.
- Lincoln Place is safe for pedestrians. At Kings Road and Prospect Street people run across the street. There is a new traffic signal at Kings and Prospect with walk and don’t walk pedestrian signals.
- The current Walgreens construction at Greenwood Avenue has slowed the traffic down, which is good.
- Weekend traffic is fairly low except for Saturday mornings. Traffic is more congested when school is in session and during school start and end times.
- There are no problems with pick-ups/drop offs at the station.
- The municipal commuter lots have about 280 parking spaces in total. There were problems years ago when the police building was built and nonresident parkers were turned away as the number of spaces for nonresidents was reduced.
- Parking inquiries come mostly from out-of town residents from Florham Park, Livingston, and Harding.
- Merchants have complained about other merchants’ employees parking in spaces reserved for shoppers.
- Parking is designated for employee, shopper, or commuter parking.
- Merchants occasionally complain about commuter parking.
- There are a couple of private lots that charge commuters to park monthly including some churches and private lots.
- Madison shuttles and taxis park on Lincoln Place.
- Friends of the Madison Train Station own 90 parking spaces.
- Bicycles ride in traffic in Madison and use the shoulder east of Rosemont Avenue.



Morris Township

- Currently there is not as much of a parking shortage issue as there was a couple of years ago, when there was a problem with the Hotel parking spaces. Additional lots were made available which has addressed the issue.
- There have been periodic parking conflicts between commuters and church parishioners in the St. Thomas Moore Church lot. The church parishioners can park with a copy of their church program on their windshield.
- There is restricted parking on roads including Old Turnpike Road, Barberry Road, and Shephard Place.
- Residents have complained about people parking in front of their houses all day.
- Two NJ TRANSIT buses park in the kiss & ride area along with a food vendor that parks for one hour each morning.
- Metlife, Westin Suites, and MAD Shuttles serve the station along with five taxi companies that are allowed to serve the area. Some taxis have scheduled trips so taxi's wait for riders on a regular basis.
- Most complaints received are regarding people speeding while traveling to and from the station.
- Some commuters cut through the St. Elizabeth campus to travel between NJ 124 and Park Avenue.
- There are very few people walking to the station from NJ 124.
- Buses serve NJ 124 in both directions from the station.
- TransOptions leases the bike lockers.
- The Township sells resident and nonresident permits.
- Daily parking fees can be paid in cash or by credit card - \$5.00 for 24 hours daily rate.
- Nonresident permits are limited to 125. The Township keeps a waiting list of 50 to 75. The list is purged by calling the people at the top of the list, and if there is no response the person is removed from the list and people move up. There are about 600 spaces. Resident permits take precedence over nonresident permits.
- There have been no grade crossing incidents at Convent Station; however, commuters have been observed going under the gate. An Operation Lifesaver program at the Colleges should be considered.
- A parking deck is not needed at this time. The Township would have to see a real overflow of demand in order to consider a parking deck.
- The Township has explored various parking management techniques to deal with demand. When the economy picks up there might be more demand for parking.
- The township does not envision a TOD with retail and parking in place of the current parking lots. The Township would like to keep the existing look; a TOD would be too urban looking.



Traffic Issues/High Accident Locations

- In Chatham there were two pedestrians struck by autos near the center of town in the last six months. In both cases, the cause was distracted driving. The accidents were at Main Street and Passaic Avenue/Kings Road, and Lafayette Avenue and Main Street. Chatham has conducted a number of traffic studies and made improvements that have made it safer, but with the increase in cell phones, texting, and other distractions there are still problems.
- Chatham is installing a crosswalk at Dunbar Street to provide access to Kings Supermarket.
- A traffic signal is needed at Coleman Avenue and Main Street in Chatham. There are over 50 daily crossings and the Borough is waiting to hear back from NJDOT regarding whether a traffic signal is warranted.
- There is some cut through traffic and speeding on Kings Road and Woodland Road. Madison has installed traffic calming devices including permanent radar advisory and painted shoulders. In Madison, as part of the paving program, some roads have been narrowed using paint to create an illusion to slow down traffic. The intersection of Main Street and Rosedale Avenue in Madison has a lot of pedestrians exiting the train and walking to Stop and Shop or Whole Foods.
- Main Street and Greenwood Avenue in Madison has a lot of pedestrian traffic.
- South Passaic Avenue in Chatham has a lot of truck loading and unloading.



Date: March 26, 2012

Meeting Name: Stakeholder Meeting – Senior Citizen/ Disabled/ Minority/ Low Income AND Advocacy Groups

Attendees:

Name	Representing	Name	Representing
Sandra Fielo	Senior Citizens Advisory Committee	Gary Ruckelshaus	Friends of Madison Train Station
Jay Marowitz	Morris Area Freewheelers	Jim Hunt	Morris Area Freewheelers
John Tetz	Morris Area Freewheelers	Edna Lerley-Byrne	Madison Senior Center Foundation
Marty Epstein	Marty’s Reliable Cycle	Bill Ruddicic	Gran Fondo NJ
Nance Greenberg	Rose City Steppers	Hope Hezel	Morris County - Morris Area Para Transit System (MAPS)
Susan O’Donnell	VHB	Thomas Phelan	VHB
Matt Carmody	VHB	John Hayes	Morris County

The following are the meeting highlights:

- A project overview was provided to the attendees.

Bicycle and Pedestrian Access

- A Madison Area Freewheeler (MAF) uses his bicycle mostly as recreation. In the past, he has commuted via Convent Station and parked his automobile in front of neighbor’s house. When he was a regular commuter there always were complaints that there was not enough parking at the station. He indicated that he believes using human powered vehicles would minimize the need for parking.
- The MAF would like NJ TRANSIT to change their bicycle policy regarding bicycles on trains. The NJ TRANSIT regulations are subjective so it is difficult for cyclist to ride the trains because of the rules. Rules only allow two bikes per train car. Buses accept two bikes now.
- At the end of the Traction Line, the crossing in front of Giralda Farms near Danforth Road allows turning movements. The problem with that intersection is that bicycles do not trigger the traffic signal so cyclists must wait for a vehicle to arrive to trigger the signal.
- The Traction Line should be extended further into Madison. The Traction Line ends at Danforth Road. An extension would require engineering but there is a clear path right to the Madison Train station. If the connection was made from Morristown to Madison, then people



would start riding for recreation and for transportation – a cyclist could ride from the medical center in Morristown to Madison in about 10 minutes. If you create a safe path, more people will use it.

- People feel safer bicycling off-road than with traffic.
- A bike sharing program should be created for this area. This area has three colleges/universities, a hospital, Giralda Farms, hotels, etc. that could attract bike share participants.
- At Normandy Parkway the Traction Line goes under the highway overpass. The stairs are in horrible condition in that area and bicyclists must carry their bikes down steep steps. In New York City channels for bicycle wheels have been installed at some locations next to steps to help guide bikes up and down stairs. Bicycle wheel channels should be added to the stairs at this location.
- One of the problems with commuting on a bike is sweating. There may be a revenue opportunity to install lockers and showers at the train stations similar to what is found in Chicago at Millennium Station.
- Walking from downtown Morristown to Morris Township is difficult. In some places the sidewalks are in poor shape or they are not continuous.
- The Mayors wellness campaign is about to start up again and it encourages walkability.
- Madison and Chatham have a large number of children that walk to school but Morris Township does not. Madison and Chatham would benefit from more safe routes to school programs.

Parking

- The permitted parking spaces in Madison are taken early so it is difficult to find parking midday in Madison after all the parking permits are taken. There are no major problems with access to the stations. Safety has been improved at the grade crossing over the tracks at Convent Station.

Senior Citizens

- Senior Citizens walk to town and would like to use the station building to warm up. The seniors have had trouble getting into the station building after the peak hour. The Chatham Senior Center has a van service to take seniors to the station, but that service ends at 2:30pm so returning from the city late in the day can be an issue. The Senior Center runs the van for residents 60 years and older, and for people with disabilities. The van runs Monday through Thursday.
- The Senior Citizen reduced train fare is very appealing -- \$5.00 to travel to the New York City.

Paratransit

- The Morris Area Para Transit System (MAPS) provides medical transportation. MAPS transports seniors and people with disabilities to train stations when that provides the best accessibility to their customers' destinations; they encourage customers to utilize the train



when possible. MAPS has received calls from the colleges asking for transportation into Morristown. Sometimes they provide transportation to Convent Station.

Safety

- An example of a safe crosswalk is the one with red brick pavers near the Hartley Dodge Memorial Municipal Building in Madison.
- A number of students cross at Kings Road and Cross Street and midblock between Greenwood Avenue and Waverly Place in downtown Madison.
- The Elmer Street parking lot in Madison would be a good mid-block crossing location.
- There should be some marked crosswalks on NJ 124 near Convent Station. Currently there are none.
- The new “stop and stay stopped” pedestrian law has been helpful.
- Crossing NJ 124 is difficult in front of Drew University. There is a similar long stretch from the Starbucks area of Madison into the beginning of Chatham where it is difficult to identify where to cross NJ 124.
- The Senior Citizens had previously suggested adding a crosswalk near the Starbucks and Staples, but were advised against it because of the difficulty to get NJDOT approval.
- Recent improvements along Lincoln Place have been very good.

Congested Areas

- Traffic congestion is generally heavy around the schools during drop off and pick up times. Madison Junior High School near the Stop and Shop generates a lot of congestion during school hours. The MAPS service has morning and afternoon pickups and drop offs near Pitney Place and Punchbowl Road in Morris Township, which is also congested.
- Even though traffic volumes are not always high, sometimes the friction with parking activity makes NJ 124 feel congested.
- The area near Friendly’s in Morris Township is always heavily congested around 3PM to 4PM.
- When traveling west (towards Morristown) on Woodland Avenue the right turn onto South Street going towards Morristown is very difficult and unsafe. Seniors have changed medical appointments to avoid that congested area.
- From the cyclist point of view, the condition of the roads is an additional challenge beyond the traffic. At times alternate routes are taken because the roads are in such poor condition.
- MAPS drivers have cut through Morristown Memorial Hospital by the cancer center to Franklin Street to avoid congestion on NJ 124 in Morristown.
- MAPS also receives many requests to transport patients from a Morristown Hospital appointment to an appointment across the street at 95 Madison Avenue because they do not feel safe crossing the street..
- Old Turnpike Road is used by some people as a shortcut but it is underutilized by bicyclists and pedestrians. Creative use of that road to shift people (maybe vehicles, pedestrians, and/or bicyclists) from NJ 124 which would be good.
- There is a lot of concern in Madison about the construction on Park Avenue. Park Avenue is an alternative corridor to NJ 124 and the concern is that as more development occurs it may shift



NJ 124 Corridor Transit Access Improvement Study

Final Report

more traffic to NJ 124. Park Avenue would benefit from Complete Streets thinking – it is wide enough to put a bicycle/pedestrian path similar to the Traction Line and it may encourage people to use other modes.

General

- Each town and the County should adopt a Complete Streets policy.
- Friends of the Madison Train Station work to keep the station neat and clean. Their work is funded through the parking on Crescent.
- There was a question regarding the status of a new on ramp to Route 24. It was examined as part of the Exxon Redevelopment project.



Date: March 26, 2012

Meeting Name: Stakeholder Meeting –Environmental and Neighborhood Groups?

Attendees:

Name	Representing	Name	Representing
Ron Goldberg	Morris Township Environmental Commission	Betsy Uhlman	Madison Environmental Commission
Annie Acken (Not in attendance -- emailed responses)	Washington’s Headquarters Neighborhood Association	Thomas Phelan	VHB
Susan O’Donnell	VHB	John Hayes	Morris County

The following are the meeting highlights:

- A project overview was provided to the attendees.
- Some Morris Township residents are concerned that Honeywell wants to fully develop their 140 acres. There have been a lot of questions regarding accommodating the traffic associated with the proposed development including: How do we deal with traffic that crosses the train tracks? How do we get people to stay out of their cars and to get to the train station another way? How do we get to people to use the train to get to work? What do we do about that last or first mile?
- A traffic study was prepared that presents the impact of the Honeywell redevelopment. With Honeywell fully built out, certain intersections’ levels of service (LOS) will drop from LOS D to LOS F.
- Mobility needs for an outlying site may conflict with mobility to the train station. Some recommendations may be vehicular focused but such improvements may not work well in a downtown environment with a lot of bicycle and pedestrian activity. All stakeholders should be brought to the table to work together and share resources to make improvements rather than competing.
- There is an opportunity to do something innovative such as people movers or fuel-efficient vehicles. There are potential opportunities to be explored to run something along the rail line and/or along the traction line.
- There is no way to improve travel flow unless all the stakeholders including neighbors, local government, NJ TRANSIT, large landholders, businesses, and universities work together and come to a consensus.
- The Traction Line should continue to the Madison Train station.



- Can the transfer of affordable housing requirements (that allows transfers from one town to another) be used with parking? For example, along the business corridors we could find who the major traffic contributors are and where people are coming from. Businesses would save a lot of money in lost time and in parking structures by developing an incentive system. The incentives would reduce the need to build parking and then maybe the development space could be used for something else. Businesses could use the money that would have been spent on parking structures by contributing to offsite parking or last mile shuttles.
- The Convent Station townhouses on Old Turnpike Road have not been fully sold so the developer is asking to be permitted to rent some units.
- People who would like to use the train are confused about the complexity of parking. There are many different payment categories, a strange payment system, and poor signage. There are subtle differences between whether you have a parking permit or a resident identification. If the resident parking spaces are filled then your permit is valid in the nonresident spaces. People are angry if they are ticketed because they didn't understand that they were doing something wrong.
- Some of the residential streets leading to the station do not have sidewalks. The distance between residences and the train is an impediment to walking and biking.
- There are some business shuttles that travel to Convent Station. The shuttles are used much more by service workers rather than by the professionals that are staffing the offices.
- Morris Township and Morristown funded a bus operated by Colonial Coach. The bus was fairly expensive to operate and it only operated in the midday. Now it just serves Morristown. The bus cost \$100K and each town was paying \$50K each year to fund it. The fuel was provided by a co-op so it was not quite as expensive as regular gas. The bus was used mostly by service workers and retired people traveling in the middle of the day.
- It is difficult to get into Convent Station from Morristown if you were walking along NJ 124. If you want to cross the tracks to access the station from Cromwell Hills or across Columbia Turnpike or off of Park Avenue there are difficult crossings. Generally if you are along a County road you might have a problem safely navigating. There are not always sidewalks or safe shoulders plus the travel speeds are high. It is sometimes difficult to tell if there are no sidewalks because no one walks, or maybe no one walks because there are no sidewalks.
- There is not an easy way to get from Danforth Road to Madison Station by bicycle.
- There is a Safe Routes program in Madison. The program usually conducts events in the fall including a walking school bus program and walking /biking programs – mostly at the three elementary schools.
- Madison is very worried about Park Avenue and the developments occurring there. Park Avenue goes from two lanes down to one lane as you approach downtown Madison.
- Limited access on NJ 24 does not allow for traffic to be distributed.
- Traffic congestion is bad between 7 AM and 9:30 AM and again between 4:30 PM and 7 PM.
- Narrowing Morris Avenue from three lanes to two lanes has helped with speeding issues.
- A wider shoulder for bicycles on NJ 124 would be helpful.



NJ 124 Corridor Transit Access Improvement Study

Final Report

- In Morris Township, the Old Glen Road /NJ 124 intersection was improved and restriped. An improved pedestrian crossing was one of the improvements. The consultant team should examine Old Turnpike Road to make it more bicycle and pedestrian friendly.
- Punchbowl Road is unsafe. There are no bicycle and pedestrian amenities. The road is unsafe for bicyclists and pedestrians. The Morris County Golf Course should improve the roadway shoulder that runs adjacent to the golf course.
- Bicycle access from Drew's campus to the Madison train station is difficult.
- Additional sidewalks on Morris Avenue up to Normandy Parkway and on Normandy Parkway are needed. A crosswalk is needed across Normandy Parkway to the stairway access to the Traction Line, or on the Friendly's side of NJ 124. Crossings at those locations are difficult
- There could be more nonresident parking at Convent Station as many Morristown residents park there along with Morris Township residents.
- There are tanks underground at the intersection of Greenwood Avenue and Main Street where the new Walgreens is being built. The street and sidewalks may be required to be torn up for tank removal.
- This area might be good for a bike share program with the downtown areas and the universities. A bike share program would be good for economic development.
- Taxi shares might be something to consider.



Date: March 26, 2012

Meeting Name: Stakeholder Meeting –Businesses and Colleges

Attendees:

Name	Representing	Name	Representing
Roland Feit	VPSI, Inc./ Pfizer	Kevin J. Bremer	Sisters of Charity of St. Elizabeth
Frank Neglia	College of St. Elizabeth	Robert Lucid	Drew University
Andre Turner	Fairleigh Dickenson University	Jesse Linder	NY Jets (Not in attendance -- emailed responses)
Lisa DiTaranti	VHB	Susan O’Donnell	VHB
John Hayes	Morris County		

The following are the meeting highlights:

- A project overview was provided to the attendees.

Drew University

- Drew University does not appear to be directly affected by the traffic issues associated with the corridor but the University needs transportation choices. There are many students who could and would use the transit system if it were reasonable, accessible, and easy to use – particularly when making transfers and interconnections to other systems.
- The MAD shuttle ridership is not where it should/could be. Drew University is not sure if the reason for low ridership is the service frequency or the cost.
- Only the Juniors and Seniors are allowed to have cars on campus.
- One of the University’s saleable points is the direct access to NYC. Access to NYC is integrated into the curriculum for both cultural and educational benefits. Drew has an internship program with Wall Street.
- Drew University has a campus bike program – students can rent bicycles by the semester or year. Usually all the bikes are rented out. The campus is relatively pedestrian and bicycle friendly.
- It would be great if there was a “packet” of transit information that could be provided to the parents at orientation so that the parents would know that their student could get around and get home without having a car.



- Drew University liked the idea of working in concert with the three universities to develop vanpools and carpools. With all three colleges there may also be opportunities to find car/vanpool matches between workers at the three colleges.
- Drew University – total population for graduate and under graduate residents is about 2,000, which is far higher than the employee population. The University has a relatively high student resident population (about 90 percent compared to 10 percent commuting population) and about 350 employees (not including all faculty because the College has some adjunct professors).

Fairleigh Dickenson University (FDU)

- FDU feels the issue holding back more student ridership on transit is the lack of advertising of transit services. FDU is working with the MAD shuttle and NJ TRANSIT to offer ticket books for sale at the book store. While students have access to train, they generally either get a ride home from another student or get picked up by their parents on campus.
- The University has been working with the commuting population but they are not sure if the students, faculty, and administrative staff are aware of the transit and carpooling options. FDU is working with TransOptions to develop options for students. Resident students have complained that the commuter students take their parking spots. Some international students have been observed walking from the train.
- The housekeeping staff at FDU may take the bus or train but faculty most likely drive. Morris County provides packages of transit materials to the libraries, and other places in the county including the colleges.
- FDU asked why NJ TRANSIT doesn't offer the "free transit week" for students at the beginning of the semester as they have in the past. Another option would be to offer Juniors and Senior students a transit discount to discourage bringing a car to campus. A "transit buddy" program should also be established to help both students and staff learn how to use transit.
- FDU has 1,200 students living on campus. The remaining 2,000 students are commuters. There is a mixture of graduate and undergraduate students. Most of the graduate classes are at night.

Sisters of Charity of St. Elizabeth

- The Sisters of Charity are the property owners of the College and Academy and own property on Park Avenue -- the Villa. The Sisters usually carpool because they live close together. About 15 Sisters take the train to get to the City – many are much older and do not travel. About 15 percent of the girls from the Academy come by train. Students and others heading to FDU get off the train and go through St. Elizabeth's campus because of the shared gate.
- St. Elizabeth sees a lot of vehicles that use the campus as a cut-through to get between NJ 124 and Park Avenue, mostly during the midday. There is not much traffic calming in place to discourage cut-through traffic. The back gate is completely open so anyone can come in. Speed humps and/or narrowing the roadway have been suggested.



College of St. Elizabeth

- The College is much smaller than FDU and Drew. The College has 450 students on campus and about three-quarter of them have cars. All students can bring vehicles to campus.
- Some students use the train to get to school but most usage is for travel to and from NYC. While the school is very close to the train station, many students call security for transport to the train station.
- Security is not supposed to transport students unless they are carrying a suitcase or something heavy; students will take a large bag with them to get transported by security.
- A small amount of employees use the train, such as the kitchen staff.
- St. Elizabeth would like to see the MAD shuttle succeed but right now the ridership seems low.
- The College likes the idea of providing an orientation package with transit information. It would be good to also provide transit information to the College Student Services office.
- Some employees might ride the bus.
- St. Elizabeth has 450 resident students. In addition the College has a large population of night students – about a three to one ratio of night students to day students. During the day there are not that many commuter students, about 100-150, in comparison to the evening and night students. Almost all of the night students are commuters.
- Many commuters walk around the rail crossing gate when they are down/activated at Convent Station. Occasionally there has been enforcement near the station which has deterred people. Both commuters and students have been observed walking around the gate. During graduations and larger events, a guard is usually posted. An Operation Lifesaver program would be beneficial at the College.

Pfizer

- Pfizer has a shuttle service that runs several times a day but it may be scaled back due to budget issues.
- Pfizer's workforce population is primarily located to the east of the office. Workers are usually in early and out late, which makes carpool/vanpool matching difficult. Pfizer has worked with TransOptions and with its predecessor, MC RIDES, to determine vanpool/carpool options to reduce the number of vehicles coming to the site. Van/carpools have been organized by geographic area reducing the parking and traffic demands. This has been funded partially by the **Federal Workforce Transportation Subsidy Program**; however the transit subsidy funding has recently been reduced to \$125 per month. It is uncertain if that funding will be restored. New Jersey provides \$175/\$350 for worksites in the state.
- VPSI operates vanpools throughout the country. Participation ebbs and flows depending on funding. The best few years occurred when federal employees received \$230 per month in funding. Large federal employers like Picatinny Arsenal benefited from that with a number of shuttles. The Pfizer last mile shuttle was not well used – it was looked at as a benefit. The shuttle was not available for lunchtime visits into town. Vanpools are formed by groups of commuters living reasonably nearby each other who travel from their home to work in a vehicle with no more than 15 seats. The driving is shared by some and the costs are shared by all and sometimes the employer. As part of the program, participants are provided a vehicle,



- insurance, emergency highway servicers, and loaner vehicle if your vehicle is out of service for more than two days. VPSI provides ridematching services for employers and individuals.
- Why is the MAD shuttle not being used?
 - FDU said students have said the van looks “a little sketchy”.
 - The headways between shuttles are not efficient. Students do not want to stay at Staples for an hour to wait for the next bus.
 - Cost \$1.50 – students do not want to pay the money out of their pocket. It would be better if tickets could be prepaid by parents.
 - Drew University suggested a daily pass.
 - The service hours are acceptable. Morning service is not needed because students are not awake. Later hours would be beneficial but there was a concern at MAD Shuttle meetings that the shuttle could end up transporting inebriated students.

 - Car Shares
 - Drew University has Zip cars. Drew University also had an eight or nine passenger VRC – Volunteer Resource Center. Students can use these vehicles as part of a group trip.
 - FDU had a Hertz car rental program on campus but the cars were not being used. FDU is looking into a Zip car program.
 - St. Elizabeth College also has something similar to Drew University’s VRC through Student Services.

 - Would dedicated College/University parking at the train stations be beneficial and encourage train usage?
 - Drew University said most of the students walk or take a cab to the station. If the students are returning to school late at night, dedicated parking might be useful. Drew University has a program to pick up students, if needed. The school calls a cab for the student and then bills the student’s account for the charge.

 - Do train times match class times?
 - At St. Elizabeth College most of the night students drive because they are coming from day jobs. Parking is at capacity during evening classes. The College has 175 employees, not including all of the faculty and adjunct professors.



Open House Feedback



A Public Open House was held Thursday, March 29th from 4PM to 7PM at the Madison Train Station. The Open House included five “information areas” where attendees could view presentation boards and converse with project staff. These information areas provided an introduction to the project and an opportunity for the project team and the public to learn about station access issues and planning. Below is feedback and issues that attendees provided at the information areas from the Transit Access, Traffic Access and Parking, Bicycle and Pedestrian Access, and Land Use stations.

TRANSIT ACCESS

- Extend the hours that the Madison station building is open -- five months during the winter on weekends/weekend mornings and weekdays 2-5PM.
- Platform accessibility on the eastbound side is difficult when the station is closed.
- Signage for the short high-level (and ADA accessible) platform is needed.
- Transit access from the south side neighborhoods is poor.
- The bathrooms in Madison Station are locked.
- Track assignment postings are needed in advance for disabled customers.
- The NJ TRANSIT 873 bus route does not make connections with the train.
- Bus-to-bus connections in Livingston and Morristown are not available.
- The current train schedule is erratic (schedule not clock face).
- Please make at least one consistent bus-to-train connection in the group of stations (Chatham, Madison, Convent)
- Better advertising should be provided for the Madison Shuttles
- The zone fare differential between Madison and Convent Stations is a disincentive to using Convent Station.

TRAFFIC ACCESS and PARKING

- There are parking challenges for Harding Township residents so people park at St. Vincent Martyr and Green Village Road School.
- The parking fee of \$5/day is expensive.
- Madison has a four-hour on-street parking limit to discourage commuter parking.
- The cost of train fares is a disincentive to taking transit.
- Morris & Essex Line parking pricing should be more flexible
- To finance new parking spaces, sell the spaces so that they are “owned” much in the same way as sports teams are selling seat licenses.
- The NJ TRANSIT fare zones in Madison vs. Convent Station and more frequent service at Madison Station makes it a more attractive station for Harding Township, residents.
- Local shuttle buses should be provided instead of additional parking.



BICYCLE and PEDESTRIAN ACCESS

Madison Station Accessibility

- Bathrooms are needed on both sides of the track and heat is needed in the station.
- The gap between the platform and the trains is too wide.
- The buildings are closed afternoons and weekends which makes it difficult to wait for the train.
- There are elevated ADA platforms but the trains don't stop there to allow passengers to board.
- Bathrooms are not accessible on double-decker trains.

Pedestrian Access

- NJ 124 sidewalks are cracked and uneven near the cemetery and Stop & Shop.
- On Cross Street there are discontinuous sidewalks between Main Street and Kings Shopping Center.
- Between the Hospital (Morristown Medical) and Franklin Street along NJ 124 there are discontinuous sidewalks and cracked and uneven sidewalks. Near Chatham Station the following streets have unsafe pedestrian crossings:
 - Front St
 - Fairmount Ave
 - Lum Ave
 - Washington Ave
- The sidewalks need to be cleaned better after snowfalls.

Bicycling

- Eastbound NJ 124 between Convent Station and Giralda Farms has a bike lane that should be continued thru the intersection.
- Actuated bicycle signals are needed at:
 - Kings Road and Madison Avenue
 - Giralda Farms and Madison Avenue
- Adding a signed bypass for cyclists to go around the narrow section of Ridgedale Avenue would encourage a safer route.
- Bike route signs are needed leaving Madison Train Station. Way-finding signs for cyclists en route to the Post Office, Hospitals and other local areas area needed.
- Cycling on NJ 124 past Friendly's is unsafe when there's traffic. Signage should direct cyclists to the Traction line.
- Crossing Ridgedale Avenue at the Madison Recreation Center on a bicycle is the most dangerous crossing on the ride from Florham Park to the Madison Station.

NJ TRANSIT

- Trains need to pull train up to the elevated platform for disabled passengers, or passengers with bicycles, strollers, and luggage.
- There is no bus from Madison to Newark Airport or the City of Newark.



- Some driveways are very wide and it's unsafe for pedestrians to cross.

Open Space

- Pocket parks like a sitting area behind the station are needed and they should include:
 - Chair and tables
 - Planters
 - Water fountains
 - Better lighting
 - Recycling containers

LAND USE

- Harding residents should be able to purchase a parking space much like fans purchase "seat licenses."
- A newsstand is needed on both sides of the rail line.
- Better information is needed regarding bus routes and stops.
- Structured parking should not be added in Chatham unless it is well designed.
- What are costs for structured parking?



Online Survey Questions



The NJ 124 Corridor Transit Access Improvement Study (NJ 124 Transit Study) will assess and recommend station access improvements at the three NJ TRANSIT commuter rail stations in the NJ 124 Corridor: **Chatham, Madison, and Convent Station**. If you travel to or from southeast Morris County daily, a few days per week, or once a year, we would like to hear from you. Whether you travel by train or not, please complete this Transportation Survey which will provide valuable input into the study.

1. In what ZIP code (or town) is your HOME located? (enter 5-digit ZIP code; for example, 17837 or Lewisburg)
2. What is your employment status?
Employed -- full or part time Go to Q.3
Student -- full or part time Go to Q.3
Not working Go to Q.6
Retired Go to Q.6
Other (please specify) Go to Q.6
3. In what ZIP code (or town) is your JOB or SCHOOL located? (enter 5-digit ZIP code; for example, 17837 or Lewisburg)
4. How many days a week do you usually commute to work or school?
1, 2, 3, 4, 5, 6, 7
5. During a typical week, how do you usually travel to work or school? (*Please indicate your primary mode*)
Drive Alone Go to Q.6
Dropped Off by spouse or family member Go to Q.6
Taxi Go to Q.6
Train Go to Q.7
Bus Go to Q.6
Car/Vanpool Go to Q.6
Bicycle Go to Q.6
Walk Go to Q.6
6. Have you traveled by train for any purpose in the past year?
Yes Go to Q.7
No Go to Q.16



7. When you travel by train, what is your typical boarding station? (please select one)

- Chatham
- Madison
- Convent Station
- Summit
- Morristown
- Other (specify)

8. How do you typically travel to the train station? (*Please indicate your primary mode*)

- Drove alone and parked Go to Q.10
- Carpooled and parked Go to Q.10
- ALL BELOW** Go to Q.12
- Car-Dropped off
- Bus
- Public Shuttle
- Private Shuttle/Security Car
- Taxi
- Bicycle
- Walk Only
- Other _____ (*Please specify*)

9. What type of parking do you typically use?

- Station/Municipal Lot parking
- Private Lot parking nearby station
- Metered On-street parking
- Free On-Street Parking or free private lot
- Other _____ (*Please specify*)

10. How do you typically pay for parking?

- Monthly Resident permit
- Monthly Non-Resident permit
- Daily
- Free
- Other _____ (*Please specify*)

11. Is this your preferred way to travel to the station?



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Yes Go to Q.13 or No Go to Q.12

12. If no, what is your preferred way to travel to the station?

- Drive alone and park
- Carpool and park
- Car-Drop off
- Bus
- Public Shuttle
- Private Shuttle/Security Car
- Taxi
- Bicycle
- Walk ONLY
- Other _____ *(Please specify)*

13. When you travel by train, what station do you typically get off? (If you switch to another train in New Jersey, tell us the final station. (please select one)

- NY Penn Go to Q.15
- Newark Penn Go to Q.15
- Newark Broad Street Go to Q.15
- Hoboken Go to Q.15
- Chatham Go to Q.14
- Madison Go to Q.14
- Convent Station Go to Q.14
- Summit Go to Q.15
- Morristown Go to Q.15
- Other (specify) Go to Q.15

14. How do you travel from the train to your final destination?

- Drive alone and park
- Carpool and park
- Car-Drop off
- Bus
- Public Shuttle
- Private Shuttle/Security Car
- Taxi
- Bicycle
- Walk ONLY

15. What is needed most to improve travel to and from the NJ TRANSIT train station?



_____ (Please specify)

16. Was a personal vehicle available to you to make this trip?
Yes
No

For the purposes of this survey, the MORRIS COUNTY TRANSPORTATION SYSTEM is defined as:
"All the services to travel around the County, including roads, buses, and trains, and services for bicycling, walking and carpooling."

17. How well does the Morris County transportation system meet your travel needs? Please rate on a scale of 1 to 5 where "1" is "not at all well" and "5" is "extremely well."
18. About how far from your home is the nearest train station?
0.0 to 0.25 miles
0.26 to 0.5 miles
0.51 to 1 miles
1.1. to 2.0 miles
More than 2 miles
I don't know
19. In your home neighborhood, are there . . . ?
Sidewalks on most/all streets
Sidewalks on some streets
No sidewalks
20. About how far from your home is the nearest bus stop?
0.0 to 0.25 miles
0.26 to 0.50 miles
0.51 to 1 miles
1.1 to 2.0 miles
More than 2 miles
I don't know
21. In the past year, did you request or seek information on types of transportation you could use to get around Morris County or other parts of New Jersey?
Yes Go to Q.22
No Go to Q.26
22. What information were you seeking and where did you look or whom did you contact?



23. After receiving this information, did you take any actions to change how you travel?
Yes Go to Q.24
No Go to Q.25
24. If yes, what changes did you make and why?
25. If no, why didn't you make changes to your travel?
26. What improvements could be made to encourage you to make more trips by train? (select all that apply)
- More shuttles/bus connections
 - Additional parking
 - Better bicycle and pedestrian connections
 - Roadway improvements
 - Carpool and auto-share options
 - Housing, employment and retail adjacent to the train station
 - Information services regarding existing transit services
 - Nothing would encourage me
 - Other (please specify)
27. What improvements could be made to encourage you to walk to the train station? (Select all that apply)
- Provide sidewalks in neighborhood
 - Maintain sidewalks
 - Better snow removal
 - Can't - health or personal constraints
 - Nothing would encourage me
 - Other (please specify)
28. What improvements could be made to encourage you to bicycle to the train station? (Select all that apply)
- Separate bike lanes
 - More bike lanes
 - Shoulder on roadway for bike use
 - Make motorists aware of bicyclists
 - Bike lockers/Racks
 - I don't have a bicycle
 - Can't ride due to physical conditions
 - Nothing would encourage me



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Other (please specify)

29. How important is it for government agencies to invest in each of the following transportation improvements on a scale of 1 to 5, with "1" being "not at all important" and "5" being "extremely important?"

- Improve/expand transit
- Transit information/services
- Carpool information/services
- Construct more sidewalks
- More Park & Ride lots
- Build/expand highways/roadways
- Special carpool/bus lanes
- Expand bicycle trails/lanes

THANK YOU FOR YOUR TIME!



Detailed Survey Tables

*From the Online Survey
of Regular Rail
Commuters, occasional
riders, and non-riders*



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The online surveys intended to gather demographic, employment, and commute information from residents of the NJ 124 corridor area (both rail commuters and non-rail commuters) as well as suggestions on how to improve access to Chatham, Madison, and Convent Stations. Tables B-1a through B-25 display information gathered concerning respondents’ demographic, employment, and commute information, and Tables B-26 through B-29 display suggestions on how to improve train station access.

Table B-1a - In what ZIP code (or town) is your HOME located? Results by Town

Home Town	Total	Percent
MORRISTOWN (including Morris Township)	131	30.3%
MADISON	120	27.7%
CHATHAM (Borough and Township)	44	10.2%
FLORHAM PARK	16	3.7%
MORRIS PLAINS	9	2.1%
NEW VERNON	7	1.6%
RANDOLPH	6	1.4%
MENDHAM	6	1.4%
ALL OTHERS	94	21.7%
Total	433	100.0%



Table B-1b - In what ZIP code (or town) is your HOME located? Results by County

Home County	Total	Percent
MORRIS	370	85.5%
ESSEX	14	3.2%
SOMERSET	10	2.3%
UNION	6	1.4%
HUNTERDON	5	1.2%
PASSAIC	4	0.9%
MIDDLESEX	4	0.9%
HUDSON	3	0.7%
WARREN	3	0.7%
MONMOUTH	3	0.7%
SUSSEX	2	0.5%
OCEAN	2	0.5%
BERGEN	2	0.5%
QUEENS	1	0.2%
PHILADELPHIA	1	0.2%
ROCKLAND	1	0.2%
MERCER	1	0.2%
NEW YORK	1	0.2%
Total	433	100.0%

Table B-2 - What is your employment status?

Employment Status	Total	Percent
Employed -- full or part time	345	79.7%
Retired	49	11.3%
Not working	29	6.7%
Student -- full or part time	10	2.3%
Total	433	100.0%



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Table B-3a - In what ZIP code (or town) is your JOB or SCHOOL located? Results by Town

Work Town	Total	Percent
MADISON	97	22.4%
NEW YORK	71	16.4%
Retired	49	11.3%
MORRISTOWN(Including Morris Township)	47	10.9%
No Answer	37	8.5%
Not working	29	6.7%
FLORHAM PARK	16	3.7%
CHATHAM (Borough and Township)	8	1.8%
PARSIPPANY	7	1.6%
ALL OTHERS	72	16.6%
Total	433	100.0%

Table B-3b - In what ZIP code (or town) is your JOB or SCHOOL located? Results by County

Work County	Total	Percent
MORRIS	194	44.8%
NEW YORK	71	16.4%
Retired	49	11.3%
No Answer	36	8.3%
Not working	29	6.7%
ESSEX	12	2.8%
ALL OTHERS	42	9.7%
Total	433	100.0%



Table B-4 - How many days a week do you usually commute to work or school? (Employed - 345 respondents and Students -10 respondents)

Commute Frequency	Total	Percent
1 Day per week	16	4.5%
2 Days per week	10	2.8%
3 Days per week	15	4.2%
4 Days per week	40	11.3%
5 Days per week	248	69.9%
6 Days per week	12	3.4%
7 Days per week	3	0.8%
No Answer	11	3.1%
Total	355	100.0%

Table B-5 - During a typical week, how do you usually travel to work or school? (Employed - 345 respondents and Students -10 respondents)

Mode for Commuting to Work or School	Total	Percent
Bicycle	11	3.1%
Bus	3	0.8%
Car/Vanpool	16	4.5%
Drive Alone	216	60.8%
Dropped Off by spouse or family member	3	0.8%
Taxi	2	0.6%
Telework/Compressed Schedule	8	2.3%
Train	80	22.5%
Walk	12	3.4%
No Answer	4	1.1%
Total	355	100.0%

Table B-6 - Have you traveled by train for any purpose in the past year?

Have you traveled by train for any purpose in the past year?	Total	Percent
Yes	374	86.4%
No	59	13.6%
Total	433	100.0%



Table B-7 - When you travel by train, what is your typical boarding station?

Typical train boarding station	Total	Percent
Madison	138	36.9%
Convent Station	86	23.0%
Morristown	49	13.1%
Chatham	44	11.8%
Morris Plains	10	2.7%
Summit	9	2.4%
Denville	5	1.3%
South Orange	4	1.1%
All Others	28	7.5%
No Answer	1	0.3%
Total	374	100.0%

Table B-8 - How do you typically travel to the train station?

Train - Access Mode	Total	Percent
Bicycle	8	2.1%
Bus	2	0.5%
Car-Dropped off	45	12.0%
Carpooled and parked	36	9.6%
Drove alone and parked	191	51.1%
PATH	1	0.3%
Public Shuttle	1	0.3%
Taxi	2	0.5%
Walk Only	86	23.0%
No Answer	2	0.5%
Total	374	100.0%

Table B-9 - What type of parking do you typically use?

What type of parking do you typically use?	Total	Percent
Free On-Street Parking or free private lot	30	13.2%
Metered On-street parking	4	1.8%
Station/Municipal Lot parking	173	75.9%
Private Lot parking nearby station	16	7.0%
No Answer	5	2.2%
Total	228	100.0%



Table B-10 - How do you typically pay for parking?

How do you typically pay for parking?	Total	Percent
Annual Resident Permit	12	5.3%
Monthly resident permit	20	8.8%
Monthly non-resident permit	1	0.4%
Daily	117	51.3%
Free	41	18.0%
No Answer	37	16.2%
Total	228	100.0%

Table B-11 - Is this your preferred way to travel to the station?

Is this your preferred way to travel to the station?	Total	Percent
No	72	19.3%
Yes	300	80.2%
No Answer	2	0.5%
Total	374	100.0%

Table B-12 - If no, what is your preferred way to travel to the station?

If no, what is your preferred way to travel to the station?	Total	Percent
Bicycle	12	16.7%
Car-Drop off	13	18.1%
Carpool and park	3	4.2%
Drive alone and park	14	19.4%
No Answer	2	2.8%
Other Train Station	2	2.8%
Public Shuttle	13	18.1%
Walk ONLY	13	18.1%
Total	72	100.0%



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Table B-13 - When you travel by train, what station do you typically get off?

Alighting Station	Total	Percent
NY Penn Station	310	82.9%
Hoboken	20	5.3%
Newark Penn Station	9	2.4%
Newark Broad Street	4	1.1%
Madison	10	2.7%
All Others	13	3.5%
No Answer	8	2.1%
Total	374	100.0%

Table B-14 - How do you travel from the train to your final destination?

How do you travel from the train to your final destination?	Total	Percent
Bicycle	1	7.7%
Bus	1	7.7%
Walk ONLY	9	69.2%
No Answer	2	15.4%
Total	13	100.0%

Table B-15 - What is needed most to improve travel to and from the NJ TRANSIT train station?

What is needed most to improve travel to train station?	Total	Percent
More parking	93	24.9%
Parking Management etc.	18	4.8%
Buses/Shuttles to Station	26	7.0%
Improved bicycle access, parking	16	4.3%
Improved walk access; sidewalks, crosswalks	15	4.0%
Traffic improvements	7	1.9%
Faster, more reliable, expanded train service	33	8.8%
Hi-Level Platform	2	0.5%
Lower or maintained train fares	9	2.4%
Next Train information	1	0.3%
Nothing; Travel is fine	28	7.5%
Other	3	0.8%
No Answer	123	32.9%
Total	374	100.0%



Table B-16 - Was a personal vehicle available to you to make this trip?

Was a personal vehicle available to you to make this trip?	Total	Percent
Yes	327	75.5%
No	27	6.2%
No Answer	79	18.2%
Total	433	100.0%

Table B-17 - How well does the Morris County transportation system meet your travel needs?

Rate on a scale of 1 to 5 where "1" is "not at all well" and "5" is "extremely well"

How well does the Morris County transportation system meet your travel needs?	Total Responses	Percent
1	51	11.8%
2	68	15.7%
3	149	34.4%
4	99	22.9%
5	34	7.9%
No Answer	32	7.4%
Total	433	100.0%

Table B-18 - About how far from your home is the nearest train station?

About how far from your home is the nearest train station?	Total	Percent
0.0 to 0.25 miles	41	9.5%
0.26 to 0.5 miles	62	14.3%
0.51 to 1 miles	114	26.3%
1.1. to 2.0 miles	104	24.0%
More than 2 miles	94	21.7%
I don't know	3	0.7%
No Answer	15	3.5%
Total	433	100.0%

Table B-19 - In your home neighborhood, are there . . . ?

In your home neighborhood, are there . . . ?	Total	Percent
Sidewalks on most/all streets	163	37.6%
Sidewalks on some streets	158	36.5%
No sidewalks	97	22.4%
No Answer	15	3.5%
Total	433	100.0%



Table B-20 - About how far from your home is the nearest bus stop?

About how far from your home is the nearest bus stop?	Total	Percent
0.0 to 0.25 miles	63	14.5%
0.26 to 0.5 miles	62	
0.51 to 1 miles	55	12.7%
1.1. to 2.0 miles	49	11.3%
I don't know	148	34.2%
More than 2 miles	42	9.7%
No Answer	14	3.2%
Total	433	100.0%

Table B-21 - In the past year, did you request or seek information on types of transportation you could use to get around Morris County or other parts of New Jersey?

In the past year, did you request or seek information on types of transportation you could use to get around Morris County or other parts of New Jersey?	Total	Percent
Yes	134	30.9%
No	284	65.6%
No Answer	15	3.5%
Total	433	100.0%

Table B-22 - What information were you seeking and where did you look or whom did you contact?

Information Requested
Senior transit options for mother in law. Checked online.
Train schedules. njtransit.com
NJ TRANSIT website
Got bus schedules at Madison library
My employer offered share-a-ride information.
Train schedules - NJ TRANSIT
Schedule
Transfer
Online
Carpool
General schedules new jersey transit on line and also Morris county transport agency
Schedules, locations, efficiency: looked mostly online.
Bus route in Madison NJ
NJ TRANSIT site Amtrak
NJ TRANSIT.com
I wanted to see if it was possible to commute using public transit. I also checked for routes to and from New York City.



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Information Requested
Train schedules
NJ TRANSIT and Middlesex County
Form of transportation from my home in West Milford, NJ to my place of work in Madison, NJ from my Campus Sustainability Coordinator.
Online train/bus schedules. Limited sidewalks to get to public transportation is an issue. FLORHAM park downtown to bus stop on Hanover rd in east Hanover needs better access.
Train schedules- njtransit.com
NJ TRANSIT information. I got it online.
Schedules Web Pages
Other ways to get to NYC
Train access from Long Valley NJ to NYC
Website for NJ TRANSIT, Amtrak and sought paper timetables at stations. Tried to find way from Madison to Trenton via train. Not easy.
Tried to find bus routes. Looked online for train schedules
Trains to get around, specifically to cities. I referenced NJ TRANSIT.
How to get from home to other parts of the state
njtransit.com
Train schedule
Checked N.J. Transit to see if there were trains direct from Summit to Mountain Creek.
NJ TRANSIT trains are so unreliable at interment period going to New York that I was looking for the nearest Bus to go to New York
Train schedules - on internet
I submitted my name to a carpooling program but have never heard anything.
Trains schedules, NJ TRANSIT website
I was looking for train schedules. I looked online.
NJ TRANSIT train schedule, looked online
Train times. Checked on njtransit.com
Look online for train/bus schedules
Schedule, online (NJ TRANSIT web site)
Shuttle schedules from train to office
Bike commuting information
Train info to Newark airport - NJTransit.com Bus/train information to out of state locations - NJ TRANSIT.com
I was looking online for NJ TRANSIT Train schedules.
Online access to train/bus information.
Train schedules; internet
Train schedules NJtransit.com
Bus and train schedules
Train schedules. Mostly NJ TRANSIT
Travel to Morristown, using web site of NJ TRANSIT
Nothing that met my needs
Train routes to other parts of the state (ie, Princeton); looked at www.njtransit.com



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Information Requested
Bus schedules from Madison library. Train schedules from NJ TRANSIT.
Travel information, njtransit.com
Schedules
NJ TRANSIT web site
I was looking to see if the buses still went to NY
Schedules and routes; I used websites.
NJ TRANSIT website
I have contacted NJ TRANSIT to find out about the bus stations in the Oakwood Village of Flanders complex.
Bus transportation from Morris County to NYC
Bus
Bus and train lines and times to NYC. I looked on the internet for this info.
Bus routes.....checked on the computer.....used the yellow pages
Train schedules - online
Train schedules - looked on the web
NJtransit.com
MAPS-phone Train schedule-online
Bus info around Morris County. NJ TRANSIT.
Train schedules/bus schedules. website.
NJ TRANSIT Routes / Schedule / Fares
Local transportation for an elderly member of the family. looked online for info.
NJ TRANSIT which was completely a waste of time. The lack of professionalism is staggering. The crs people are rude, brief, unknowledgeable, and otherwise predisposed. They hid behind a cloak of anonymity
Train schedule ..online
Info on buses to NYC. Consulted njt website.
NJTransit website
Availability of nonresident parking in other NJT train stops.
How to get from Madison Station to the Jersey Shore, and how to travel from Madison to Newark Airport.
Looked at bus availability along 287 corridor.
commuting, car-pool. Morris County web site, NJ Dot web site
Bus schedules to doctor's offices. Looked in NJ TRANSIT site.
I looked on the internet for bus routes. I am interested in taking mass transportation as much as possible. I could probably use the bus, but I have not tried it yet. I feel like I do not even know how to pay the fare any more.
I was looking for a way to make my commute shorter. I looked on the Internet.
Asked agents in stations. Checked website. Use train schedules
I wanted to take a train from Chatham to another part of NJ.
I was looking for information on public transportation to the shore area. I looked at the NJ TRANSIT web site.
A MORRIS COUNTY MAP. THE MCDOT.
Train Schedules
Bus schedules and stop locations from NJ TRANSIT and MC rides. Roadway network and driving directions from Google.



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Information Requested
Mostly NJ TRANSIT train schedule info, but we have considered buses when our cars were out of service, ultimately did not use buses, 'tho.
Access to from Mt. Arlington station, Morristown station
Bus schedules and locations of stops
Schedules. NJ TRANSIT
Alternates for MAPS when it wasn't available.
How to take the train from Morristown to the Jersey beaches. Like the idea but it takes over 2 hours.
njtransit.com schedules and locations
NJ TRANSIT web site provided schedule and fare information
Njtransit.com
NJ TRANSIT website. Looked for alternative/cheaper routes
Train schedules and transfer points Online
Train schedules. Contacted NJ TRANSIT website.
Clifton-NYC links for an event I was planning. I used the NJT web site.
I've looked for bus and train schedules on line. I am very pleased with the bike racks on local Morris County buses and displeased with the inability to bring my bike on the NJ TRANSIT trains.
Website for Lakeland bus line. The site was useless .
TransOptions and NJ TRANSIT
Train schedules, from njtransit.com
Looked into taking a bus into city
Hoping to find quick bus routes for my teen to get to possible places of employment.
Train information to get to & from a further distance, located information on website. Also, looked into alternative routes to walk/ride bike to & from work.
Bicycle paths on streets. Online search
I looked for information on www.njtransit.com. And I will say, that the new site works very well and I like it.
Better bus service

Table B-23 - After receiving this information, did you take any actions to change how you travel?

After receiving this information, did you take any actions to change how you travel?	Total	Percent
Yes	41	30.6%
No	91	67.9%
No Answer	2	1.5%
Total	134	100.0%

Table B-24 – If yes, what changes did you make and why?

Change Made
No Answer
No Answer
No Answer



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Change Made
Decided on how to commute to work.
No Answer
driving to other stations to make transportation easier
I decided to invest in a more fuel efficient car since there was no route that was efficient to my work.
Numerous connections to get to work, try to get rides to train stations or possibly to work
No Answer
Changed plans from private to public transportation.
Well, I moved, and so I started commuting by car to Madison. It was a change from living in Madison and walking/driving within Madison.
No Answer
Used transit more fully
I chose a different train.
-Picked appropriate trains and made arrangements to be on them
Adjusted time needed to get to station
Had to take train
After the snowstorm, my spouse took the bus from downtown to NYC, but he paid on the way in because we had not been able to determine whether the bus was honoring train passes.
Changed travel times to fit schedule
No Answer
Because of timing and logistics, and my long drive home from work, I have found it easier to park in Millburn on certain occasions I needed to travel to NYC in the evening. Cheaper fare than Madison, more trains per hour, and closer to my office.
We took the train since the buses did not go where we wanted to go
Followed train schedule
Adjusted my time of arrival and plans at my destination of NYC.
Took a different bus - more convenient schedule
Drove instead due to lack of service
Time
No Answer
Opted against purchasing monthly fare from Convent Station to Hoboken - too costly.
Was able to take public transportation to the doctors' appointments (bus with transfer to train) at a cost of \$5.50 each way instead of \$30 taxi fare each way.
I used the Madison station when traveling with wheelchair. If miss the mid town direct out penn I wait for next I don't both trying a board street transfer
For that trip, decided to take the train instead of drive.
I SWITCHED TO LINCOLN PARK FOR MY WEEKDAY TRIPS. FREE PARKING.
I continue to walk on a dangerous curve to get to town.
Got a taxi due to limited trains from Mt Arlington. Took train more often from Morristown when schedule permits.
I had to decide which was more cost effective to drive or take the train since the time it would take was the same. Driving 4 people was cheaper.
Chose a direct train rather than one that required a connection



Change Made
Changed time and/or days.
Choose a bur route and time and avoided the train.

Table B-25 - If no, why didn't you make changes to your travel?

Why Changes Were Not Made
No Answer
No Answer
No mass transit to Bernardsville or Rt. 10 in East Hanover.
The information I was verifying was correct.
convenience/timing
Information wasn't anything that I could use for my specific commute
Too expensive
The train schedule was robust enough to get me where I needed to go in a reasonable timeframe.
It was not time efficient nor cost efficient.
no good scheduled trains
The schedules weren't convenient
No Answer
schedule too inconvenient
Nothing met needs
Hoping to travel to other towns but haven't had time.
No Answer
schedule suited me
None of the service changes had a material impact on the ease (or lack thereof) of dealing with the "last two" miles.
No Answer
There were no options available to me to make changes.
No more convenient than taking the train
would have to get off in Norristown to get to Madison which took t to long
No Answer
No Answer
MAPS was too difficult of a process Train Scheduled was sufficient for me to make my scheduled appointment
Options I needed not available.
No Answer
No Answer
I just explained why. The best and the brightest need not apply.
what i wanted was available
Impractical to drive into NYC on day in question. Regular commuting pattern, by car alone, to work remain unchanged.
Train is the easiest most convenient way to travel
No better nonresident parking than in Madison.



Why Changes Were Not Made
Train to the Shore was not convenient. I decided against train to the Airport because I didn't like that I had to rely on a taxi to get me to Newark Airport from Broad Street.
No 287 transportation was available
Nothing convenient to my schedule
Since I do have a car available to me, it is too easy for me to use it.
Because I didn't find the information that I was looking for.
No Answer
Public transportation did not go where I wanted to get to.
Just looking for the train schedules
Bus service not convenient - insufficient frequency, operating hours.
Most of the info was just refining our plans (looking for which train, express vs. local, etc.).
Still not clear where buses stop and how you hail them.
Not needed
Could not find alternates and had to rely on coworkers or taxis.
schedule did not allow
No reason to
Didn't see any options
No Answer
Wasn't cheaper or easier
It didn't apply to me. I was checking for participants from other areas.
Because I could not find the information I needed...namely, commuter bus information.
The bus routes are not usable for my commute
Not applicable because Morris county trains are not feasible for my commute
No need to change.
it was not more convenient
buses very slow and infrequent
No Answer
I tried biking in Morristown to run errands and felt threatened by cars driving on the same roads.
Because NJ TRANSIT didn't make any changes. Actually, they raised the prices for tickets and reduced schedules. This actually limited my choices and forced me only be able to drive to NYC.
The train trip I take is still the shortest and most frequent option for my daily commute. For other trips, like weekend trips into the city, it is often twice as fast to drive because there are no express trains at all on the weekends.
Too long of travel time and not often



Table B-26 - What improvements could be made to encourage you to make more trips by train?

Multiple answers were permitted

What improvements could be made to encourage you to make more trips by train?	Total	Percent
More parking	163	37.6%
OTHER - Parking Management	3	0.7%
OTHER - Free or less expensive parking	4	0.9%
More shuttles/bus connections	85	19.6%
Better bicycle and pedestrian connections	89	20.6%
OTHER - Safety improvements	5	1.2%
Roadway improvements	35	8.1%
Carpool and auto-share	16	3.7%
Housing, employment and retail adjacent to the train station	31	7.2%
Information services regarding existing transit services	47	10.9%
OTHER - Faster, more reliable, expanded train service	62	14.3%
OTHER - Accessibility improvements	3	0.7%
OTHER - Lower train fares	42	9.7%
Other	2	0.5%
OTHER - Already ride the train	10	2.3%
Nothing would encourage me	51	11.8%

Table B-27 – What improvements could be made to encourage you to walk to the train station?

Multiple answers were permitted

What improvements could be made to encourage you to make more trips by walking?	Total	Percent
Provide sidewalks in neighborhood	128	29.6%
Maintain sidewalks	118	27.3%
Better snow removal	65	15.0%
Improved lighting	1	0.2%
Additional pedestrian safety measures	2	0.5%
I walk already	4	0.9%
Nothing would encourage me	104	24.0%
Can't - health or personal constraints	16	3.7%



Table B-28 - What improvements could be made to encourage you to bicycle to the train station?
Multiple answers were permitted

What improvements could be made to encourage you to bicycle to the train station?	Total	Percent
Separate bike lanes	82	18.9%
More bike lanes	70	16.2%
Shoulder on roadway for bike use	90	20.8%
Make motorists aware of bicyclists	85	19.6%
Bike lockers/Racks	112	25.9%
Allow bikes on trains	7	1.6%
Showers/changing areas at work/station	4	0.9%
Too far away/hills	9	2.1%
Other	4	0.9%
I don't have a bicycle	50	11.5%
Can't ride due to physical conditions	21	4.8%
Nothing would encourage me	128	29.6%

Table B-29 – How important is it for government agencies to invest in each of the following transportation improvements on a scale of 1 to 5, with “1” being “not at all important” and “5” being “extremely important?”

Improvement	1	2	3	4	5	No Answer	Total	Weighted Average
Improve/expand transit	10	19	92	80	186	46	433	4.07
Transit information/services	15	39	128	104	99	48	433	3.61
Carpool information/services	67	102	122	51	33	58	433	2.68
Construct more sidewalks	53	68	105	79	76	52	433	3.15
More Park & Ride lots	30	56	116	100	78	53	433	3.37
Build/expand highways/roadways	80	76	90	64	63	60	433	2.88
Special carpool/bus lanes	101	117	85	47	23	60	433	2.39
Expand bicycle trails/lanes	57	62	102	61	100	51	433	3.22



Survey Question Response Totals

Survey Question		Type of Question	Respondents	Number of Responses
1	In what ZIP code (or town) is your HOME located?	Single Answer	All respondents	433
2	What is your employment status?	Single Answer	All respondents	433
3	In what ZIP code (or town) is your JOB or SCHOOL located?	Single Answer	All respondents	433
4	How many days a week do you usually commute to work or school?	Single Answer	Employed -- full or part time AND Student -- full or part time	355
5	During a typical week, how do you usually travel to work or school?	Single Answer	Employed -- full or part time and Student -- full or part time	355
6	Have you traveled by train for any purpose in the past year?	Single Answer	All respondents	433
7	When you travel by train, what is your typical boarding station?	Single Answer	Respondents that traveled by train in the past year	374
8	How do you typically travel to the train station?	Single Answer	Respondents that traveled by train in the past year	374
9	What type of parking do you typically use?	Single Answer	Respondents that traveled by train in the past year AND Drove alone and parked AND Carpooled and parked	228
10	How do you typically pay for parking?	Single Answer	Respondents that traveled by train in the past year AND Drove alone and parked AND Carpooled and parked	228
11	Is this your preferred way to travel to the station?	Single Answer	Respondents that traveled by train in the past year	374
12	If no, what is your preferred way to travel to the station?	Open-Ended/Coded	Respondents that indicated "No, it is not my preferred way to travel to the station"	72
13	When you travel by train, what station do you typically get off?	Single Answer	Respondents that traveled by train in the past year	374
14	How do you travel from the train to your final destination?	Single Answer	Respondents that traveled by train in the past year AND Train Alighting Station Chatham, Madison OR Convent Station	13
15	What is needed most to improve travel to and from the NJ TRANSIT train station?	Open-Ended/Coded	Respondents that traveled by train in the past year	374
16	Was a personal vehicle available to you to make this trip?	Single Answer	All respondents	433



	Survey Question	Type of Question	Respondents	Number of Responses
17	How well does the Morris County transportation system meet your travel needs? Please rate on a scale of 1 to 5 where "1" is "not at all well" and "5" is "extremely well."	Rating Scale	All respondents	433
18	About how far from your home is the nearest train station?	Single Answer	All respondents	433
19	In your home neighborhood, are there . . . ?	Single Answer	All respondents	433
20	About how far from your home is the nearest bus stop?	Single Answer	All respondents	433
21	In the past year, did you request or seek information on types of transportation you could use to get around Morris County or other parts of New Jersey?	Single Answer	All respondents	433
22	What information were you seeking and where did you look or whom did you contact?	Open-Ended/Coded	All respondents	134
23	After receiving this information, did you take any actions to change how you travel?	Single Answer	Respondents that sought travel information	134
24	If yes, what changes did you make and why?	Open-Ended/Coded	Respondents that sought travel information AND Changed their travel based on information received	41
25	If no, why didn't you make changes to your travel?	Open-Ended/Coded	Respondents that sought travel information AND DID NOT Changed their travel based on information received	91
26	What improvements could be made to encourage you to make more trips by train?	Multiple Answers with Open-Ended/Coded	All respondents	433
27	What improvements could be made to encourage you to walk to the train station?	Multiple Answers with Open-Ended/Coded	All respondents	433
28	What improvements could be made to encourage you to bicycle to the train station?	Multiple Answers with Open-Ended/Coded	All respondents	433
29	How important is it for government agencies to invest in each of the following transportation improvements on a scale of 1 to 5, with "1" being "not at all important" and "5" being "extremely important?"	Rating Scale	All respondents	433



Detailed Survey Tables

*From the
ScoreCard Survey*



The ScoreCard Survey intended to gather demographic and commute information from those in the NJ 124 corridor who currently use Chatham, Madison, and Convent Stations. It also asked for suggestions on how to improve access to the three stations. Tables B-30 through B-38 display information gathered concerning respondents' commute information, Table B-39 shows suggested improvements to increase station access, and Tables B-40 through B-44 show demographic information.

Table B-30 – Origin by Station

Origin	Chatham		Madison		Convent	
	Total	Percent	Total	Percent	Total	Percent
Chatham Borough	332	41.4%	7	1.0%	0	0.0%
Chatham Township	188	23.4%	13	2.0%	0	0.0%
Chatham (Unspecified)	39	4.9%	0	0.0%	0	0.0%
Madison	23	2.9%	426	63.4%	0	0.0%
Morris Township	0	0.0%	0	0.0%	226	38.8%
Basking Ridge	0	0.0%	7	1.0%	0	0.0%
Bernardsville	0	0.0%	00	0.0%	5	0.9%
Bloomfield	0	0.0%	0	0.0%	5	0.9%
Chester	0	0.0%	0	0.0%	5	0.9%
East Hanover	8	1.0%	7	1.0%	5	0.9%
Flemington	0	0.0%	0	0.0%	5	0.9%
Florham Park	47	5.9%	47	6.9%	25	4.3%
Hanover	0	0.0%	13	2.0%	40	6.9%
Harding Township	0	0.0%	27	4.0%	10	1.7%
Mendham	0	0.0%	0	0.0%	35	6.0%
Morristown	0	0.0%	0	0.0%	75	12.9%
Morristown (unspecified)	0	0.0%	0	0.0%	15	2.6%
New Providence	8	1.0%	0	0.0%		0.0%
Newark	0	0.0%	0	0.0%	5	0.9%
No Answer	156	19.5%	120	17.8%	100	17.2%
Parsippany-Troy Hills	0	0.0%	0	0.0%	5	0.9%
Randolph	0	0.0%	0	0.0%	15	2.6%
Roxbury	0	0.0%	7	1.0%	5	0.9%
Total	802	100.0%	672	100.0%	582	100.0%



Table B-31 – Access Mode by Boarding Station

Access Mode	Chatham		Madison		Convent	
	Total	Percent	Total	Percent	Total	Percent
Drove alone and parked	297	37.1%	326	48.5%	431	74.1%
Carpool and parked	16	2.0%	13	2.0%	0	0.0%
Car drop off	180	22.4%	126	18.8%	45	7.8%
Passenger in carpool	8	1.0%	0	0.0%	5	0.9%
Bus/Shuttle	23	2.9%	0	0.0%	15	2.6%
Walk	215	26.8%	173	25.7%	50	8.6%
Bicycle	31	3.9%	20	3.0%	15	2.6%
Other	8	1.0%	0	0.0%	0	0.0%
No Answer	23	2.9%	13	2.0%	20	3.4%
Grand Total	802	100.0%	672	100.0%	582	100.0%

Table B-32 - Egress Mode by Alighting Station

Egress Mode	Chatham		Madison		Convent	
	Total	Percent	Total	Percent	Total	Percent
Drove alone and parked	0	0.0%	0	0.0%	35	10.8%
Car pick up	12	16.7%	6	4.8%	12	3.6%
Bus/Shuttle	0	0.0%	53	42.9%	182	56.9%
Walk	47	66.7%	41	33.3%	81	25.1%
Bicycle	0	0.0%	6	4.8%	0	0.0%
Other	12	16.7%	18	14.3%	12	3.6%
Total	71	100.0%	123	100.0%	321	100.0%



Table B-33 – Where do you typically park?

Parking Location	Chatham		Madison		Convent	
	Total	Percent	Total	Percent	Total	Percent
Station/Municipal Lot parking – Resident only	149	46.3%	200	58.8%	216	49.4%
Station/Municipal Lot parking – Non-resident	141	43.9%	60	17.6%	201	46.0%
Private Lot parking nearby station	23	7.3%	20	5.9%	5	1.1%
Metered On-street parking	0	0.0%	0	0.0%	10	2.3%
Free On-street parking	0	0.0%	60	17.6%	0	0.0%
No Answer	8	2.4%	0	0.0%	5	1.1%
Total	321	100.0%	339	100.0%	437	100.0%

Table B-34 – How do you typically pay for parking?

Parking Payment Type	Chatham		Madison		Convent	
	Total	Percent	Total	Percent	Total	Percent
Monthly Permit	63	19.5%	86	25.5%	135	31.0%
Daily	156	48.8%	80	23.5%	140	32.2%
Free	0	0.0%	53	15.7%	5	1.1%
Other	94	29.3%	120	35.3%	151	34.5%
No Answer	8	2.4%	0	0.0%	5	1.1%
Total	321	100.0%	339	100.0%	437	100.0%

Table B-35 – Was a Personal Vehicle Available for this Trip?

Station	Chatham		Madison		Convent Station	
	Total	Percent	Total	Percent	Total	Percent
Yes	626	78.1%	539	80.2%	492	84.5%
No	137	17.1%	67	9.9%	25	4.3%
No Answer	39	4.9%	67	9.9%	65	11.2%
Total	802	100.0%	672	100.0%	582	100.0%



Table B-36 - If transit service was not available, how would you have made this trip?

Alternate Mode	Chatham		Madison		Convent Station	
	Total	Percent	Total	Percent	Total	Percent
Drive alone	454	56.6%	333	49.5%	346	59.5%
Car drop off	23	2.9%	13	2.0%	5	0.9%
Carpool	117	14.6%	93	13.9%	50	8.6%
Taxi	0	0.0%	7	1.0%	5	0.9%
Walk	19	2.4%	0	0.0%	0	0.0%
Would not have made this trip	78	9.8%	140	20.8%	70	12.1%
Other	70	8.8%	20	3.0%	40	6.9%
No Answer	39	4.9%	67	9.9%	65	11.2%
Total	802	100.0%	672	100.0%	582	100.0%

Table B-37 - Trip Frequency by Station

Trip Frequency	Chatham		Madison		Convent Station	
	Total	Percent	Total	Percent	Total	Percent
4 or more times a week	702	81.4%	567	71.3%	745	82.5%
1 - 3 times a week	82	9.5%	150	18.8%	116	12.9%
1 - 3 times a month	16	1.8%	26	3.2%	17	1.8%
6 - 11 times a year		0.0%	19	2.4%		0.0%
1 - 5 times a year	31	3.6%	7	0.8%	5	0.6%
No Answer	31	3.6%	27	3.3%	20	2.2%
Total	863	100.0%	795	100.0%	903	100.0%

Table B-38 - Trip Purpose by Station

Trip Purpose	Chatham		Madison		Convent Station	
	Total	Percent	Total	Percent	Total	Percent
Work	777	90.0%	678	85.2%	819	90.8%
Company business	16	1.8%	7	0.8%	17	1.8%
School	0	0.0%	19	2.4%	17	1.8%
Recreation	31	3.6%	20	2.5%	5	0.6%
Medical	8	0.9%	0	0.0%	0	0.0%
Social	0	0.0%	20	2.5%	5	0.6%
Personal business	0	0.0%	25	3.1%	10	1.1%
Other	0	0.0%	0	0.0%	10	1.1%
No Answer	31	3.6%	27	3.3%	20	2.2%
Total	863	100.0%	795	100.0%	903	100.0%



Table B-39 – What one improvement would you make to improve your travel to the station (non-parking access related improvements are highlighted)?

Comments
More reasonable monthly parking
Better lighting under the rail overpass on Fairmount Avenue
More parking options.
Traffic flow patterns in the parking lot, no cars allowed to stand with passengers inside waiting for the train to come in drop off area of parking lot
The parking machines are the worst! There are too few, they often do work, and people don't know how to use. It is the most stressful part of the commute.
More parking spaces.
Stoplight at north entrance to Chatham station on Main street
More daily parking spaces. All spots taken by 7 am. Why not restrict parking spots for commuters from Chatham & Madison. Also, paying \$5.00 daily is OBNOXIOUS!
Expand the parking passes to Chatham Township residents not just Chatham Borough.
The one improvement would if Chatham Borough provided permit parking to Chatham Township residents. I would then not need a ride to the train station
Create a cheaper parking option and parking machines that actually work.
Increase parking and drop-off area at the station.
Shuttle bus in the winter
more parking
Concrete platform is crumbling. Would like to see it refurbished at some point. its tolerable (as i'm sure its been crumbling for decades). Also, work was recently done on the west bound side, and the platform was blocked in a manner that forced people to have no way off the platform, without basically transiting across a barrier. a stair case was closed for no apparenty reason as well related to this which made for an unpleasant, and downright dangerous situation. engineering should be more thoughtful about this kind of thing, because it can only be described as stupid by users, who shake their heads in disgust as the lack of attention and though put into this was most apparent.
More covered areas on the platform.
Nothing
Free motorcycle, scooter or very small car parking
More parking spaces for non-residents of Chatham Borough
None
N/A
More permit parking
Need more parking, particularly for Chatham Township residents.
Better coffee/food options
Much more parking--there is generally no parking available if one needs to make a midday trip into NYC
More bike racks. Today I had to double-up on a bike rack before 8am.
More parking
None
Guaranteed parking. I have to take a much earlier train than necessary most days in order to secure parking anywhere near the station.



Comments
Parking spaces. There are none available for Chatham township.
My travel to the station could be better if i could drive without having to pay for parking.
None
None
None
Waiting rooms open longer, ATM Machine, LED Board announcing time for arriving train and destination. Use it other than blinking CHATHAM
More parking
Cross walk with lights on Fairmount Ave. The traffic can make crossing the street dangerous.
I would add more parking spaces at or near the station for individuals who are not residents.
Street lighting
City should offer monthly unlimited parking ticket.
Move it closer to my home
Improved timeliness
Be able to get a permit. The process is too long
I take the 7:27am train from Chatham and frequently have to stand all the way to NY Penn station, it would be good if you can add one more car to this train.
Renovated rest rooms
More parking for non residents
N/A - The station is great - clean and friendly
Add additional nonresident parking so I don't have to catch such an early train.
Allow non-residents to purchase annual parking permit.
There should be a specific entrance and exit into the station, because it gets very crowded and backed up with all the cars going opposite directions
Nothing
Jitney
None at this time
Lower the cost of daily parking
Increase the number of daily spaces
None.
More non-resident parking. It is a nightmare and typically no spots available after the 6:42a train. If you have to drive your child to school, you cannot get parking in Chatham, even at 715a. I live in Chatham Township and only Chatham Borough has permits, and there is ample parking for them.
Travel to the station is okay for me, but I arrive very early and have no problem finding a parking space.
The possibility of a shuttle service on Main Street that would take you to the train station
Make a monthly pass, just like for the train, that I can use for daily parking with certain restrictions. No guarantee of a spot or something. I know many people would like this. This pay \$5 everyday at a long line with the machine broke half the time is nuts. I know we can do better. Please!
Raised platforms
Travel to the station is not a problem for me. Unless you could teleport me from home to station.....
More parking.
More lighting along the street.



Comments
Ability to get a monthly/annual Parking permit
more parking
Nothing
More parking availability. There is extremely limited parking at all nearby train stations. The closest station with enough non permit parking is metropark. Horrible. That's not considered commuter service
N/A
Station building should be open for more time. Chatham station building (climate controlled) is closed all day past mid-morning.
Parking is sparse. I assume there are studies to determine demand / parking needs. But, this is why I walk... I don't want the stress of working to find parking
None
N/A
More Parking space with working meters
None
It's crowded on the 7:34 to new York I can't even sit
Clear sidewalks, particularly in the winter
Not have to go there.
More parking
Delay warnings in the stations...maybe monitors will be a good idea, in the small stations, as well.
No changes needed.
The parking machines do not work 50% of the time. It is extremely annoying! The lines can be so bad people miss their trains.
Grant Chatham Township residents the option to purchase parking permits. Chatham Boro residents that drive to the station frequently live within walking distance. Spaces for daily parking are usually gone after the 6:42 AM train
More parking
More bicycling storage lockers
The Midtown Direct line is too often re-routed through Hoboken. This makes travel difficult and should go directly to Penn Station. Again. IT HAPPENS FAR TOO OFTEN.
None
N/A
Alleviate traffic on Hanover Rd in Morris Plains and Morristown area
Parking for non-residents is expensive \$690/year with no guarantee that even though you apply for parking, get a sticker that there will be an available space for you
N/A
None
Penn Station is a dumb where nothing appears ever to work (e.g., escalators)
It's fine. Can't complain
Nothing, traveling to this station is fine.
A shuttle to take me to the station so I don't have to pay \$300+ for the yearly resident parking fee.
More train options; less expensive parking



Comments
Fix/Add better parking meters. There is only one which accepts credit cards which is inside the station and does not work efficiently at all. Commuters who would like to pay with credit cards have to use this machine, which is not easy to use, has trouble reading cards, and because it takes a long time to print the actual parking ticket- it gets backed up. (especially since if you do not use it everyday and know the quirks and tricks- i.e. when you put in the card you have to push it back all the way, leave it in the machine for a second, then pull it out as fast as possible- it will not read properly and you will just have to do it again which again- backs everything up. Also - if the machine is broken or someone can't get it to work- there isn't any information on the machine to indicate who to call/what to do in order to NOT receive a parking ticket. There should be a sign which states, if this machine is out of order or not working properly- call this number. (I myself found this out the hard way- after multiple parking tickets
I wouldn't mind a bus option, but the trip is quick. Bigger complaint is about the lack of parking lot oversight by NJT - the municipalities are lousy at running a service.
NA
No improvement
None
More parking spaces
We are held hostage by the towns where train stations reside. As non-residents to these towns, there are very limited parking permits which are double the resident costs and then limited daily spots
More frequent shuttle bus service.
None
None
N/A... wish it would be just a little closer so i could walk.
None
None
None
None needed
More space, better cash machine.
A less frequent payment option - i.e. monthly or quarterly, rather than daily.
None
Better Ventilation of the Convent Station waiting room.
Make it easier to get to/from the westbound track (not just at one end of the train).
None
Chaffeur service to the train paid for by the useless conductors union. Get rid of these unions immediately as commuters will only pay so much for their rail tickets. Another rate hike will not be tolerated.
Shuttle Service - More Parking
Additional monthly or annual non-resident parking spaces would make my annual commute much cheaper.
All fine
Having the ability as a non resident to pay monthly parking
Fix the damn potholes on 287 so they stop wrecking my suspension



Comments
I'm not sure what I could. It is 4.5 miles each way and I encounter only one street light (which I can right-on-red) and it takes me about 9-11 minutes.
An over/under pass to get from one side of the tracks to the other at Convent Station.
The public parking at Convent Station is a disgrace. Both the cash and credit card machines are very temperamental and cause a great deal of anxiety for my daily trip. I can't even use my Benefits card for the transaction because it is denied by the machine! On weekends you must pay for parking but the only available machine is cash only and it doesn't always accept the bills inserted.
Free parking or cheaper parking would be great. Even though this is a municipal decision the price we pay to park it ridiculous.
Keep parking rates low. Morristown station parking increases were unacceptable.
Monthly passes for parking aren't available. I was told I can only purchase 6 month and one year passes.
None
None
I've been on the waiting list for a parking pass for a year, which is ridiculous when I park pretty much in the same spot everyday. It almost triples the cost because I'm 40 people deep on the list. Make more year passes.
N/A
A local shuttle to the train station for local area residents would be helpful
none
A bus/van
NONE
It's great. In fact, there's a bike bath that I use regularly to get to the station. I would encourage more people to walk, or bike to the station.
More bicycle lockers.
There are many people being dropped off that are waiting in their cars until the train arrives. However, they are all waiting right in front of the station, rather than pulling into a parking spot. This causes significant backups in the morning.
With people trying to hustle past the station to their parking spot, I've seen more than one instance of rage. Suggest that someone patrol this area to ensure that cars don't clog up the road.
no improvement needed
None.
More direct route with fewer stop signs/lights
Morristown station is closer but parking difficult so travel extra distance to Convent.
none
There is never enough parking at Convent Station for daily non-resident commuters. It helped to get the church parking lot for daily metered parking, but I still need to get to the train station before 7 AM in order to park my car to take the train to my NY office 6 or 8 times a month. In summer, the parking situation is better of course. But from September-June, it is an issue.
Can't think of anything.... Love the double deckers are nice, clean, quieter trains, I always get a seat.
None
Nothing - i am happy with the travel
None



Comments
The traffic light before the Madison Hotel stays red for a long time and green for only a short period. Causes anxiety.
My walk takes about 6 minutes. It's hard to improve on that.
Not having to ride my bike on a busy street, Rte. 124/Main Street.
Can't think of one.
To have precise timing when picking up the citizens.
Nothing to add.
A crosswalk should be added that connects the sidewalks on either side of Madison Avenue. There is a crosswalk at this intersection between canfield/convent station and Madison Avenue but it is on the opposite side where there are no sidewalks. Thus, everyone crosses in an unmarked intersection and not safely in the crosswalk.
None
None
Shorter distance
Have monthly permits available everywhere
None
Nothing. walking to station is mostly ideal
None
MORE PARKING
None.
The Parking Meter machine is EXTREMELY slow. Consider invoking Smart Parking Cards Commuters
Parking Lot needs repaving
I've worked at 210 Park Ave. Florham Park, NJ for 2 months & of those 2 months I walked 2 miles to the Madison train station FOR OVER 1 MONTH because your Representatives & your Trip Planner is absolutely WORTHLESS. I called on several different occasions to ask about mass transit from Florham Park & was told there wasn't any! Well there are 2 bus #878 & #879 that are under contract with NJ TRANSIT!! HOW ABSURD IS YOUR COMPANY & YOUR RESOURCES THAT THESE FIRST STUDENT BUS ROUTES DO NOT COME UP ON YOUR TRIP PLANNER OR IN FRONT OF THE REPRESENTATIVE. If there were any other services, I would not waste my time or money with NJ TRANSIT. ABSOLUTELY RIDICULOUS & ABSURD
Sidewalks along Punch Bowl Road.
None.
Please, please add signs to the Quiet Cars. They are one of the best improvements in a long time, but it adds such stress when someone doesn't know and the other passengers either are annoyed or confront the talkers. Can't there be a spot for a sign to be posted so that people know when they enter the car?
More parking
N/A
More places to park. Madison, Chatham, Summit, and Short Hills will not give me a parking permit because I am not a resident. Incredibly difficult (and costly) to park in daily parking. Parking spots should not be limited to residents only.
More spaces



Comments
If there were public transportation to train station, I would take it. I cannot walk because I get home after dark, and it is pretty far--over a mile.
None
None
Less handicap parking spots since they're very rarely used.
None
Reduce the cost for parking and make more spaces available to park.
None. I am able to walk
N/A
More parking, monthly permits for non-residents
Better lighting.
None
No improvements needed.
More non-permit parking
Better parking accommodations. My town does not have a municipal station, so I only have a pay per day option, other than walking 0.5 miles from a free private lot. Also, it could be nice if there was a parking perk for monthly pass holders.
None.
pedestrian signal priority at signaled intersections
pedestrian signal priority at signaled intersections
none--v nice and pleasant train station
Less expensive parking close to train station.
None
Closer
Larger parking lot closer to station.
A electronic sign at the parking lots saying how many minutes away the next train is from the station.
There is no parking by the time I get on the 7:58 train so my mother has to wake up every morning and drive me. It would be helpful if there was more parking.
No improvement. Great walk in a beautiful town.
N/A
I would like to see the ticket vending machines on the platform instead of being on the street level.
Better safety for pedestrians crossing to/from station
None
More parking spots at the train station
Open lobby area.
More parking spaces in the lot closer to the station.
None
Have more public parking at the Madison station for non-residents
None
Reduce the price of parking
Nothing
None



Comments
Parking for out of town users
None
Nothing. I do not live far from the station.
None
Nothing - it's perfect.
None
Nothing, I walk. But there are tons of steps :-)
More resident parking . I am on waiting list.
Given that my monthly ticket from Madison to Hoboken costs \$273.00, and a PATH ride from Hoboken to the WTC costs a discounted \$1.50 each way, the \$5.00 per day parking fee in Madison is high. There should be more options for reduced rate parking for daily commuters.
Dropped off by my dad so I wish I didn't have to wait so long in the waiting area before the train I have to catch.
Price. The lower the price is for a monthly pass, the more people would use the NJ TRANSIT system. More express trains and train times, similar to the summit station. The more trains available to fit people's schedules the more customers will choose them. Currently beyond summit, there are not enough express trains for people to think of NJTransit as a means of transportation more frequently. The population of people at the madison area is large enough to call for more trains to run from hoboken and NY Penn. Trains to run on time. It is very important to riders that the trains are running on schedule since this is the way that riders get to work and need to be on time.
More parking so I could drive myself. Presently, if you are not a Madison resident, you can not get a parking permit.
More daily parking spaces
Nothing much, it is easy to get to and there is not much traffic.
Frequency of trains to Hoboken has diminished over the years. Trains that are left are more local than express So more and/or faster trains
Nothing it is fantastic
Double track Peapack Gladstone and provide better service on that line.
Nothing except maybe the cost of the parking permit
Better spaces.
None are necessary
Stop constant delays and going to Hoboken instead of Penn Station when there are problems in the tunnel
Sidewalks should be even, without depressions/potholes/elevations, and trees overhang should be cut, so that normal person can walk under them without bending over.
Replace bike racks on western end of station with bike lockers.
Better parking options
None. I live about a mile away from the station. Travel local roads, early, so traffic is not a problem.
None
More parking available by station
None
More trains to NYC that begin and end on the half hour especially after 7.00 pm.



Comments
Persuade town to allow free parking on designated blocks within walking distance of station.
It's perfect.
More parking at station
None
Not applicable; Train station is within walking distance.
I could use another way to get there like walking, riding a bicycle or moving nearest the train station

Table B-40 – Gender

Gender	Chatham		Madison		Convent Station		Total	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent
Male	530	67.6%	380	53.5%	502	62.4%	1412	61.4%
Female	255	32.4%	330	46.5%	302	37.6%	887	38.6%
Total	785	100.0%	709	100.0%	804	100.0%	2298	100.0%

No Answer	78		86		98		262	
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Table B-41 - Age

Age	Chatham		Madison		Convent Station		Total	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent
18 - 24 years	39	5.0%	92	13.0%	47	6.1%	177	7.9%
25 - 34 years	119	15.2%	108	15.3%	180	23.4%	407	18.0%
35 - 44 years	251	31.9%	172	24.5%	185	24.1%	608	26.9%
45 - 54 years	235	29.9%	162	23.1%	155	20.2%	552	24.5%
55 - 64 years	106	13.5%	124	17.6%	164	21.4%	394	17.5%
65 years and over	35	4.5%	47	6.6%	37	4.8%	118	5.3%
Total	785	100.0%	704	100.0%	768	100.0%	2257	100.0%

No Answer	78		91		135		304	
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Table B-42 - Are you of Spanish/Hispanic/Latino origin?

Spanish/ Hispanic /Latino origin	Chatham		Madison		Convent Station		Total	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent
Yes	16	2.0%	40	5.6%	17	2.1%	72	3.2%
No	753	98.0%	670	94.4%	756	97.9%	2180	96.8%
Total	769	100.0%	710	100.0%	773	100.0%	2252	100.0%

No Answer	94		85		130		309	
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Table B-43 – Race

Spanish/ Hispanic /Latino origin	Chatham		Madison		Convent Station		Total	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent
White	610	81.9%	617	89.1%	592	80.4%	1819	83.7%
Black or African American	20	2.6%	6	0.8%	33	4.5%	59	2.7%
Asian or Pacific Islander	64	8.6%	24	3.5%	56	7.6%	145	6.7%
Mixed Race	16	2.1%	33	4.8%	17	2.2%	65	3.0%
Other	35	4.7%	12	1.7%	38	5.2%	85	3.9%
Total	745	100.0%	692	100.0%	736	100.0%	2173	100.0%
No Answer	118		103		166		387	

Table B-44 - Income

Income	Chatham		Madison		Convent Station		Total	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent
\$250,000 and over	250	39.1%	118	18.7%	159	27.3%	528	28.5%
\$200,000-\$249,999	86	13.5%	57	9.0%	32	5.6%	175	9.5%
\$150,000-\$199,999	70	11.0%	125	19.8%	92	15.9%	288	15.5%
\$100,000-\$149,999	70	11.0%	95	15.0%	152	26.2%	317	17.1%
\$75,000-\$99,999	55	8.6%	62	9.8%	51	8.8%	167	9.0%
\$50,000-\$74,999	35	5.5%	50	7.9%	24	4.2%	109	5.9%
\$35,000-\$49,999	31	4.9%	55	8.7%	38	6.6%	124	6.7%
\$25,000-\$34,999	10	1.5%	44	7.0%	7	1.1%	61	3.3%
\$15,000-\$24,999	8	1.2%	17	2.6%	0	0.0%	24	1.3%
Under \$15,000	23	3.7%	10	1.6%	25	4.3%	59	3.2%
Total	640	100.0%	631	100.0%	581	100.0%	1852	100.0%
No Answer	223		271		214		709	



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Appendix C: TOD Pro Forma Analysis



Chatham Station 30 Dwelling Unit Scenario

Assumed Zoning Densities		
Retail Floor Area Ratio	1.0	SF
Office Floor Area Ratio	4.0	SF
Residential Dwelling Units per Acre	30.0	Acre

Acquisition, Demolition & Site Work		
Site Acquisition Cost		\$6,000,000
Demolition Costs per CF		\$7.00
Residential Buildings	0	\$0
Office Buildings	20,000	\$0
Retail Buildings	0	\$0
Public Buildings	0	\$0
Haz Mat Abatement:		\$0
Site Prep & Grading: Entire Site		\$500,000
Site Infrastructure Costs		8.00%

Residential: Multi-Family Rental		
Efficiency Rate	92%	
Avg. Unit Size	1,150	SF
Parking Spaces per Unit	1.25	spaces
Construction Costs: Low-Rise	\$185	per SF
Construction Costs: Mid-Rise	\$220	per SF
Average Rent per SF/Month	\$2.00	
Vacancy Rate: Rental	5.00%	
Operating Expenses per SF	\$3.00	per SF

Retail: Ground Floor		
Efficiency Rate	90%	
Parking Spaces per 1,000 SF	3	spaces
Construction Costs: Shell	\$100	per SF
Construction Costs: Fit Out	\$25	per SF
Construction Costs: Shell + Fit Out	\$125	per SF
Rent per SF: Triple Net	\$25	per SF
Vacancy Rate: Retail	5.00%	
Operating Expenses per SF	\$4.00	per SF

Office: Class A		
Efficiency Rate	90%	
Parking Spaces per 1000 SF	3.00	spaces
Construction Costs: Inclusive of shell and fit-up	\$200	per SF
Rent per SF	\$25.00	
Vacancy Rate: Class A	5.00%	
Operating Expenses per SF	\$6.00	per SF



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Parking		
SF per Space: Structured	400	SF
SF per Space: Surface	300	SF
Construction Costs: Structured	\$20,000	per space
Construction Costs: Surface, New	\$3,500	per space
Construction Costs: Surface, Existing	\$2,000	per space

Misc		
Sales Cost	5.00%	
Hold Period	15	years
Investment Return Goal: Unleveraged	8%	
Inflation Factor	2.20%	
Estimate of Annual Real Property Taxes	\$2.50	per SF

Cap Rates	
Residential	7.00%
Retail	7.50%
Office	8.00%



Chatham Station: 50 Dwelling Unit Scenario

Assumed Zoning Densities		
Retail Floor Area Ratio	1.0	SF
Office Floor Area Ratio	4.0	SF
Residential Dwelling Units per Acre	50.0	Acre

Acquisition, Demolition & Site Work		
Site Acquisition Cost		\$6,000,000
Demolition Costs per CF		\$7.00
Residential Buildings	0	\$0
Office Buildings	20,000	\$0
Retail Buildings	0	\$0
Public Buildings	0	\$0
Haz Mat Abatement:		\$0
Site Prep & Grading: Entire Site		\$500,000
Site Infrastructure Costs		8.00%

Residential: Multi-Family Rental		
Efficiency Rate	92%	
Avg. Unit Size	1,150	SF
Parking Spaces per Unit	1.25	spaces
Construction Costs: Low-Rise	\$185	per SF
Construction Costs: Mid-Rise	\$220	per SF
Average Rent per SF/Month	\$2.00	
Vacancy Rate: Rental	5.00%	
Operating Expenses per SF	\$3.00	per SF

Retail: Ground Floor		
Efficiency Rate	90%	
Parking Spaces per 1,000 SF	3	spaces
Construction Costs: Shell	\$100	per SF
Construction Costs: Fit Out	\$25	per SF
Construction Costs: Shell + Fit Out	\$125	per SF
Rent per SF: Triple Net	\$25	per SF
Vacancy Rate: Retail	5.00%	
Operating Expenses per SF	\$4.00	per SF

Office: Class A		
Efficiency Rate	90%	
Parking Spaces per 1000 SF	3.00	spaces
Construction Costs: Inclusive of shell and fit-up	\$200	per SF
Rent per SF	\$25.00	
Vacancy Rate: Class A	5.00%	
Operating Expenses per SF	\$6.00	per SF



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Parking		
SF per Space: Structured	400	SF
SF per Space: Surface	300	SF
Construction Costs: Structured	\$20,000	per space
Construction Costs: Surface, New	\$3,500	per space
Construction Costs: Surface, Existing	\$2,000	per space

Misc		
Sales Cost	5.00%	
Hold Period	15	years
Investment Return Goal: Unleveraged	8%	
Inflation Factor	2.20%	
Estimate of Annual Real Property Taxes	\$2.50	per SF

Cap Rates	
Residential	7.00%
Retail	7.50%
Office	8.00%



Chatham Station 30 Dwelling Unit Scenario	
1	Acreage Acquired 2.76
2	Property Acquisition Cost \$6,000,000
3	Demolition Cost \$140,000
4	Relocation Costs \$0
5	Site Work Cost \$500,000
6	Multi-family Residential Units Developed 83
7	Multi-family Residential Development Costs \$20,948,400
8	Townhouse Residential Units Developed 0
9	Townhouse Residential Development Costs \$0
10	Retail Square Footage Developed 24,045
11	Retail Development Costs \$3,005,640
12	Office Square Footage Developed 9,618
13	Office Development Costs \$1,923,610
14	Lodging Square Footage Developed 0
15	Lodging Development Costs \$0
16	Parking Spaces - Structured 204
17	Total Structured Parking Costs \$4,089,790
18	Parking Spaces - Surface 0
19	Total Surface Parking Costs \$0
20	Performance Venue Space Developed 0
21	Performance Venue Development Costs \$0
22	Developer Fee \$3,660,744
	Sub-Total Phase I Acquisition, Site, Demo & Infrastructure Costs \$10,729,790
	Sub-Total Phase I Building Construction Costs (Hard and Soft Combined) \$25,877,650
	Total Phase I Costs \$40,268,184

- Assumptions**
- 1 Estimated
 - 2 Represents an estimated acquisition cost
 - 3 Estimated demolition and site clearance costs based on existing character and size of structures present.
 - 4 No residential or business relocation costs are assumed.
 - 5 Placeholder estimate based on limited site work improvements likely required , given the developed nature of the site.
 - 6 Assumes a permitted dwelling unit density of 30 units per acre.
 - 7 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
 - 8 Assumes a permitted dwelling unit density of 30 units per acre.
 - 9 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
 - 10 Assumes a limited amount of convenience, specialty retail and allied health services
 - 11 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
 - 12 Assumes professional service office space (possibly medical office building space), four story low-rise.
 - 13 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.



- 14 Assumes small (less than 200 rooms), limited service, brand loading facility.
- 15 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 16 Based on an assumed parking ratio of 1.25 spaces/dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square
17 footage.
- 18 Assumes an estimated cost of \$20,000/ space, based on inquiries made with parking consultants and local area findings.
19 Based on an assumed parking ratio of 1.25 spaces/ dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square
20 footage.
- 21 Assumes an estimated cost of \$3,500/ space, based on inquiries made with parking consultants and local area findings.
- 22 Assumes an estimated cost of \$180 per square foot.
Source: 4ward Planning LLC, 2012

Chatham Station 50 Dwelling Unit Scenario

1	Acreage Acquired	2.76
2	Property Acquisition Cost	\$6,000,000
3	Demolition Cost	\$140,000
4	Relocation Costs	\$0
5	Site Work Cost	\$500,000
6	Multi-family Residential Units Developed	138
7	Multi-family Residential Development Costs	\$34,914,000
8	Townhouse Residential Units Developed	0
9	Townhouse Residential Development Costs	\$0
10	Retail Square Footage Developed	24,045
11	Retail Development Costs	\$3,005,640
12	Office Square Footage Developed	9,618
13	Office Development Costs	\$1,923,610
14	Lodging Square Footage Developed	0
15	Lodging Development Costs	\$0
16	Parking Spaces - Structured	273
17	Total Structured Parking Costs	\$5,469,790
18	Parking Spaces - Surface	0
19	Total Surface Parking Costs	\$0
20	Performance Venue Space Developed	0
21	Performance Venue Development Costs	\$0
22	Developer Fee	\$5,195,304
	Sub-Total Phase I Acquisition, Site, Demo & Infrastructure Costs	\$12,109,790
	Sub-Total Phase I Building Construction Costs (Hard and Soft Combined)	\$39,843,250
	Total Phase I Costs	\$57,148,344

Assumptions

- 1 Estimated
- 2 Represents an estimated acquisition cost
- 3 Estimated demolition and site clearance costs based on existing character and size of structures present.
- 4 No residential or business relocation costs are assumed.



- 5 Placeholder estimate based on limited site work improvements likely required , given the developed nature of the site.
- 6 Assumes a permitted dwelling unit density of 50 units per acre.
- 7 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 8 Assumes a permitted dwelling unit density of 50 units per acre.
- 9 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 10 Assumes a limited amount of convenience, specialty retail and allied health services
- 11 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 12 Assumes professional service office space (possibly medical office building space), four story low-rise.
- 13 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 14 Assumes small (less than 200 rooms), limited service, brand loading facility.
- 15 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 16 Based on an assumed parking ratio of 1.25 spaces/ dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square footage.
- 17 Assumes an estimated cost of \$20,000 per space, based on inquiries made with parking consultants and local area findings.
- 18 Based on an assumed parking ratio of 1.25 spaces/ dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square footage.
- 19 Assumes an estimated cost of \$3,500 per space, based on inquiries made with parking consultants and local area findings.
- 20 Assumes an estimated cost of \$180 per square foot.

Source: 4ward Planning LLC, 2012



Madison Station 30 Dwelling Unit Scenario

Assumed Zoning Densities		
Retail Floor Area Ratio		SF
Office Floor Area Ratio		SF
Residential Dwelling Units per Acre	30.0	Acre

Acquisition, Demolition & Site Work		
Site Acquisition Cost		\$9,000,000
Demolition Costs per CF		\$7.00
Residential Buildings	20,000	\$0
Office Buildings	15,000	\$0
Retail Buildings	20,000	\$0
Public Buildings	0	\$0
Haz Mat Abatement:		\$0
Site Prep & Grading: Entire Site		\$1,000,000
Site Infrastructure Costs		8.00%

Residential: Multi-Family Rental		
Efficiency Rate	92%	
Avg. Unit Size	1,150	SF
Parking Spaces per Unit	1.25	spaces
Construction Costs: Low-Rise	\$185	per SF
Construction Costs: Mid-Rise	\$220	per SF
Average Rent per SF/Month	\$2.00	
Vacancy Rate: Rental	5.00%	
Operating Expenses per SF	\$3.00	per SF

Retail: Ground Floor		
Efficiency Rate	90%	
Parking Spaces per 1,000 SF	3	spaces
Construction Costs: Shell	\$100	per SF
Construction Costs: Fit Out	\$25	per SF
Construction Costs: Shell + Fit Out	\$125	per SF
Rent per SF: Triple Net	\$25	per SF
Vacancy Rate: Retail	5.00%	
Operating Expenses per SF	\$4.00	per SF

Office: Class A		
Efficiency Rate	90%	
Parking Spaces per 1000 SF	3.00	spaces
Construction Costs: Inclusive of shell and fit-up	\$200	per SF
Rent per SF	\$25.00	
Vacancy Rate: Class A	5.00%	
Operating Expenses per SF	\$6.00	per SF



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Parking		
SF per Space: Structured	400	SF
SF per Space: Surface	300	SF
Construction Costs: Structured	\$20,000	per space
Construction Costs: Surface, New	\$3,500	per space
Construction Costs: Surface, Existing	\$2,000	per space

Misc		
Sales Cost	5.00%	
Hold Period	15	years
Investment Return Goal: Unleveraged	8%	
Inflation Factor	2.20%	
Estimate of Annual Real Property Taxes	\$2.50	per SF

Cap Rates		
Residential	7.00%	
Retail	7.50%	
Office	8.00%	

Madison Station: 50 Dwelling Unit Scenario

Assumed Zoning Densities		
Retail Floor Area Ratio	1.0	SF
Office Floor Area Ratio	4.0	SF
Residential Dwelling Units per Acre	50.0	Acre

Acquisition, Demolition & Site Work		
Site Acquisition Cost		\$9,000,000
Demolition Costs per CF		\$7.00
Residential Buildings	20,000	\$0
Office Buildings	15,000	\$0
Retail Buildings	20,000	\$0
Public Buildings	0	\$0
Haz Mat Abatement:		\$0
Site Prep & Grading: Entire Site		\$1,000,000
Site Infrastructure Costs		8.00%

Residential: Multi-Family Rental		
Efficiency Rate	92%	
Avg. Unit Size	1,150	SF
Parking Spaces per Unit	1.25	spaces
Construction Costs: Low-Rise	\$185	per SF
Construction Costs: Mid-Rise	\$220	per SF
Average Rent per SF/Month	\$2.00	
Vacancy Rate: Rental	5.00%	
Operating Expenses per SF	\$3.00	per SF



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Retail: Ground Floor		
Efficiency Rate	90%	
Parking Spaces per 1,000 SF	3	spaces
Construction Costs: Shell	\$100	per SF
Construction Costs: Fit Out	\$25	per SF
Construction Costs: Shell + Fit Out	\$125	per SF
Rent per SF: Triple Net	\$25	per SF
Vacancy Rate: Retail	5.00%	
Operating Expenses per SF	\$4.00	per SF

Office: Class A		
Efficiency Rate	90%	
Parking Spaces per 1000 SF	3.00	spaces
Construction Costs: Inclusive of shell and fit-up	\$200	per SF
Rent per SF	\$25.00	
Vacancy Rate: Class A	5.00%	
Operating Expenses per SF	\$6.00	per SF

Parking		
SF per Space: Structured	400	SF
SF per Space: Surface	300	SF
Construction Costs: Structured	\$20,000	per space
Construction Costs: Surface, New	\$3,500	per space
Construction Costs: Surface, Existing	\$2,000	per space

Misc		
Sales Cost	5.00%	
Hold Period	15	years
Investment Return Goal: Unleveraged	8%	
Inflation Factor	2.20%	
Estimate of Annual Real Property Taxes	\$2.50	per SF

Cap Rates		
Residential		7.00%
Retail		7.50%
Office		8.00%



Madison Station 30 Dwelling Unit Scenario		
1	Acreage Acquired	5.81
2	Property Acquisition Cost	\$9,000,000
3	Demolition Cost	\$385,000
4	Relocation Costs	\$0
5	Site Work Cost	\$1,000,000
6	Multi-family Residential Units Developed	174
7	Multi-family Residential Development Costs	\$44,097,900
8	Townhouse Residential Units Developed	0
9	Townhouse Residential Development Costs	\$0
10	Retail Square Footage Developed	25,308
11	Retail Development Costs	\$3,163,545
12	Office Square Footage Developed	10,123
13	Office Development Costs	\$2,024,669
14	Lodging Square Footage Developed	0
15	Lodging Development Costs	\$0
16	Parking Spaces - Structured	324
17	Total Structured Parking Costs	\$6,483,402
18	Parking Spaces - Surface	0
19	Total Surface Parking Costs	\$0
20	Performance Venue Space Developed	0
21	Performance Venue Development Costs	\$0
22	Developer Fee	\$6,615,452
	Sub-Total Phase I Acquisition, Site, Demo & Infrastructure Costs	\$16,868,402
	Sub-Total Phase I Building Construction Costs (Hard and Soft Combined)	\$49,286,114
	Total Phase I Costs	\$72,769,968

- Assumptions**
- 1 Estimated
 - 2 Represents an estimated acquisition cost
 - 3 Estimated demolition and site clearance costs based on existing character and size of structures present.
 - 4 No residential or business relocation costs are assumed.
 - 5 Placeholder estimate based on limited site work improvements likely required , given the developed nature of the site.
 - 6 Assumes a permitted dwelling unit density of 30 units per acre.
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 - 10 Assumes a limited amount of convenience, specialty retail and allied health services
 - 11 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
 - 12 Assumes professional service office space (possibly medical office building space), four story low-rise.
 - 13 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
 - 14 Assumes small (less than 200 rooms), limited service, brand loading facility.



- 15 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
Based on an assumed parking ratio of 1.25 spaces/ dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square
16 footage.
- 17 Assumes an estimated cost of \$20,000/ space, based on inquiries made with parking consultants and local area findings.
Based on an assumed parking ratio of 1.25 spaces/dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square
18 footage.
- 19 Assumes an estimated cost of \$3,500/ space, based on inquiries made with parking consultants and local area findings.
- 20 Assumes an estimated cost of \$180 per square foot.

Source: 4ward Planning LLC, 2012

Madison Station 50 Dwelling Unit Scenario

1	Acreage Acquired	5.81
2	Property Acquisition Cost	\$9,000,000
3	Demolition Cost	\$385,000
4	Relocation Costs	\$0
5	Site Work Cost	\$1,000,000
6	Multi-family Residential Units Developed	291
7	Multi-family Residential Development Costs	\$73,496,500
8	Townhouse Residential Units Developed	0
9	Townhouse Residential Development Costs	\$0
10	Retail Square Footage Developed	25,308
11	Retail Development Costs	\$3,163,545
12	Office Square Footage Developed	10,123
13	Office Development Costs	\$2,024,669
14	Lodging Square Footage Developed	0
15	Lodging Development Costs	\$0
16	Parking Spaces - Structured	469
17	Total Structured Parking Costs	\$9,388,402
18	Parking Spaces - Surface	0
19	Total Surface Parking Costs	\$0
20	Performance Venue Space Developed	0
21	Performance Venue Development Costs	\$0
22	Developer Fee	\$9,845,812
	Sub-Total Phase I Acquisition, Site, Demo & Infrastructure Costs	\$19,773,402
	Sub-Total Phase I Building Construction Costs (Hard and Soft Combined)	\$78,684,714
	Total Phase I Costs	\$108,303,928

Assumptions

- 1 Estimated
- 2 Represents an estimated acquisition cost
- 3 Estimated demolition and site clearance costs based on existing character and size of structures present.
- 4 No residential or business relocation costs are assumed.
- 5 Placeholder estimate based on limited site work improvements likely required , given the developed nature of the site.



- 6 Assumes a permitted dwelling unit density of 50 units per acre.
- 7 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 8 Assumes a permitted dwelling unit density of 50 units per acre.
- 9 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 10 Assumes a limited amount of convenience, specialty retail and allied health services
- 11 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 12 Assumes professional service office space (possibly medical office building space), four story low-rise.
- 13 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 14 Assumes small (less than 200 rooms), limited service, brand loading facility.
- 15 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 16 Based on an assumed parking ratio of 1.25 spaces per dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square footage.
- 17 Assumes an estimated cost of \$20,000 per space, based on inquiries made with parking consultants and local area findings.
- 18 Based on an assumed parking ratio of 1.25 spaces per dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square footage.
- 19 Assumes an estimated cost of \$3,500 per space, based on inquiries made with parking consultants and local area findings.
- 20 Assumes an estimated cost of \$180 per square foot.

Source: 4ward Planning LLC, 2012

Convent Station 30 Dwelling Unit Scenario

Assumed Zoning Densities		
Retail Floor Area Ratio		SF
Office Floor Area Ratio		SF
Residential Dwelling Units per Acre	30.0	Acre

Acquisition, Demolition & Site Work		
Site Acquisition Cost		\$3,000,000
Demolition Costs per CF		\$7.00
Residential Buildings	0	\$0
Office Buildings	5,000	\$0
Retail Buildings	0	\$0
Public Buildings	0	\$0
Haz Mat Abatement:		\$0
Site Prep & Grading: Entire Site		\$500,000
Site Infrastructure Costs		8.00%

Residential: Multi-Family Rental		
Efficiency Rate	92%	
Avg. Unit Size	1,150	SF
Parking Spaces per Unit	1.25	spaces
Construction Costs: Low-Rise	\$185	per SF
Construction Costs: Mid-Rise	\$220	per SF
Average Rent per SF/Month	\$2.00	
Vacancy Rate: Rental	5.00%	
Operating Expenses per SF	\$3.00	per SF



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Retail: Ground Floor		
Efficiency Rate	90%	
Parking Spaces per 1,000 SF	3	spaces
Construction Costs: Shell	\$100	per SF
Construction Costs: Fit Out	\$25	per SF
Construction Costs: Shell + Fit Out	\$125	per SF
Rent per SF: Triple Net	\$25	per SF
Vacancy Rate: Retail	5.00%	
Operating Expenses per SF	\$4.00	per SF

Office: Class A		
Efficiency Rate	90%	
Parking Spaces per 1000 SF	3.00	spaces
Construction Costs: Inclusive of shell and fit-up	\$200	per SF
Rent per SF	\$25.00	
Vacancy Rate: Class A	5.00%	
Operating Expenses per SF	\$6.00	per SF

Parking		
SF per Space: Structured	400	SF
SF per Space: Surface	300	SF
Construction Costs: Structured	\$20,000	per space
Construction Costs: Surface, New	\$3,500	per space
Construction Costs: Surface, Existing	\$2,000	per space

Misc		
Sales Cost	5.00%	
Hold Period	15	years
Investment Return Goal: Unleveraged	8%	
Inflation Factor	2.20%	
Estimate of Annual Real Property Taxes	\$2.50	per SF

Cap Rates		
Residential	7.00%	
Retail	7.50%	
Office	8.00%	



Convent Station: 50 Dwelling Unit Scenario

Assumed Zoning Densities		
Retail Floor Area Ratio	1.0	SF
Office Floor Area Ratio	4.0	SF
Residential Dwelling Units per Acre	50.0	Acre

Acquisition, Demolition & Site Work		
Site Acquisition Cost		\$3,000,000
Demolition Costs per CF		\$7.00
Residential Buildings	0	\$0
Office Buildings	5,000	\$0
Retail Buildings	0	\$0
Public Buildings	0	\$0
Haz Mat Abatement:		\$0
Site Prep & Grading: Entire Site		\$500,000
Site Infrastructure Costs		8.00%

Residential: Multi-Family Rental		
Efficiency Rate	92%	
Avg. Unit Size	1,150	SF
Parking Spaces per Unit	1.25	spaces
Construction Costs: Low-Rise	\$185	per SF
Construction Costs: Mid-Rise	\$220	per SF
Average Rent per SF/Month	\$2.00	
Vacancy Rate: Rental	5.00%	
Operating Expenses per SF	\$3.00	per SF

Retail: Ground Floor		
Efficiency Rate	90%	
Parking Spaces per 1,000 SF	3	spaces
Construction Costs: Shell	\$100	per SF
Construction Costs: Fit Out	\$25	per SF
Construction Costs: Shell + Fit Out	\$125	per SF
Rent per SF: Triple Net	\$25	per SF
Vacancy Rate: Retail	5.00%	
Operating Expenses per SF	\$4.00	per SF

Office: Class A		
Efficiency Rate	90%	
Parking Spaces per 1000 SF	3.00	spaces
Construction Costs: Inclusive of shell and fit-up	\$200	per SF
Rent per SF	\$25.00	
Vacancy Rate: Class A	5.00%	
Operating Expenses per SF	\$6.00	per SF



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Parking		
SF per Space: Structured	400	SF
SF per Space: Surface	300	SF
Construction Costs: Structured	\$20,000	per space
Construction Costs: Surface, New	\$3,500	per space
Construction Costs: Surface, Existing	\$2,000	per space

Misc		
Sales Cost	5.00%	
Hold Period	15	years
Investment Return Goal: Unleveraged	8%	
Inflation Factor	2.20%	
Estimate of Annual Real Property Taxes	\$2.50	per SF

Cap Rates		
Residential	7.00%	
Retail	7.50%	
Office	8.00%	

Convent Station 30 Dwelling Unit Scenario

1	Acreage Acquired	6.45
2	Property Acquisition Cost	\$3,000,000
3	Demolition Cost	\$35,000
4	Relocation Costs	\$0
5	Site Work Cost	\$500,000
6	Multi-family Residential Units Developed	194
7	Multi-family Residential Development Costs	\$48,955,500
8	Townhouse Residential Units Developed	0
9	Townhouse Residential Development Costs	\$0
10	Retail Square Footage Developed	25,287
11	Retail Development Costs	\$3,160,823
12	Office Square Footage Developed	11,238
13	Office Development Costs	\$2,247,696
14	Lodging Square Footage Developed	0
15	Lodging Development Costs	\$0
16	Parking Spaces - Structured	351
17	Total Structured Parking Costs	\$7,029,004
18	Parking Spaces - Surface	0
19	Total Surface Parking Costs	\$0
20	Performance Venue Space Developed	0
21	Performance Venue Development Costs	\$0
22	Developer Fee	\$6,492,802
	Sub-Total Phase I Acquisition, Site, Demo & Infrastructure Costs	\$10,564,004



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Sub-Total Phase I Building Construction Costs (Hard and Soft Combined)	\$54,364,019
Total Phase I Costs	\$71,420,824

Assumptions

- 1 Estimated
- 2 Represents an estimated acquisition cost
- 3 Estimated demolition and site clearance costs based on existing character and size of structures present.
- 4 No residential or business relocation costs are assumed.
- 5 Placeholder estimate based on limited site work improvements likely required , given the developed nature of the site.
- 6 Assumes a permitted dwelling unit density of 30 units per acre.
- 7 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 8 Assumes a permitted dwelling unit density of 30 units per acre.
- 9 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 10 Assumes a limited amount of convenience, specialty retail and allied health services
- 11 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 12 Assumes professional service office space (possibly medical office building space), four story low-rise.
- 13 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 14 Assumes small (less than 200 rooms), limited service, brand loading facility.
- 15 Based on estimated per square foot costs, inclusive of all vertical hard and soft costs, and finishes.
- 16 Based on an assumed parking ratio of 1.25 spaces/dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square footage.
- 17 Assumes an estimated cost of \$20,000/ space, based on inquiries made with parking consultants and local area findings.
- 18 Based on an assumed parking ratio of 1.25 spaces/ dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square footage.
- 19 Assumes an estimated cost of \$3,500/ space, based on inquiries made with sparking consultants and local area findings.
- 20 Assumes an estimated cost of \$180 per square foot.

Source: 4ward Planning LLC, 2012

Convent Station 50 Dwelling Unit Scenario	
1 Acreage Acquired	6.45
2 Property Acquisition Cost	\$3,000,000
3 Demolition Cost	\$35,000
4 Relocation Costs	\$0
5 Site Work Cost	\$500,000
6 Multi-family Residential Units Developed	323
7 Multi-family Residential Development Costs	\$81,592,500
8 Townhouse Residential Units Developed	0
9 Townhouse Residential Development Costs	\$0
10 Retail Square Footage Developed	25,287
11 Retail Development Costs	\$3,160,823
12 Office Square Footage Developed	11,238
13 Office Development Costs	\$2,247,696
14 Lodging Square Footage Developed	0
15 Lodging Development Costs	\$0
16 Parking Spaces - Structured	513



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17	Total Structured Parking Costs	\$10,254,004
18	Parking Spaces - Surface	0
19	Total Surface Parking Costs	\$0
20	Performance Venue Space Developed	0
21	Performance Venue Development Costs	\$0
22	Developer Fee	\$10,079,002
	Sub-Total Phase I Acquisition, Site, Demo & Infrastructure Costs	\$13,789,004
	Sub-Total Phase I Building Construction Costs (Hard and Soft Combined)	\$87,001,019
	Total Phase I Costs	\$110,869,024

Assumptions

- 1 Estimated
 - 2 Represents an estimated acquisition cost
 - 3 Estimated demolition and site clearance costs based on existing character and size of structures present.
 - 4 No residential or business relocation costs are assumed.
 - 5 Placeholder estimate based on limited site work improvements likely required, given the developed nature of the site.
 - 6 Assumes a permitted dwelling unit density of 50 units per acre.
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 - 17 Assumes an estimated cost of \$20,000 per space, based on inquiries made with parking consultants and local area findings.
 - 18 Based on an assumed parking ratio of 1.25 spaces/ dwelling unit and 3.0 spaces per 1,000 s.f. of commercial square footage.
 - 19 Assumes an estimated cost of \$3,500/ space, based on inquiries made with parking consultants and local area findings.
 - 20 Assumes an estimated cost of \$180 per square foot.
- Source: 4ward Planning LLC, 2012



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Appendix D:

Glossary of Terms

(Regional Market Analysis)



GLOSSARY OF TERMS

Household Population: Household population excludes all persons living within dormitories, health facilities (convalescent facilities, long-term healthcare centers), and incarceration/ detention facilities (e.g., prisons, county jails, and youth detention centers).

Family: A family is a group of two or more people (one of whom is the householder) related by birth, marriage, or adoption and residing together; all such people are considered as members of one family. The number of families is equal to the number of family households; however, the count of family members differ from the count of family household members because family household members include any non-relatives living in the household.

Non-Family: A non-family household consists of a householder living alone (a one-person household) or where the householder shares the home exclusively with people to whom he/ she is not related. Does not include students living in campus housing.

Household: A household consists of all the people who occupy a housing unit. A house, an apartment, another group of rooms, or a single room, is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters. The count of households excludes group quarters and institutions.

Primary Market Area (PMA): For purposes of this analysis, the PMA takes in a 7.5 mile radial area (an approximate 15 minute drive contour) around each station area examined, and is assumed to encompass 70 percent of likely commuter rail patrons for that given station.

Secondary Market Area (SMA): For purposes of this analysis, the SMA represents the area falling immediately outside of the PMA (7.5 mile radial area) but within a 15 mile radial area. It is assumed to approximate nearly 30 percent of likely commuter rail patrons for that given station