

DANBURY

NEWTOWN

BETHEL

7Link Efficiency Study

REDDING

RIDGEFIELD

EASTON

WESTON

WILTON

FAIRFIELD

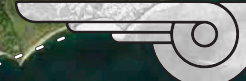
NEW CANAAN

WESTPORT

STAMFORD

NORWALK

NORWALK TRANSIT DISTRICT



7 Link Efficiency Study

FINAL REPORT

January 2016

This document was prepared in cooperation with the Federal Transit Administration, the Connecticut Department of Transportation and Norwalk Transit District. The opinions, findings, and conclusions expressed in this publication are those of the Housatonic Valley Metropolitan Planning Organization and do not necessarily reflect the official views or policies of the Connecticut Department of Transportation or the US Department of Transportation.

Prepared for HVMPO by



Eric C. Bergstraesser, Chief Executive Officer

Report Staff

Richard A. Schreiner, Director of Service Development

Stephanie A. Scavelli, Transportation Planner

Andrew C. O'Connell, Marketing and Public Relations Coordinator

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1. INTRODUCTION

Study Purpose

The purpose of this study is to evaluate the status of the Danbury-Norwalk Route 7 Link (7 Link) bus route and identify areas for improvement. This study is the first in depth look at the service in the 13 years it has operated.



The 7 Link is an inter-regional bus route that provides public transit service between the central business districts of Norwalk and Danbury via U.S. Route 7. Buses originate and terminate at the HARTransit and Norwalk Transit District (NTD) main bus stations. Major locations served include the Danbury Fair Mall, Branchville, Wilton Center, Georgetown, Merritt 7 and 10/20 Westport Road.

The 7 Link provides hourly service Monday through Friday between 6:00 a.m. and 12:00 p.m. and 3:00 p.m. to 8:45 p.m. There is no midday service provided. HARTransit and NTD run the service jointly, each operating 50% of the service. The Coastal Link is the only other bus route in Connecticut operated by multiple bus systems.

Ties between the cities of Norwalk and Danbury and the municipalities along the Route 7 Corridor have grown much closer since the route started operations. Notable examples of the deepening relationships include:

- The recent merger of the Housatonic Valley Council of Elected Officials (HVCEO) and South Western Regional Planning Agency (SWRPA) into the now 18 member Western Connecticut Council of Governments (WestCOG).
- The consolidation of Norwalk, Danbury and New Milford Hospitals into the Western Connecticut Health Network.
- Initiation of the Norwalk River Valley Trail, paralleling Route 7 and envisioning a continuous non-motorized pathway between Long Island Sound and Danbury. Construction of several segments of this route are now complete.

In this context, the study provides an overview of current operations of the 7 Link and an analysis of connectivity with other transit systems.

The analysis included rider and driver surveys to better understand trip patterns, demographics and rider preferences. Survey results and recommendations for service improvement are provided.

2. EXISTING CONDITIONS

Service History

The service was first recommended in the *Route 7 Travel Options Implementation Plan*, a joint HVCEO-SWRPA Study completed in September 2000. The study, prepared by the firm of Vanasse, Hangen and Brustlin, Inc. (VHB) of Middletown, CT, was undertaken to evaluate transit and travel demand management improvement alternatives in the Route 7 Corridor.

Several fixed route bus enhancements were developed as part of this study. In each case, bus transit options were developed to complement the existing Danbury Branch Line rail service.

At the time, the Branch Line provided only 10 round trips per weekday. The options for transit riders making commutes northwards towards Danbury, and for connections to in-state destinations such as Stamford were particularly challenging.

To enhance mobility along the corridor, a public transit connection linking the bus systems in Norwalk and Danbury was proposed. The following study excerpt details the recommendation to create the route:

One element of transit service currently missing from the study area is a service connecting the businesses and industries located along Route 7 between South Norwalk and Danbury. This bus transit option serves several different markets.

It has the potential to offer local access to employment and retail sites located on or near Route 7 as well as offering another commute alternative to job sites along the I-95/Route 1 corridor.

The service could connect the existing HART and Norwalk Transit District fixed route systems, provide service along the northern segment of Route 7 which is currently not served by transit, and offer a link to the Danbury Branch rail service. The estimated one-way travel time for this service is 79 minutes.



A demographic analysis was performed on the corridor as part of the Route 7 Travel Options Plan. Most of the commercial and employment centers in the northern portion of the corridor were in the vicinity of the Danbury Fair Mall. In the southern portion of the route, employment was concentrated along Route 7 in the Cannondale section of Wilton and the area adjacent to Merritt 7 in Norwalk.

The operating plan was to include hourly service throughout the day between 6:00 a.m. and 7:00 p.m. The bus would serve the Danbury Fair Mall and Miry Brook Park and Ride Lot, then run express to Branchville Station. South of this area, “more local service could be provided with stops on Route 7 at major employment centers and other major destinations based on demand.” It was estimated that 208 trips per day would be provided by the proposed service.

In February 2002, service commenced with support from the Connecticut Transportation Strategy Board (TSB). The TSB was a group created by then Governor John Rowland partially in reaction to an economic study dubbed the “Gallis Report”. The report averred that Connecticut was in danger of becoming an economic backwater because of its uncoordinated transportation system. The 7 Link service in reality was not as robust as recommended in the study. Nonetheless, annual ridership exceeded estimates put forth in the report by the fifth year.

The TSB, made up of appointees largely from private industry, recommended several projects to promote regional travel by transit, of which the 7 Link was one. The TSB has since disbanded and support for the bus service is now provided through CTDOT and passenger fares.

Ridership

From FY 2002 to FY 2015 average daily ridership increased 80% from 119 daily passenger trips to 214 daily passenger trips. On average, slightly more riders (59%) are carried on HARTransit buses (see charts on the following pages).

Total annual ridership over the past five years averaged 54,944, with a high of 58,483 in FY 2012 and a low of 52,508 in FY 2014.

Ridership to date peaked in FY 2009 at 229 daily trips or 59,073 annually. This was just prior to the economic downturn and when gas prices in Connecticut reached over \$4.30 a gallon.

Recent ridership lows are consistent with fare increases that were implemented on the NTD WHEELS system in winter 2011 and on the HARTransit CityBus system in July 2013.

The chart and table below displays average trips per day from FY2002 through FY2015.

Figure 1: Average Weekday 7 Link Ridership, FY02-FY15

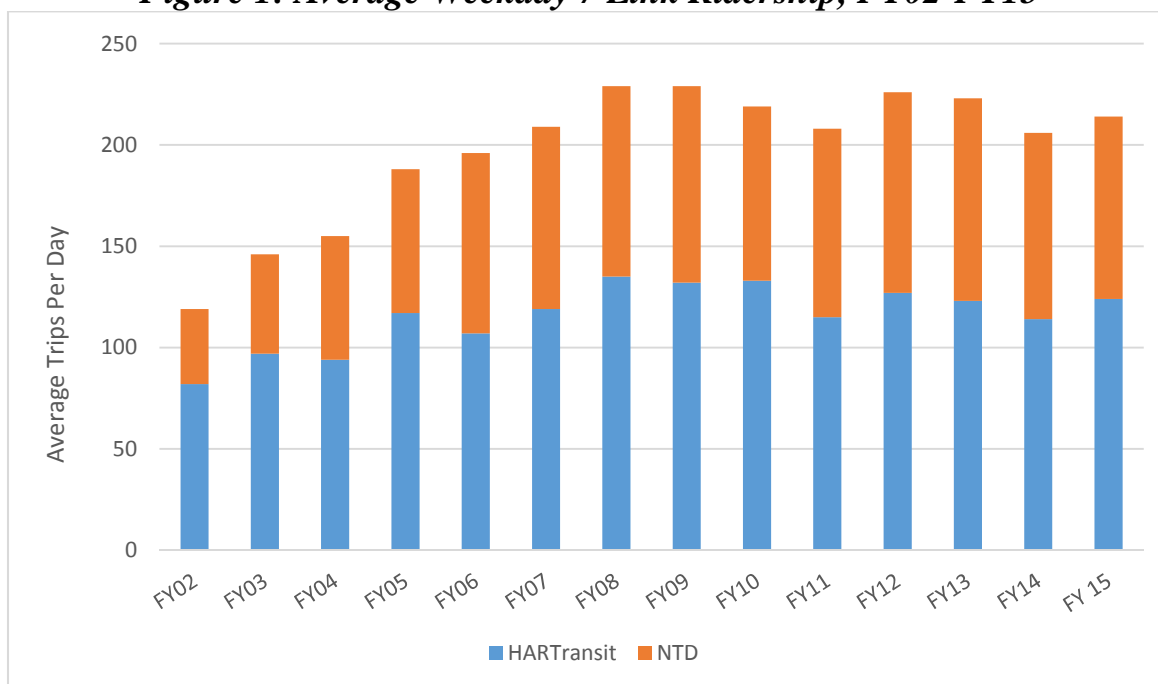


Table 1: Average Weekday 7 Link Ridership

Fiscal Year	HARTransit Trips/Day	NTD Trips/Day	Total Trips/Day
2002	82	37	119
2003	97	49	146
2004	94	61	155
2005	117	71	188
2006	107	89	196
2007	119	90	209
2008	135	94	229
2009	132	97	229
2010	133	86	219
2011	115	93	208
2012	127	99	226
2013	123	100	223
2014	114	92	206
2015	124	90	214

Source: NTD and HARTransit ridership counts.

The chart below displays the total ridership as annual trips from combined operations of HARTransit and NTD vehicles from FY 2002 through FY 2015.

Figure 2: Annual 7 Link Ridership, FY 02-FY 15

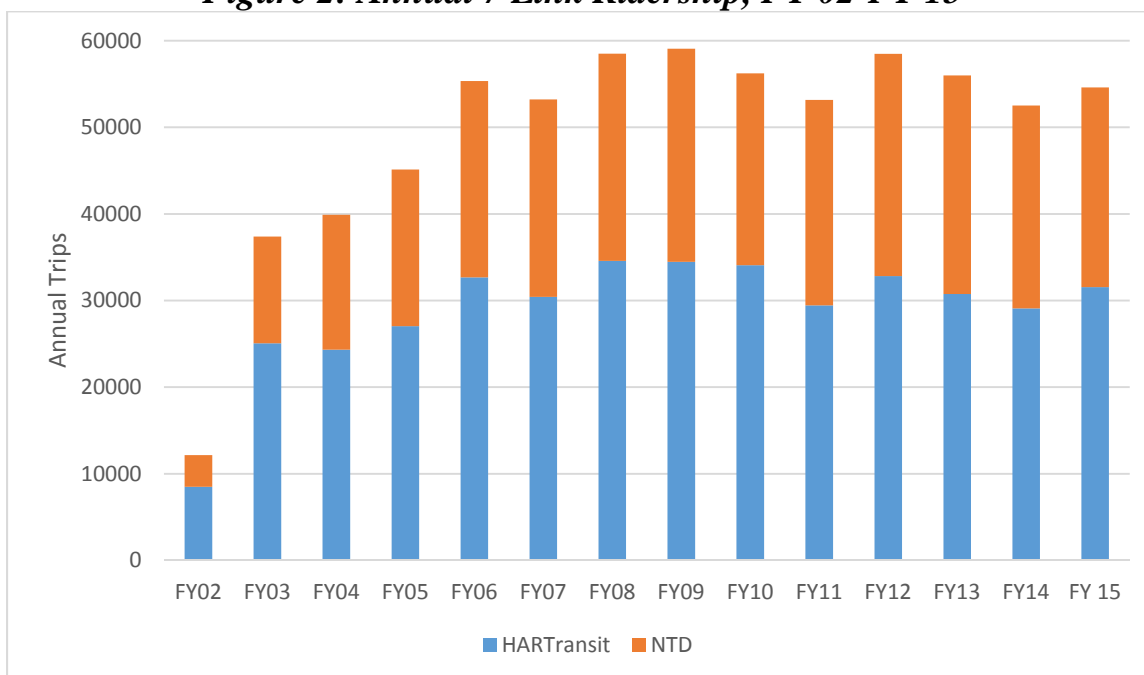


Table 2: Annual 7 Link Ridership

Fiscal Year	HARTransit Trips/Year	NTD Trips/Year	Total Trips/Year
2002	8498	3670	12168
2003	25060	12336	37396
2004	24323	15567	39890
2005	27052	18080	45132
2006	32685	22657	55342
2007	30430	22777	53207
2008	34576	23914	58490
2009	34477	24596	59073
2010	34087	22143	56230
2011	29438	23712	53150
2012	32823	25560	58483
2013	30757	25225	55982
2014	29090	23418	52508
2015	31546	23053	54599

Source: NTD and HARTransit ridership counts.

Bus Rider Demographics:

The Regional Plan Association (RPA) based in New York City, NY conducted rider surveys in April through June of 2015. Bus riders including those in the HARTransit and NTD systems were surveyed in the western Connecticut counties of Fairfield, New Haven and Litchfield.

Relevant demographics based on 232 responses include:

- 86% of respondents reported a household income of less than \$36,000 annually.
- 59% of riders are women.
- 50% are employed. Of that group 65% work on a part time basis.

When asked their greatest challenges, the top three responses were

- Lack of job opportunities (66%)
- High cost of living (62%)
- Lack of affordable housing (58%)

Operations

Three buses are used to operate the service in the morning and evening peaks for a total of 24 hours and 36 minutes in “platform hours” per day. Platform hours represent the total time a bus is operating from pull-out to pull-in, including deadhead time (travel time to or from the route to the garage), scheduled revenue service, and layover periods.

Service is operated jointly by the two agencies to minimize deadhead travel in Danbury and Norwalk. During the morning period, two HARTransit buses operate in concert with one NTD bus. In the evening, two NTD buses operate with a single HARTransit bus.

The table below details the operation of each vehicle operating on a typical weekday including the time of day and platform hours:

Table 3: Run Assignment

Bus	Pull-Out Time	Pull-In Time	Operator	Platform Hours (hr:min)
1	5:58 a.m.	12:00 p.m.	HARTransit	6:02
2	6:20 a.m.	9:25 a.m.	NTD	3:05
3	6:54 a.m.	9:56 a.m.	HARTransit	3:17
4	2:50 p.m.	8:55 p.m.	NTD	6:05
5	3:24 p.m.	6:26 p.m.	HARTransit	3:02
6	3:50 p.m.	6:55 p.m.	NTD	3:05

Source: NTD and HARTransit statistics.

Running time is scheduled at an hour and 15 minutes in the southbound direction and an hour and 20 minutes in the northbound direction, with buses departing from each transit agency's main bus station. Buses at the Danbury Pulse Point have a ten minute layover before scheduled departures for Norwalk. 7 Link buses leaving the Norwalk WHEELS Hub have a 15 minute scheduled layover.

The bus schedule was constructed this way to facilitate connectivity between the 7 Link route and the local bus systems at their main bus stations.

Both NTD and HARTransit operate pulse systems. A pulse system is commonly employed by transit providers with 12 or fewer routes and with service frequencies of a half hour or more. All routes in a pulse system meet at a single station at prescheduled frequencies to facilitate transfers between routes. Waiting time between transfers is typically 5-10 minutes.

NTD refers to their pulse station as the WHEELS Hub. HARTransit refers to theirs as the downtown Danbury Pulse Point.

The two bus systems have differing weekday pulse times. NTD operates most weekday routes with a 20 minute pulse frequency, with bus departures on the hour, 20 minutes after the hour and 40 minutes after the hour.

Local HARTransit weekday fixed route services operate at a lesser frequency, with buses departing hourly in the off peak (10:00 a.m. to 2:00 p.m.) and on the half hour during peak periods (6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m.)

During peak service, departures from the Pulse Point are scheduled on the hour and 30 minutes after the hour. Midday buses depart on the hour.

Figure 3: Published Route Map

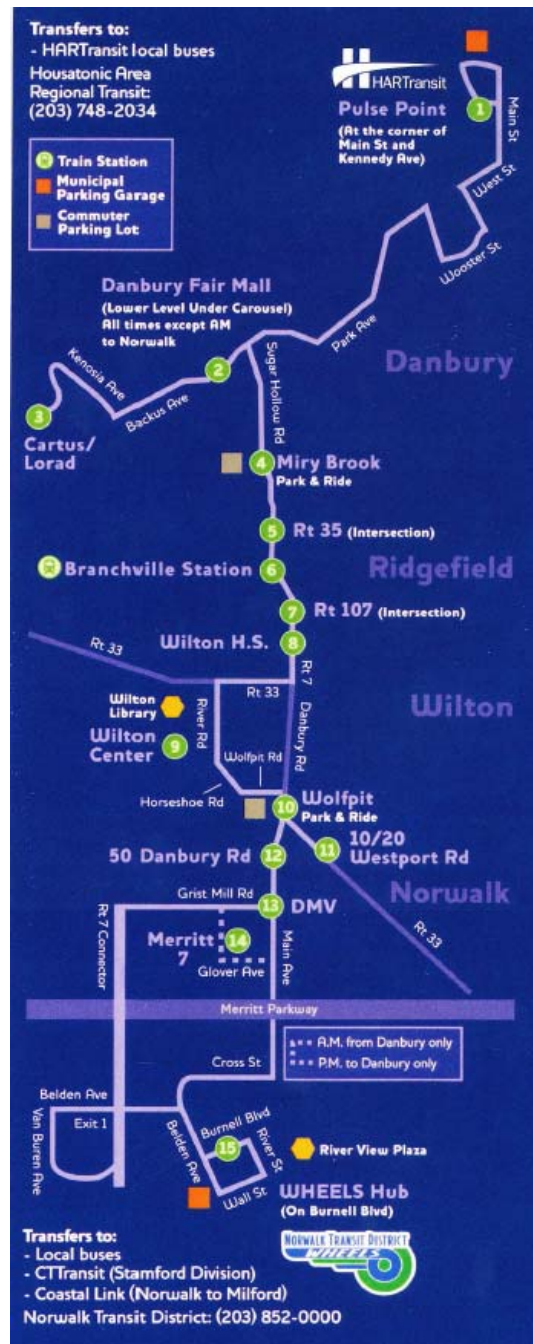


Figure 4: Published Timetable
(effective Nov 2013)

From Danbury to Norwalk >>>		Pulse Point	Danbury Fair Mall	Cartus/Lorad	Miry Brook Park & Ride	Route 35 Intersection	Branchville Station	Route 107 Intersection	Wilton High	Wilton Center	Wolfpit Park & Ride	10/20 Westport Rd	50 Danbury Rd	DMV	Merritt 7	WHEELS Hub
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	a.m.	6:05	---	---	6:12	6:22	6:29	6:31	6:41	6:45	6:49	6:53	6:57	7:00	7:03	7:15
		7:00	---	---	7:12	7:22	7:29	7:31	7:41	7:45	7:49	7:53	7:57	8:00	8:03	8:15
		8:00	---	---	8:12	8:22	8:29	8:31	8:41	8:45	8:45	8:53	8:57	9:00	9:03	9:15
		9:00	---	---	9:12	9:22	9:29	9:31	9:41	9:45	9:45	9:53	9:57	10:00	10:03	10:15
	p.m.	3:30	3:40	3:45	---	3:59	4:06	4:08	4:18	4:22	4:26	4:27	4:28	4:33	4:35	4:45
		4:30	4:40	4:45	---	4:49	5:06	5:08	5:18	5:22	5:26	5:27	5:28	5:33	5:35	5:45
		5:30	5:40	5:45	---	5:59	6:06	6:08	6:18	6:22	6:26	6:27	6:28	6:33	6:35	6:45
		7:30	7:40	7:45	---	7:59	8:06	8:08	8:18	8:22	8:26	8:27	8:28	8:33	8:35	8:45
From Norwalk to Danbury >>>		WHEELS Hub	Merritt 7	DMV	50 Danbury Rd	10/20 Westport Rd	Wolfpit Park & Ride	Wilton Center	Wilton High School	Route 107 Intersection	Branchville Station	Route 35 Intersection	Miry Brook Park & Ride	Cartus/Lorad	Danbury Fair Mall	Pulse Point
		(15)	(14)	(13)	(12)	(11)	(10)	(9)	(8)	(7)	(6)	(5)	(4)	(3)	(2)	(1)
	a.m.	6:30	6:40	6:42	6:45	6:47	6:49	6:53	6:57	7:04	7:06	7:13	---	7:27	7:38	7:50
		7:30	7:40	7:42	7:45	7:47	7:49	7:53	7:57	8:04	8:06	8:13	---	8:27	8:38	8:50
		8:30	8:40	8:42	8:45	8:47	8:49	8:53	8:57	9:04	9:06	9:13	---	9:27	9:38	9:50
		10:30	10:40	10:42	10:45	10:47	10:49	10:53	10:57	11:04	11:06	11:13	---	11:27	11:38	11:50
	p.m.	3:00	3:12	3:14	3:17	3:25	3:27	3:30	3:35	3:42	3:44	3:51	4:00	---	4:08	4:20
		4:00	4:12	4:14	4:17	4:25	4:27	4:30	4:35	4:42	4:44	4:51	5:00	---	5:08	5:20
		5:00	5:12	5:14	5:17	5:25	5:27	5:30	5:35	5:42	5:44	5:51	6:00	---	6:08	6:20
		6:00	6:12	6:14	6:17	6:25	6:27	6:30	6:35	6:42	6:44	6:51	7:00	---	7:08	7:20

Source: Adapted from HARTransit published schedule.

Vehicles are independently dispatched from the NTD and HARTransit operations facilities.

NTD operations are based at 275 Wilson Ave. in Norwalk and HARTransit at 62 Federal Rd. in Danbury.

Communication to vehicles is via two-way radio, but signal reception is intermittent at the far end of the route relative to each garage. Both bus systems employ cell phones to augment long range communications, but there are gaps in cellular coverage as well.

Inter-district communication is by telephone or e-mail. NTD drivers cannot be contacted directly via radio or phone by HARTransit supervision and vice-versa.

There are two days per year where a single system will operate the service due to holiday schedules in one system or another. NTD does not operate on Martin Luther King's Birthday. HARTransit

operates the complete service on this holiday. HARTransit operates limited service the day after Thanksgiving so NTD reciprocates by operating the full service on this day.

Road calls are typically performed by the geographically closest maintenance facility regardless of operator. In the event that a vehicle needs replacement, a spare bus and driver is dispatched from the geographically closest garage.

When the service began in 2002, CTDOT transferred four 40-foot 2001 New Flyer LF buses from CTTRANSIT. This expansion of the fleets of the two agencies and allowed for operation of the new bus service. Each bus was identified with Danbury-Norwalk Route 7 Link logos. The last of these buses were recently replaced with new equipment and returned to DOT.

Current fleets at both NTD and HARTransit include 35-foot Orion VII and 35-foot Gillig low floor transit buses, any of which may be placed in service on the 7 Link.

The following chart lists the equipment available to run service on the 7 Link:

Table 4: Equipment Available for Use on the 7 Link

Year	Make	Type	Capacity (seats/wheelchair)	Vehicle Count	HARTransit	NTD
2003	Orion VII	35' Coach	32/2	20	1	19
2006	Gillig	35' Coach	32/2	7	0	7
2007	Gillig	35' Coach	32/2	10	10	0
2008	Gillig	35' Coach	32/2	4	0	4
2010	Gillig	35' Coach	32/2	3	0	3
2014	Gillig	35' Coach	32/2	12	12	0

Source: NTD and HARTransit vehicle rosters

All buses are low floor and fully accessible to persons with disabilities. NTD buses have annunciators that automatically provide stop announcements whereas HARTransit drivers verbally announce stop locations.

GPS technology is installed on all vehicles. At this point the devices are used for tracking only.

NTD is in the final stages of rolling out intelligent transportation system (ITS) technology that will provide for route and vehicle information in real time via the internet to both agency staff and the general public for its fixed route and paratransit bus services. The system hardware, developed by Avail technologies of State College, Pennsylvania was completely installed in July 2015. Website and App development is in process as of the writing of this report. It is anticipated that the program will be up and running in early 2016.

HARTransit bus stop signs are installed along the route from the Danbury Fair Mall northward to Danbury. South of Danbury, the majority of the service is accessed via flag stops.

Total route mileage is 24.8 miles each way.

Passenger Fares

Cash fares between the two systems are comparable. For the purpose of discount fares, both systems define “senior” as age 65 years or older. Additionally, HARTransit provides a student discount for children grades K-12.

Table 5: Cash Fare Structure

Cash Fares	Full Fare	Student	Senior or Disabled
NTD	\$1.50	\$1.50	\$0.75
HARTransit	\$1.50	\$1.10	\$0.75

Fares are set locally by each transit system’s policy board and have not always been the same over the life of the service. Historically, when fares for the two systems differed, riders would be charged the local fare based on where they boarded the 7 Link bus.

As a policy, passengers may transfer to or from the NTD or HARTransit systems at either terminal or to and from any connecting Coastal Link or CTTRANSIT bus at the WHEELS Hub. Intersystem transfers to or from the 7 Link service are free at each terminus; however, riders will not be issued a second transfer. In other words, a rider boarding a 7 Link bus in Danbury with a transfer will not be issued a second transfer to board buses in Norwalk.

NTD and HARTransit offer a variety of pre-paid discounted fares, and several different types of fare media are universally accepted.

Both agencies employ GFI Odyssey electronic registering fareboxes but the devices are not set up to allow to read the partner agency’s passes. The odyssey farebox is capable of accepting cash, magnetic swipe cards or Smart Cards. At present, the fareboxes (as is the case in all Connecticut bus systems at this point) are configured for only magnetic fare media. CTTRANSIT will install units that allow for Smart Card technology by 2016.

The complete description of HARTransit and NTD prepaid fare media is outlined on the following table.

Table 6: Prepaid Fare Structure

Fare Media	HARtransit	NTD	Acceptance Policies
30 Day Unlimited Ride Pass	\$54.00 Full Fare \$40.50 Student \$27.00 Senior/Disabled	N/A	Accepted as flash pass by NTD if activated and dates valid.
40 Ride Pass	N/A	\$54.00 Full Fare	Not accepted by HARtransit.
10 Ride Pass	\$13.50 Full Fare \$10.00 Student \$6.75 Senior/Disabled	\$13.50 Full Fare \$7.50 Senior/Disabled	HARtransit issues punch passes for use on the 7 Link that are accepted universally. Electronic passes are only accepted by issuing systems.
Tokens	N/A	\$54.00 40 Rides \$27.00 20 Rides \$13.50 10 Rides	Accepted on all buses.
NVCC Upass	Semester pass	N/A	Accepted as a transfer to NTD

Source: HARtransit fare collection manual

Other Transfer Policies and Agreements

The Coastal Link is a bus service provided by multiple operators including NTD, Milford Transit and Greater Bridgeport Transit (GBT). The service operates along U.S. Route 1 between the WHEELS Hub and the Connecticut Post Mall in Milford.

GBT issues unlimited ride Ziptrip passes in 90 minute, one day, seven day, and 31 day increments but does not use traditional transfers. Passes are issued with the valid dates on the back of the pass. Ziptrips are accepted on 7 Link buses at the Norwalk WHEELS Hub.

Revenue sharing agreements allow for the purchase of discounted monthly or weekly UniTickets through Metro North that allow for coordinated bus/train trips. UniTickets encoded for HARtransit or NTD are accepted on the 7 Link.

Both NTD and HARtransit accept Connecticut statewide bus passes as issued by CTRANSIT to eligible Medicaid recipients. When presented, these passes allow for one adult and up to three children under 18 to board.

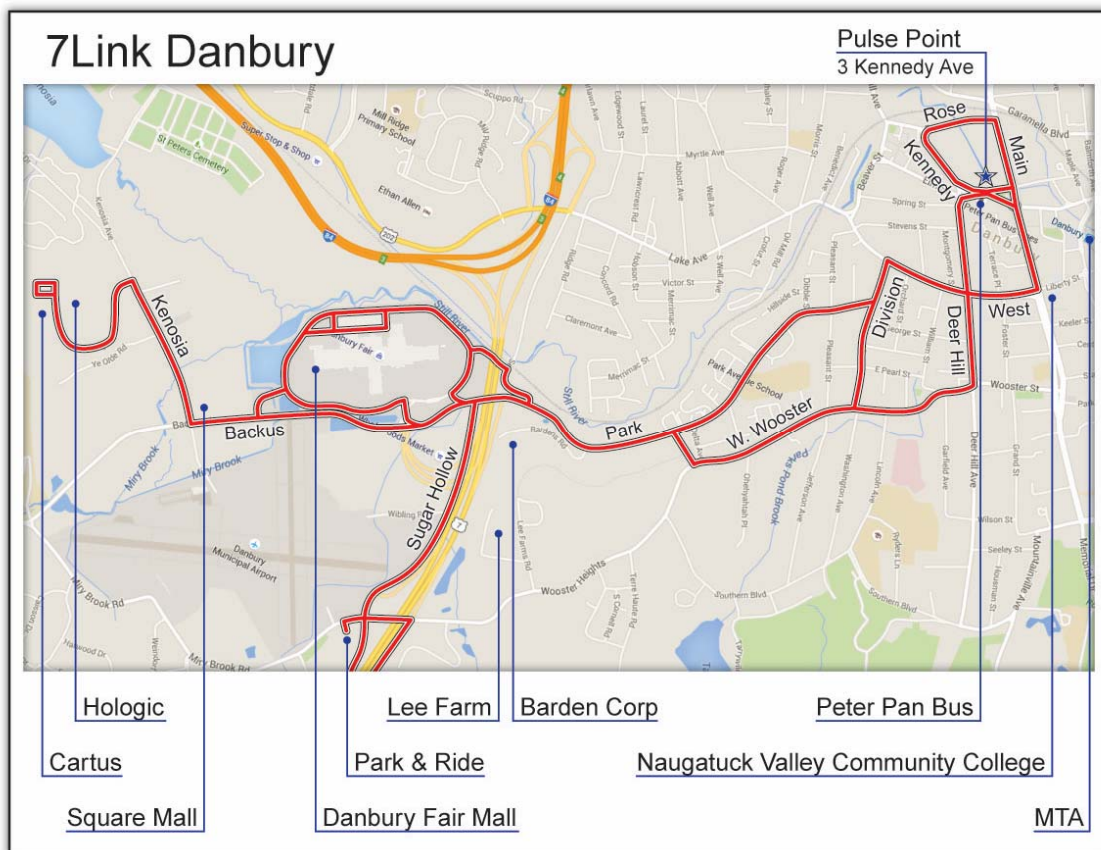
There are no fare agreements with Peter Pan or other private intercity bus operators.

Route and Locations Served

Danbury - Beginning in Danbury at the HARTransit Pulse Point, the 7 Link travels local city streets heading to Route 7 via Main, West and Division Streets, then Park and Backus Avenues.

Downtown Danbury includes the campus of Western Connecticut State University (WCSU) and the Danbury campus of Naugatuck Valley Community College (NVCC). NVCC is expanding and is anticipated to open a new facility on the corner of West and Main Streets within the year. Danbury has long been recognized as having the largest retail sales volume of any municipality in the state.

Figure 5: Danbury segment



Work locations served directly by the 7 Link include the Danbury Fair Mall and Danbury Square Mall. The Danbury Fair Mall, at 1.29 million square feet, includes 200 retail establishments. It is the second largest shopping mall in Connecticut and the fifth largest in New England. The Danbury Square Mall is a 194,000 square foot shopping facility anchored by The Christmas Tree Shop, Toys-R-U's and Barnes & Noble. These areas are served all times, except when buses head southbound in the morning.

A short distance from the two malls on Apple Ridge Road, are Cartus, a corporate relocation company with 1600 employees and Hologic, a manufacturer of x-ray diagnostic machines. Service is provided here in the morning in the northbound direction and in the evening in the southbound direction.

Several large corporate facilities including Lee Farm Corporate Park, Goodrich and Barden/FAG are located within ¼ mile of the route in Danbury, but no direct service is provided to these locations.

The Miry Brook Park and Ride Lot just off Route 7 near exit 3 of I-84 is served in the southbound direction in the morning and in the northbound direction in the evening.

Ridgefield - Buses remain entirely on Route 7 throughout the town limits. In 2005, a deviation off the bus route was added on a trial basis that provided direct service to Copps Hill Plaza in Ridgefield via Route 35. The deviation was discontinued by June 2006 due to running time issues and low ridership.

The northernmost section of Route 7 in Ridgefield is four lanes. Notable employers served in this area include Ullman Devices, a manufacturer of specialty tools, and BMW of Ridgefield.

The intersection of Routes 35 and 7 at the termination of the four-lane section was identified in the *2011 Route 7 Transportation and Land Use Study* as a potential gateway to Ridgefield and Route 7 southward. The enhancement plan calls for completion of a sidewalk network on both sides of the roadway. A walking trail from this intersection to the nearby Regency Condominiums and Laurel Ridge nursing care facility is envisioned to further enhance pedestrian access.

Additional signalization and crosswalks are also planned. Proposed bus stops would be served by a pedestrian sidewalk network.

Continuing south, the bus route follows the roadway through a sparsely developed area for the next 4.4 miles, briefly entering Redding and then reentering Ridgefield at the hamlet of Branchville where Route 7 intersects Route 102. Branchville includes a Metro-North Railroad Station as well as nearby commercial and residential development.

There are multiple plans under consideration here relative to transit oriented development (TOD). The Western Connecticut Council of Governments (WestCOG) is currently engaged in a \$250,000 TOD planning study of the Branchville area.

The 2011 corridor study proposed expanded parking at the rail station as well as the inclusion of a 185-space parking structure with ground level retail on the southwest corner of Routes 7 and 102, across from the train station. Another important proposal is the creation of a Mobility Hub on the opposite bank of the Norwalk River.

The Mobility Hub would include additional parking, a pedestrian bridge over the river, bus transit amenities, secure bicycle parking, an information kiosk, and a taxi stand.

A recent Federal Transit Administration (FTA) study recommended that a visitor transportation shuttle service be established between the nearby Weir Farm National Historic Site and Branchville Station.

FTA's Transit in the Parks program (TRIP), specifically designed for transit options in national park was not renewed under MAP 21. A potential alternative funding source is the Federal Lands Transportation Program (FLTP). However, according to the National Parks Conservation Association, the core transportation funding needs for the National Parks Service far outstrip the funds available through this program.

Redding/Georgetown - Approximately one mile south of Branchville is the Georgetown section of Redding, a short distance from the intersection of Routes 107 and 7.

Redding is working to convert the former mill into a mixed use development, and plans to reinstitute a rail station stop and create a transit hub as part of this project. The proposed rail station stop was formally approved by CTDOT and is now integrated into expansion plans for the Branch Line.

NTD and HARTransit have participated in the planning process so far and are supportive of a route deviation of the 7 Link to serve the proposed transit hub.

The Georgetown Special Taxing District was created in 2005 to help move the project forward. Although there was some early success, three years later the project stalled during the economic downturn. In January 2014, the state Department of Economic and Community Development awarded the taxing district a \$5.6 million grant for infrastructure work. However, the grant came with conditions the parties involved have yet to meet. As of 2015, the project remains on hold.

Wilton - South of Georgetown is the Cannondale train station, off Cannon Road. No direct bus service is provided here, but the station is within 0.1 mile of the 7 Link bus route. The 2011 corridor study recommended sidewalks along Cannon Road to the station and a road diet in this area. While not an official stop, the Wilton Police Department has requested that riders board and alight at the crosswalk proximal to Cannon Road.

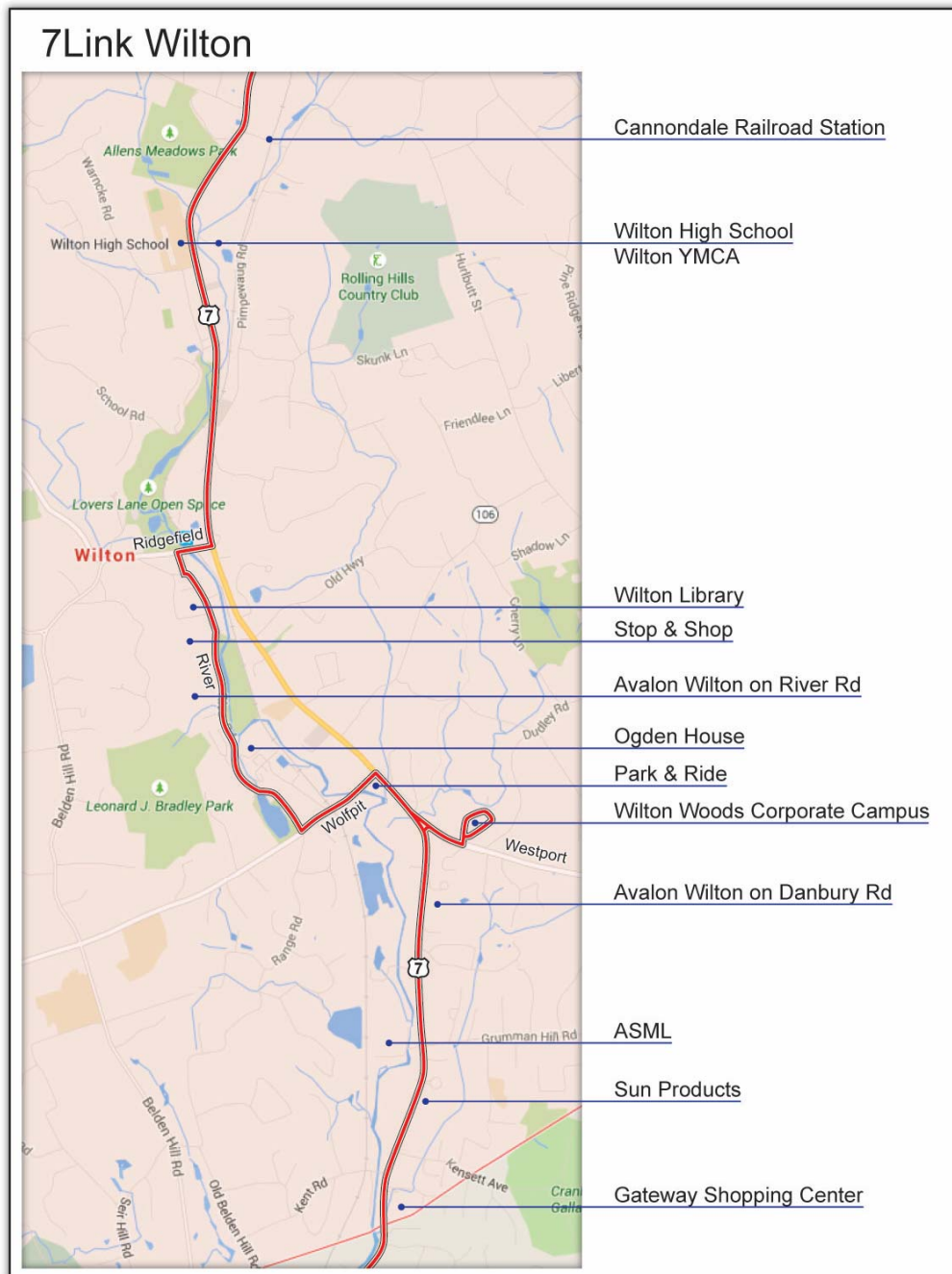
Between Cannondale and Wilton Center, the bus route provides access to the campus of Wilton High School, where some 1,230 students are enrolled.

The 7 Link bus route continues south, deviating off of Route 7 via Route 33 to serve Wilton Center. Wilton Center is a well-established village with multiple commercial and residential establishments. Major trip generators include Stop and Shop, the Glen River and Avalon Wilton Condo complexes and Ogden House assisted living as well as the town library and a four screen movie theater.

According to the 2011 study "the primary need for planning for this area is ... for making better pedestrian connections among Route 7, the train station and the village." Existing access to Wilton

Station is via route 7 and there are no provisions for access by pedestrians from the village or those alighting from the 7 Link bus.

Figure 6: Wilton Segment



After serving Wilton Center, buses return to Route 7 south by way of Wolfpit Road. The Wolfpit park and ride lot is adjacent to this intersection but the bus does not enter the lot. Buses remain on Route 7 from Wilton Center to the Norwalk town line, deviating onto Route 33 for a short distance to serve the Wilton Woods Corporate Campus at 10/20 Westport Road. Wilton Woods includes over 530,000 square feet of Class A office space. Current tenants include Altus Capital Partners and Deloitte.

Large corporate and manufacturing locations on the bus route in the southernmost part of Wilton include Melissa and Doug, Beiersdorf, Sun Products and ASML. Route 7 here and southward is bound on both sides by strip commercial development. Notable retail locations include the Gateway Shopping Center at 14 Danbury Road, with over 75,000 square feet of retail space.

Norwalk - Norwalk is the sixth largest city in Connecticut and the most urbanized of the communities along the 7 Link route. The U.S. Conference of Mayors recently recognized Norwalk as one of the top ten most livable small cities in its nationwide City Livability Awards.

All buses serve Route 7, locally referred to as Main Avenue, between the Wilton town line and the intersection with Grist Mill Road opposite the Norwalk office of the state DMV. The entire 7 Link route within the city, outside of that provided via the expressway, is bounded by commercial strip development from the Wilton border all the way to the WHEELS Hub.

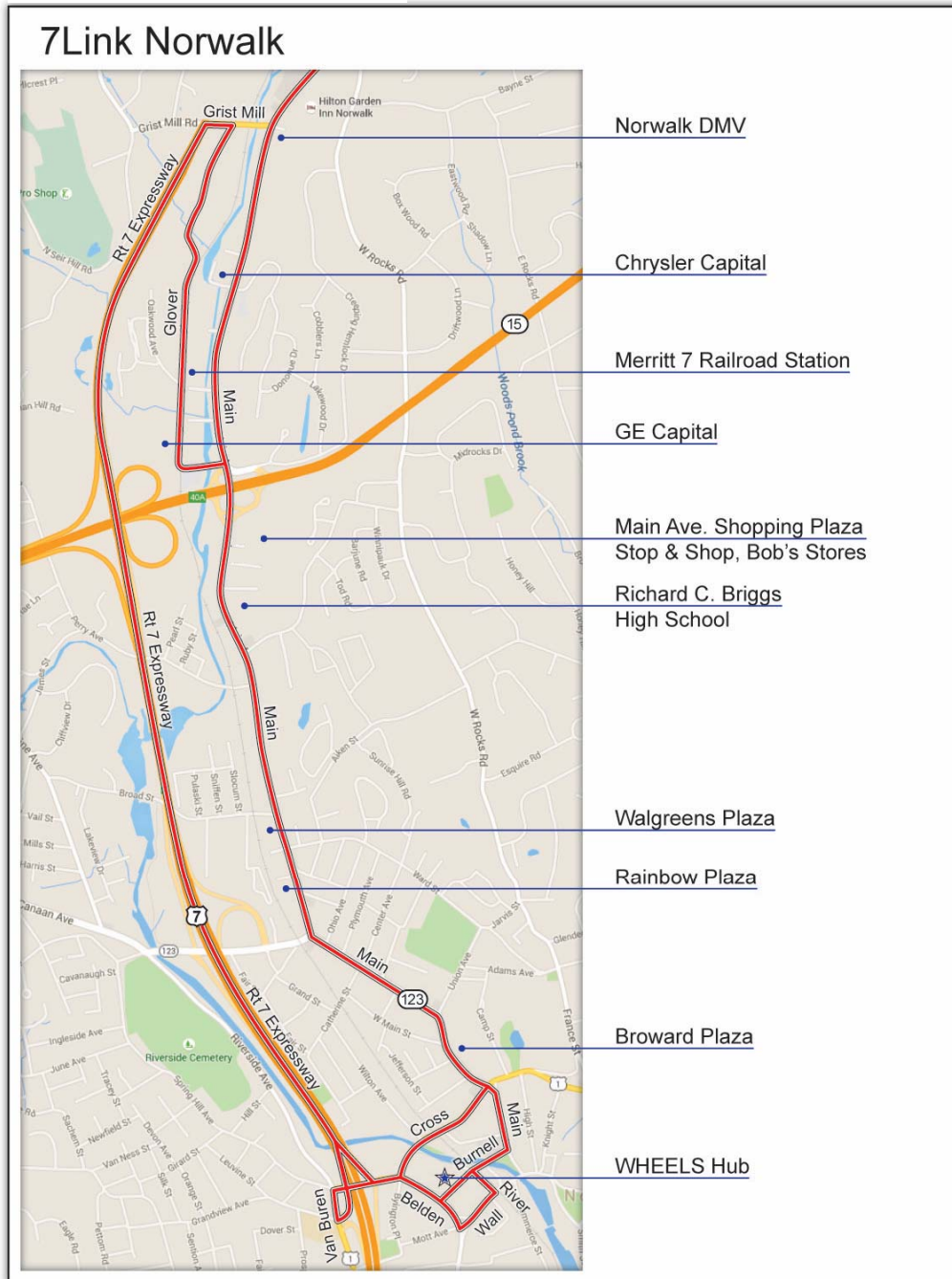
Bus service provided south of the intersection of Route 7 and Grist Mill Road differs markedly depending on the direction of travel. Southbound buses continue to travel Main Avenue to Main Street to the WHEELS Hub on Burnell Boulevard.

Northbound buses depart the WHEELS Hub and travel via Belden Avenue to the Route 7 expressway until Grist Mill Avenue. After exiting the expressway at Grist Mill Avenue, these buses deviate south on Glover Avenue through the Merritt 7 Office Complex. Buses turn left at the intersection of Glover and rejoin Route 7 north near the junction with Route 15.

The Merritt 7 complex includes over 1.4 million square feet of Class A office space, housing, and a Danbury Branch Line rail station stop. There are approximately 4,200 employees here. Large employers include GE Capital, FactSet Research Systems, Datto, Marsh and McLennan, Integrated Marketing, HomeServe USA, the Financial Accounting Foundation and Frontier and Apsos-ASI Inc.

Plans are in place to design a pedestrian bridge and to reconfigure the Glover Avenue Bridge in the 2015-2016 fiscal year to improve access to the office park. Construction is anticipated the following year.

Figure 7: Norwalk Segment



A significant commercial development project is underway near the WHEELS Hub, off West Avenue and Interstate 95. GGP, a Chicago-based mall developer is planning 975,000 square feet of retail including an 80,000 to 175,000 square foot hotel on the 95/7 site. Nordstrom's and Bloomingdales are anticipated to be future tenants.

Transit Connectivity at Key Locations

Downtown Danbury - Constructed in 1993, the HARTransit Pulse Point is located on Kennedy Avenue and Main Street in Danbury. The facility features a large covered waiting area, waste receptacles, ticket agent, lighting and schedule information. No parking or public restrooms are provided for riders. On-street metered parking is available on Kennedy Avenue and the Patriot Garage on Delay Street and Bardo Garage on Library Place are within 0.3 miles. The facility is within walking distance of many small restaurants and retail establishments.

- Between 6:00 a.m. and 6:00 p.m. riders may transfer with minimal waiting time to or from seven local bus routes to Bethel Center, Brookfield, New Milford, Stony Hill Road, Lake Avenue, Mill Plain Road/Brewster NY, and Danbury Hospital/North Street.
- Arrivals after 6:00 p.m. allow for transfers between the 7 Link and three Jobs Access LOOP routes; the Mall Hospital LOOP, Newtown Road/South Street LOOP and the New Milford LOOP.



Photo 1: Passengers at the Danbury Pulse Point transferring between buses.

Peter Pan's intercity bus terminal is located on Elm Street, just west of Main Street. The facility amenities include a ticket agent, waiting area with chairs and climate control, clock, restrooms, public telephones and a luggage cart. The facility is adjacent to a convenience store and a few hundred feet across Kennedy Park from the HARTransit Pulse Point. There is on-street metered parking available adjacent to the facility. Municipal parking is available within a third of mile at the Patriot Garage on Delay Street and Bardo Garage on Library Place.

Peter Pan provides bus service that operates between New York City and Hartford, with stops in Danbury, Southbury and Waterbury.

AM Peter Pan Arrivals from Hartford, Waterbury and Southbury

- Wait time for transfers to the 7 Link at the Pulse Point is excessive for morning departures to Norwalk, with the exception of the 9:00 a.m. departure. The morning departures at 7:00 a.m. and 8:00 a.m. require a 40-minute wait. There is no connection to the first southbound 7 Link trip.

PM Peter Pan Departures to Southbury, Waterbury and Hartford

- The best opportunity for a transfer to eastbound Peter Pan service is from the 5:20 p.m. 7 Link arrival at the Pulse Point, which meets a 5:30 p.m. departure on Peter Pan. A connection to the 7 Link 7:20 p.m. arrival in Danbury requires a 25 minute wait.

Danbury Branch Line - The 7 Link travels by MTA Metro-North Railroad station stops at [Branchville](#), [Cannondale](#), and [Merritt 7](#) but in no case does the bus pull into a rail station lot. Assuming a southbound commute to Stamford or NYC, connectivity is generally poor at all station stops, with only a few well-timed connections possible.

- The 6:29 a.m. southbound bus arrival at Branchville times well with a 6:34 a.m. southbound Metro-North departure. In the afternoon, northbound buses arriving at 4:44 p.m. and to a lesser extent at 6:44 p.m. provide the best opportunity for return connections.
- A 7:45 a.m. southbound 7 Link arrival meets a 7:58 a.m. southbound train at Wilton. In the afternoon, connections are too tight to be relied upon. Further, access to the station is not convenient by foot via Route 7 or Wilton Center.

Cannondale and Merritt 7 stations do not offer any real opportunities for convenient trip connections.

Downtown Norwalk - The best opportunity for connections with other systems occurs at the WHEELS Hub.

The WHEELS Hub, significantly upgraded in 2011, includes a 14-foot high 300-foot long system of canopies with several enclosed bus shelters, bike racks, spaces for public art, and a video security system with a feed into Norwalk Police headquarters. Route-specific signage is installed on the 13 saw tooth bus parking spaces.

- There are 12 local bus routes operated by NTD throughout the city of Norwalk. Points of interest served include the Maritime Aquarium at Norwalk, the New Haven mainline [South Norwalk MTA Station](#), Norwalk Community College, Route 1, New Canaan

Avenue, Rowayton, Norwalk Hospital and Stew Leonard's. These routes operate weekdays up until 7 p.m.



Photo 2: Overhangs provide shade to passengers at the WHEELS Hub on Burnell Boulevard in Norwalk.

- After 7:30 p.m., NTD operates two evening Jobs Access bus routes. The 8:45 7 Link arrival meets the Connecticut Avenue and Main Avenue shuttle routes, departing the WHEELS Hub at 8:50 p.m.

There are good connections in all instances with Coastal Link buses to and from points east including Westport, Fairfield, Bridgeport, Stratford and Milford as far as the CT Post Mall. Further connections to New Haven may be made at the Post Mall via CTTRANSIT and to Trumbull, Derby and Monroe at Bridgeport via Greater Bridgeport Transit.

- CTTRANSIT bus routes 41 and 41A provide good connectivity to Darien and Stamford. Further connections may be made from Stamford on the I-Bus to Portchester and White Plains, New York.



Photo 3: HARTransit placed new Gillig buses on the route in 2015. Up to date, clean equipment encourages new riders and retention of existing ones.

The Norwalk Parking Authority maintains the Yankee Doodle Garage adjacent to the transit facility.

3. INFORMATION SURVEYS

Methodology

In order to obtain information on rider usage and preferences, a one-page survey was distributed to 7 Link passengers in November, 2014, over several days. The on-board survey was produced in English and Spanish and available online. Respondents were encouraged to write in service suggestions and comments.

Of those that were returned, 147 surveys were completed with usable information. Recent ridership counts average 207 passenger trips per day.

A second survey just for vehicle operators was distributed to regular drivers of the 7 Link service.

All survey forms were developed jointly by staff at NTD and HARTransit.

Demographics

The majority of survey respondents were frequent riders with 77% using the bus four to five days a week. One in five (20%) ride three days a week or less.

The majority of surveys returned were completed in English (69%). Almost a third of surveys were completed in Spanish (31%).

The majority of respondents identified Danbury or Norwalk as their place of residency (35% and 34%, respectively), 9% identified Bridgeport at their place of residency and 4% lived in Stamford.

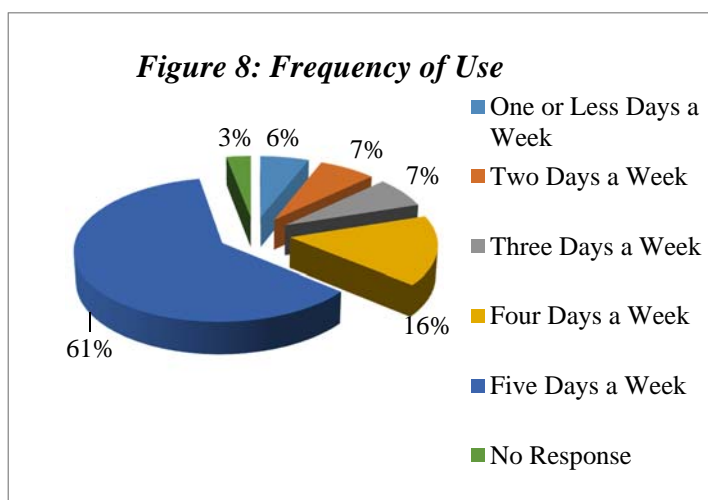


Table 7 : Frequency of Use of 7 Link Bus

Days per Week	Count	Percentage
One or Less Day a Week	9	6%
Two Days a Week	10	7%
Three Days a Week	10	7%
Four Days a Week	23	16%
Five Days a Week	89	61%
No Response	5	3%
WEIGHTED AVERAGE*	4.2 days a week	

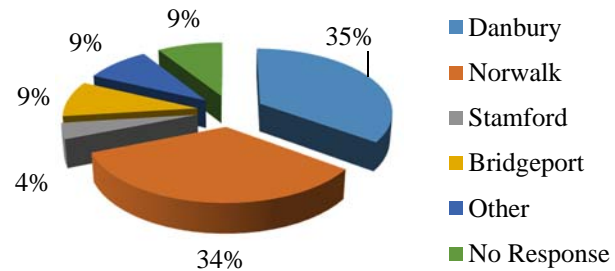
*excludes No Response

Other places of residency included Brookfield, Ridgefield, Wilton, Georgetown, West Haven, and Stratford.

Table 8 : Town of Residency

Municipality	Count	Percentage
Danbury	56	35%
Norwalk	55	34%
Stamford	7	4%
Bridgeport	14	9%
Other	14	9%
No Response	14	9%

Figure 9: Town of Residency



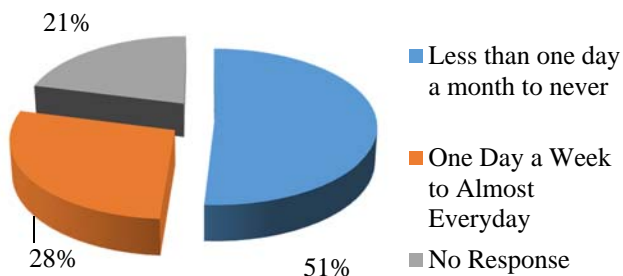
Use of Technology

Respondents were asked how often they visit the HARTransit and NTD websites for service information and updates. The two websites had nearly identical usage patterns and results described below are inclusive of both.

More than half of respondents (51%) rarely visit the web for information; 21% provided no information on their internet activity.

Those that access the web for 7 Link service information with any frequency comprise 28% of respondents. These individuals visit the web for transit information over a broad range from one day a week to nearly every day.

Figure 10: Transit Website Use



In the comments three passengers remarked that they “*only check the website when there is bad weather.*”

One of comment further clarified with stating: “*I don't drive so this is my only means of transportation to get me to work. I depend on this bus route.*”

HARTransit and NTD are unveiling new website designs within the next year that will be user-friendly and more informative for passengers.

Table 9: Frequency Passengers Visit Transit Websites

	Count	Percentage
Less than one day a month to never	110	51%
One day a week to almost everyday	60	28%
No Response	44	21%
TOTAL	214	100%

NTD is upgrading their fleet to have real-time service updates on bus arrivals/departures and HARTransit hopes to make available such technologies in the future.

The survey revealed that 61% of respondents own a smartphone. Of those who own a smartphone, 48% use iPhones, 43% Blackberries, and 9% other devices.

With demand increasing for making available real-time bus information one passenger wrote, “There should be an app, so I don’t miss the bus.”

Origins and Destination

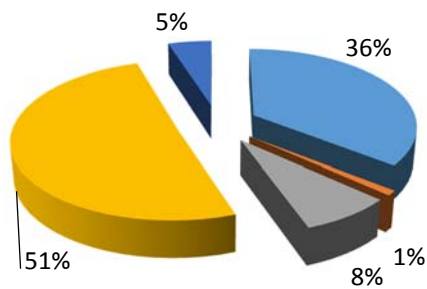
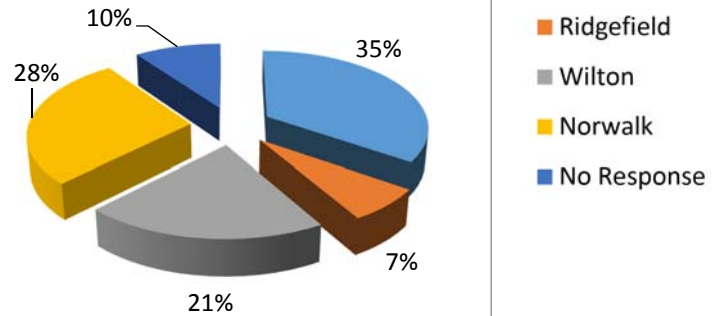
Most passengers (87%) board the 7 Link in Danbury or Norwalk. More than half (51%) board in Norwalk and more than a third (36%) board in Danbury. More specifically, one in five respondents (21%) board at the Danbury Pulse Point and nearly half (44%) board at the Norwalk WHEELS Hub.

Less than 10% of respondents board in the towns served along the route between the two cities. Almost all of this sub-group board in Wilton.

Table 10: Passengers Activity at Transfer Stations

	Boarding	Alighting
Danbury Pulse Point	21%	19%
Norwalk WHEELS Hub	44%	17%

Alighting locations are much more dispersed across the four towns served by the 7 Link, but skew towards the northern end of the route. The largest number of passengers alight in Danbury (35%), followed by Norwalk (28%), Wilton (21%) and Ridgefield (7%). Nearly one out of five (19%) of passengers alight at the Danbury Pulse Point and slightly fewer (17%) alight at the Norwalk WHEELS Hub.

Figure 11: Boarding Location**Figure 12: Alighting Location****Table 11: Boarding and Alighting Locations**

Municipality	Boarding	Alighting
Danbury	52	51
Norwalk	74	40
Wilton	11	30
Ridgefield	2	10
No Response	7	14

While final origins and destinations outside of the transit terminals were quite variable, a few common locations included:

- Higher education including Naugatuck Community College, Norwalk Community College and Western Connecticut State University
- Wilton Center
- Wilton Meadows
- Danbury Metro-North Station
- Downtown Danbury including the Library, courthouse and Metro-North station.
- Private homes

Transfers to Other Transit Systems

Respondents were asked if they make transit connections to complete their trip. While 57% of those surveyed indicated they made no connections or did not respond, 43% of survey participants (62 responses) do make connections to other services.

Among the 43% of 7 Link riders that identified the other transit options used to complete their trips, the connections were with NTD (28%), HARTransit (26%) and the Coastal Link (17%). Those that transfer to CTTRANSIT and Metro-North rail services to complete their trips each account for 14%. A single rider identified connections to GBT.

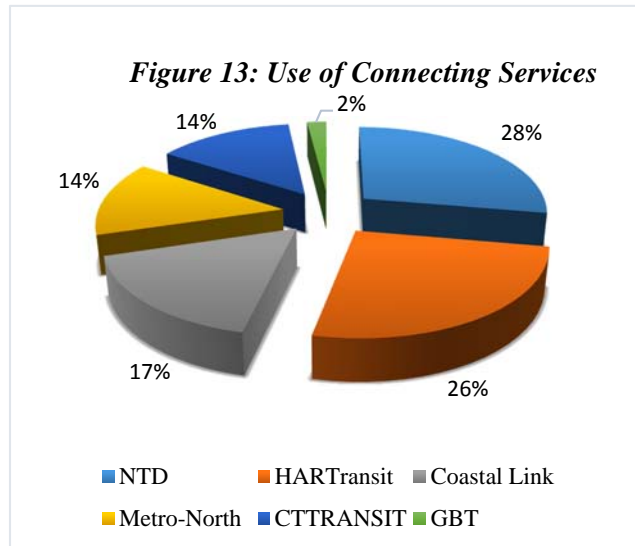


Table 12: Use of Connecting Services

Transit System/Route	Count	Percentage
NTD	16	28%
HARTransit	15	26%
Coastal Link	10	17%
CTTRANSIT	8	14%
MTA Metro-North RR	8	14%
GBT	1	2%

Transfers by Municipality

When considering those respondents that live in Danbury or Brookfield, 30% rely on connecting services to complete their trip. Of this subset, 35% make connections to NTD and 41% make connections with HARTransit. A few respondents transfer to CTTRANSIT buses for service to Stamford or to WHEELS Route 13 for service to Norwalk Community College.

Of the 45% of Norwalk residents that use other services when they access the 7 Link, 36% make connections to or from NTD and 28% make connections with HARTransit buses. Other transit connections used by Norwalk residents include CTTRANSIT, Metro-North Railroad, the Coastal Link and GBT.

A small number of respondents (7) identified themselves as residents of Wilton and Ridgefield. Of the Wilton residents that make use of connecting services, one passenger identified use of the Coastal Link to get to and from Westport. The Ridgefield residents surveyed travel to Wilton and Danbury and do not require transfers to complete their trips.

A total of 24 survey respondents identified themselves as residents of coastal communities outside the Route 7 corridor including Bridgeport, Stamford, Stratford and West Haven. Of this subset, 75% require transfers to complete their trip. One in four connect with Coastal link, many for travel to and from Bridgeport. One in five connect with CTTRANSIT to and from Stamford. Only 4% identified connections with HARTransit or WHEELS buses. Two passengers from these other areas make connections with rail services.

Although 75% of passengers from these other areas explicitly identified using connecting services, based on their town of residency it is assumed that a higher percent must use some type of connecting transportation service to access the 7 Link.

Passenger Satisfaction Ratings

Survey respondents were asked to rate the performance of the route for seven criteria on a scale of one being poor to five being excellent. The following table provides a summary of passenger opinions:

Table 13: Passenger Perception of 7 Link Service

	Good/Excellent 5-4	Average 3	Poor 2-1	No Opinion
Overall Satisfaction	79% (115)	12% (17)	3% (4)	6% (10)
Dependability of Service	79% (116)	10% (15)	2% (4)	9% (11)
Appearance & Cleanliness of Bus	78% (114)	12% (17)	2% (3)	8% (12)
Adherence to Schedule	70% (103)	13% (19)	6% (9)	11% (15)
Ability to Connect with Other Services	71% (103)	11% (16)	4% (6)	14% (21)
Helpfulness of Maps & Schedules	68% (100)	12% (17)	8% (11)	12% (18)
Friendly & Informative Customer Service	77% (113)	11% (16)	3% (4)	9% (13)
Overall Average Rankings	75%	12%	4%	10%

A significant majority of survey respondents (90%) completed this section.

- When considering all measures, the mean ratings for “good” or “excellent” were 75%, “average” opinions rated at 12% and “poor” opinions at 4%.
- Overall satisfaction, dependability of service, appearance and cleanliness of bus, and friendly and informative customer service ranked equally well and above the mean with 77% to 79% “excellent” and “good” opinions. “Poor” ratings were very low at only 2% or 3% in these categories.
- Ability to connect with other services had the highest “no opinion” or no response at 14%. Connections to other services received a rating of “good” or “excellent” of 71%, 4 percentage points below the overall mean.

- Helpfulness of maps and schedules received the lowest “good” or “excellent” grade at 68% as well as the highest “poor” rating of 8%.
- Adherence to the schedule received less favorable than average “good” or “excellent” opinions at 70%. Responses in the “poor” or “no opinion” categories were both above the mean at 6% and 11% respectively.

By way of historical comparison, HARTransit used a similar rating system to gauge perception of all HARTransit-operated fixed route services in its *2011 Fixed Route Efficiency Study*. In the 2011 study, overall positive ratings (good or excellent) for the HARTransit system were at 89%. Positive ratings for dependability stood at 94%, on time performance at 91.9%, route maps at 82.8%, and bus appearance at 84.8%.

Comments

Of the 79 written comments, most were positive in nature, expressing appreciation or reliance on service. The most common suggestions were for increased service to close the mid-day gap, provision of weekend service, and to increase service frequency.

The most common negative comments were the two-hour evening gap in service from Danbury to Norwalk, uncomfortable bus seats and experiences of poor adherence to schedule.

The following is a more detailed breakdown of comments:

- 31 requests for additional service
 - fill the midday gap
 - weekend service, mostly for employment purposes
 - provide later evening departures from Norwalk to Danbury (current last departure at 6:00 p.m.)
 - increased frequency of service, some suggesting 30 minute headways during peak periods
 - provide an additional trip between 5:30 p.m. and 7:30 p.m. from Danbury to Norwalk
 - provide a service deviation to downtown Ridgefield
- 29 positive statements complimenting or expressing reliance on the service such as “good” or “excellent” service, “I love this bus,” “I am happy with the service,” and “I need this service to get to work.”
- 9 compliments to drivers for being “always friendly and helpful” and “pleasant and very professional.”

- 11 negative comments
 - confusing route and “horrible” bus schedules needing “larger print”
 - bus not adhering to schedule (running late/early)
 - “horribly uncomfortable” seats
 - Problematic two-hour gap in evening service from Danbury to Norwalk between 5:30 p.m. and 7:30 p.m.
- A few comments related to fare collection including “if possible make Norwalk Transit and Danbury Transit passes work on every 7 Link bus” and a request for “ability to give change.”

Driver Focus Group

Drivers of the 7 Link routinely assigned to the run were asked their opinions about the service. Regular NTD and HARTransit drivers completed a short survey and returned it to their supervisor. In all, there were 16 driver survey forms completed.

- The majority of responses to questions about route structure indicated satisfaction with the basic route configuration. Three or fewer drivers per question expressed problems with running time, that additional locations needed service or that timepoints need to be adjusted
- Timing for transfers at the major bus stations was considered problematic by five of 16 drivers. Written comments included difficulty connecting with the Coastal Link and CTTRANSIT 41 bus in Norwalk and transfers that expire before riders can use them.
- The same proportion indicated that riders experience some difficulty with fare media or transfer tickets. Comments included problems with unacceptable passes from other systems, limits on free transfers and suggestions for universal and day passes.
- A majority of drivers (11 of 16) indicated that customers had requested midday or weekend service. There were three written comments in each category respectively suggesting running all day, weekends and Saturdays.
- A significant majority of drivers reported no difficulties in their interactions with the partner bus system (15 of 16).
- When asked to relate other issues and suggestions, comments included taking Main Avenue in Norwalk as opposed to the Route 7 Connector, the need for bus stop signs, and the need for clarification on routing at the Danbury Mall.

4. CONCLUSIONS AND RECOMMENDATIONS

Overview

This section discusses potential improvements to the Route 7 Link bus to better serve communities and businesses along the Route 7 Corridor.

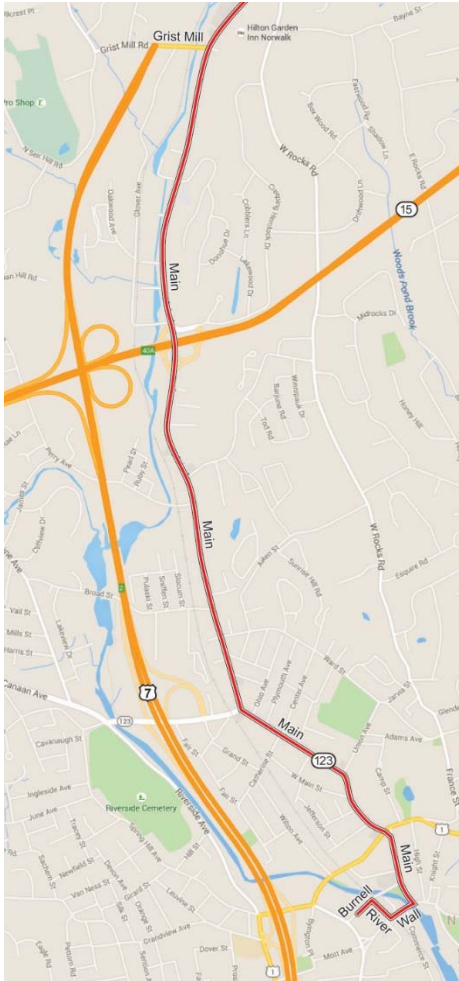
Riders expressed positive opinions about the 7 Link bus route as it does provide a mass transit linkage in a busy travel corridor. However, it is apparent that the route could benefit from routing adjustments, changes in fare collection and service additions.

Operational Issues

- Inconsistent service provision south of Grist Mill Road in Norwalk creates confusing schedules. Buses heading north and southbound do not serve the same locations, limiting possibilities for either more comprehensive service or shorter trip times.
- There is a large service gap in the midday with no departures from Danbury between 9:00 a.m. and 3:30 p.m. or from Norwalk between 10:30 a.m. and 3 p.m. The two hour gap between the 5:30 and 7:30 p.m. departures from Danbury is problematic.
- No weekend service
- A short service day with no evening departures from Norwalk after 6:00 p.m.
- When asked to rate the 7 Link, schedule adherence, printed schedule materials and connectivity with other transit services received the lowest positive ratings and the highest “no opinion” ratings.
- While cash fares are the same in both operations, there are multiple discount fare options, some of which are not universally accepted.
- NTD drivers cannot be contacted directly via radio or phone by HARTransit supervision and vice-versa. This is particularly problematic if local systems are operating behind schedule and 7 Link buses need to be held for transfers.

Short-Term Service Enhancements

The following enhancements could be made without additional investment into the service:



MERRITT 7 - South of the Main Ave-Grist Mill Road intersection, route the service on Main Avenue in both north and southbound directions and discontinue use of the Route 7 connector.

Alternatively, provide a one-way loop through the interior of the Merritt 7 complex in both directions on all trips as a deviation off of Main Avenue. Northbound service would turn left on Grist Mill, left on Glover Avenue, and left to Main Avenue towards Danbury. Southbound service would turn right on Glover Avenue, right Grist Mill Road, then continue southbound on Main Avenue.

The map to the left shows the route in red. For comparison, see the route map on page 7.

Danbury Pulse Point Departures - Schedule all departures at five minutes after the hour in the morning and 35 minutes after the hour in the afternoon/evening to allow for adequate time for transfers from other buses and limit the need to hold vehicles for transfers without additional communications equipment.

Marketing - Redesign the printed schedule with a more clearly drawn map and larger font size. Update the 7 Link logo.

Figure 14: Proposed modification to 7 Link route in Norwalk.

Fare Collection - Coordinate any future fare increases between HARtransit or NTD with respect to the 7 Link so that fares remain consistent regardless of operator.

Inter-District Communications - Each system should provide a mobile radio to its partner for use by its respective operations staff.

Several years ago, CTTRANSIT and the State Police were placed on a common radio band. The State Department of Safety and Public Protection anticipate infrastructure to allow other partners to join the common frequency to be in place by the end of CY 2016. If it is feasible for the two providers to join this network, it would further enhance communications.

Bus Stop Installations – Install northbound and southbound bus stop signs at the locations listed on the following table

Table 14: Proposed Bus Stop Installations

Municipality	Location
Ridgefield	Branchville Station @ Park Lane and Route 7
Wilton	435 Danbury Road, Cannondale
Wilton	River Road @ Wilton Library
Wilton	River Road @ Stop and Shop
Wilton	River Road @ Wilton Crest Road
Wilton	Old Ridgefield Road @ Center Street
Wilton	Wolfpit Road @ 6 Wolfpit Road

Long-Term Service Enhancement Options

Full Day Service Proposal – A full weekday service would require almost doubling the service provision, with an additional 23.7 hours per day for a total of 48.3 daily platform hours. Platform hours represent the total time a bus is operating from pull-out to pull-in, including dead head time, scheduled revenue service and lay over periods. In total, NTD would operate approximately 21.8 hours of service per day with HARTransit providing the balance of 26.2 hours after the expansion.

The full day schedule would require two additional buses.

The features of this expansion would include:

- Pulse Point departures at 10:05 a.m. and provided hourly until 3:05 p.m. Additional WHEELS Hub departures would be provided each hour between 11:30 a.m. and 2:30 p.m.
- Departure times after 2:30 p.m. would remain at 3:00 p.m. from the WHEELS Hub and 3:35 p.m. from the Downtown Danbury Pulse Point and continue with hourly through the remainder of the service day to maintain connectivity between the two bus systems in the afternoon period. Maintaining connectivity will decrease headway to 30 minutes for one trip during the transition and also create an extended deadhead from Norwalk to Danbury on a single trip
- The Midday gap would be totally eliminated in this scenario.

Table 15: Full Day Service from Danbury to Norwalk

Operator & Run #	Pulse Point	Danbury Mall	Miry Brook Park & Ride Lot	Wilton Center	WHEELS Hub
HARTransit1	6:05	---	6:12	6:45	7:15
HARTransit2	7:05	---	7:12	7:45	8:15
NTD1	8:05	---	8:12	8:45	9:15
HARTransit1	9:05	---	9:12	9:45	10:15
HARTransit2	10:05	---	10:12	10:45	11:15
NTD1	11:05	---	11:12	11:45	12:15
HARTransit3	12:05	12:12	---	12:45	1:15
HARTransit4	1:05	1:12	---	1:45	2:15
NTD2	2:05	2:12	---	2:45	3:15
HARTransit3	3:05	3:12	---	3:45	4:14
HARTransit5	3:35	3:40	---	4:22	4:45
NTD3	4:35	4:40	---	5:22	5:45
NTD4	5:35	5:40	---	6:22	6:45
HARTransit5	6:35	6:40	---	7:22	7:45
NTD3	7:35	7:40	---	8:22	8:45
NTD4	8:35	8:40	---	9:22	9:45

Table 16: Full Day Service from Norwalk to Danbury

Operator & Run #	WHEELS Hub	Wilton Center	Miry Brook Park & Ride Lot	Danbury Mall	Pulse Point
NTD1	6:30	6:53	---	7:38	7:50
HARTransit1	7:30	7:53	---	8:38	8:50
HARTransit2	8:30	8:53	---	9:38	9:50
NTD1	9:30	9:53	---	10:38	10:50
HARTransit1	10:30	10:53	---	11:38	11:50
HARTransit2	11:30	11:53	---	12:38	12:50
NTD2	12:30	12:53	---	1:38	1:50
HARTransit3	1:30	1:53	---	2:38	2:50
HARTransit4	2:30	2:53	---	3:38	3:50
NTD3	3:00	3:30	4:00	4:08	4:20
NTD4	4:00	4:30	5:00	5:08	5:20
HARTransit5	5:00	5:30	6:00	6:08	6:20
NTD3	6:00	6:30	7:00	7:08	7:20
NTD4	7:00	7:30	8:00	8:08	8:20
HARTransit5	8:00	8:30	9:00	9:08	9:20

- Additional Pulse Point departures would be instituted at 6:35 p.m. and 8:35 p.m., eliminating a gap in the afternoon service and expanding the service day. Departures from the WHEELS Hub would be added at 7:00 p.m. and 8:00 p.m.

- Connectivity would be provided to Jobs Access routes in Norwalk and Danbury.

The estimated additional operating cost for this service would be \$543,287 annually. An additional bus would be required for each transit system to provide a full day service.

Enhanced Weekday Peak-Period Service - This proposal would provide an additional 12.07 hours per day to the peak period for a total of 36.67 daily platform hours. Service provided by each operating entity would increase from approximately 12 to 18 platform hours per day. The proposed schedule would:

- Add Pulse Point departures at 10:05 a.m. and 11:05 a.m. and an additional WHEELS Hub departure at 11:35 a.m.
- Provide additional Pulse Point departures at 6:35 p.m. and 8:35 p.m., eliminating a gap in the afternoon service and expanding the service day. Add departures from the WHEELS Hub at 7:00 p.m. and 8:00 p.m.
- Reduce the midday gap by two hours.
- Maintain the existing requirements for buses; three in the morning and evening, respectively.
- Provide connectivity to evening Jobs Access routes in Norwalk and Danbury.

The tentative schedule would be as follows, showing deviations to employment at Cartus and 10/20 Westport Road:

Table 17: Morning Service from Danbury to Norwalk

Operator & Run #	Pulse Point	Miry Brook Park & Ride Lot	Wilton Center	10/20 Westport Rd	WHEELS Hub
HARTransit 1	6:05	6:14	6:45	6:53	7:15
HARTransit 2	7:05	7:14	7:45	7:53	8:15
NTD 1	8:05	8:14	8:45	8:53	9:15
HARTransit 1	9:05	9:14	9:45	9:53	10:15
HARTransit 2	10:05	10:14	10:45	10:53	11:15
NTD 1	11:05	11:14	11:45	11:53	12:15

Table 18: Morning Service from Norwalk to Danbury

Operator & Run #	WHEELS Hub	10/20 Westport Rd	Wilton Center	Cartus	Pulse Point
NTD 1	6:30	6:47	6:53	7:27	7:50
HARTransit 1	7:30	7:47	7:53	8:27	8:50
HARTransit 2	8:30	8:47	8:53	9:27	9:50
NTD 1	9:30	9:47	9:53	10:27	10:50
HARTransit 1	10:30	10:47	10:53	11:27	11:50
HARTransit 2	11:30	11:47	11:53	12:27	12:50

Table 19: Evening Service from Danbury to Norwalk

Operator & Run #	Pulse Point	Cartus	Wilton Center	10/20 Westport Rd	WHEELS Hub
HARTransit 3	3:35	3:47	4:22	4:27	4:45
NTD 2	4:35	4:47	5:22	5:27	5:45
NTD 3	5:35	5:47	6:22	6:27	6:45
HARTransit 3	6:35	6:47	7:22	7:27	7:45
NTD 2	7:35	7:47	8:22	8:27	8:45
NTD 3	8:35	8:47	9:22	9:27	9:45

Table 20: Evening Service from Norwalk to Danbury

Operator & Run #	WHEELS Hub	10/20 Westport Rd	Wilton Center	Miry Brook Park & Ride Lot	Pulse Point
NTD 2	3:00	3:25	3:30	4:00	4:20
NTD 3	4:00	4:25	4:30	5:00	5:20
HARTransit 3	5:00	5:25	5:30	6:00	6:20
NTD 2	6:00	6:25	6:30	7:00	7:20
NTD 3	7:00	7:25	7:30	8:00	8:20
HARTransit 3	8:00	8:25	8:30	9:00	9:20

The estimated increase in additional cost for this service enhancement would be \$276,687 annually. No additional buses would be required.

Saturday Service - This proposed expansion would provide approximately 36 platform hours per Saturday between the hours of 7:40 a.m. and 8:15 pm. The lion's share of the service would be operated by NTD at roughly 24 hours with the balance provided by HARTransit.

NTD's WHEELS system operates on Saturday with departures every 40 minutes throughout the day, beginning at 7:30 a.m. HARTransit's CityBus system operates with hourly headways throughout the service day on Saturday, with departures from the Pulse Point beginning at 8:00 a.m.

- Unlike weekday service, departures in this proposal would remain consistent throughout the day, but service frequency is reduced to hourly.

- Service to the Apple Ridge Road and 10/20 Westport Road deviations would not be provided on Saturdays.
- Saturday service would require a minimum of three buses for operations. The schedule below suggests that driver runs be scheduled in roughly 6 hour blocks.
- Departures from Norwalk on odd hours would be advanced to 40 minutes after the hour to maximize connectivity to the WHEELS system.

The estimated additional cost for this service would be \$170,356 annually. No additional buses would be required.

Table 21: Saturday Service from Danbury to Norwalk

Operator & Run #	Pulse Point	Danbury Mall	Miry Brook Park & Ride Lot	Wilton Center	WHEELS Hub
HARTransit 1	8:05	8:15	8:20	8:53	9:15
NTD 1	9:05	9:15	9:20	9:53	10:15
NTD 2	10:05	10:15	10:20	10:53	11:15
HARTransit 1	11:05	11:15	11:20	11:53	12:15
NTD 1	<i>12:05</i>	<i>12:15</i>	<i>12:20</i>	<i>12:53</i>	<i>1:15</i>
NTD 2	<i>1:05</i>	<i>1:15</i>	<i>1:20</i>	<i>1:53</i>	<i>2:15</i>
HARTransit 2	2:05	2:15	2:20	2:53	3:15
NTD 3	3:05	3:15	3:20	3:53	4:15
NTD 4	4:05	4:15	4:20	4:53	5:15
HARTransit 2	5:05	5:15	5:20	5:53	6:15
NTD 3	6:05	6:15	6:20	6:53	7:15
NTD 4	7:05	7:15	7:20	7:53	8:15

pm times in italic

Table 22: Saturday Service from Norwalk to Danbury

Operator & Run #	WHEELS Hub	Wilton Center	Miry Brook Park & Ride Lot	Danbury Mall	Pulse Point
NTD 1	7:40	7:55	---	8:38	8:50
NTD 2	8:30	8:51	9:20	9:38	9:50
HARTransit 1	9:40	9:55	---	10:38	10:50
NTD 1	10:30	10:51	11:20	11:38	11:50
NTD 2	11:40	11:55	---	12:38	12:50
HARTransit 1	<i>12:30</i>	<i>12:51</i>	<i>1:20</i>	<i>1:38</i>	<i>1:50</i>
NTD 3	<i>1:40</i>	<i>1:55</i>	---	2:38	2:50
NTD 4	2:30	2:51	3:20	3:38	3:50
HARTransit 2	3:40	3:55	---	4:38	4:50
NTD 3	4:30	4:51	5:20	5:38	5:50
NTD 4	5:40	5:55	---	6:38	6:50
HARTransit 2	6:30	6:51	7:20	7:38	7:50

pm times in italic

Universal Bus Pass - A consistent fare policy is a fundamentally important component of regional mobility. It is recommended that the agencies adopt a consistent, easy-to-use pass option allowing for seamless transfers between systems.

NTD, GBT, MTD and HARTransit vehicles are all equipped with GFI Odyssey fareboxes that can be readily programmed to accept a common pass. CTTRANSIT employs older style GFI CENTSaBILL fareboxes, soon to be replaced with Scheidt & Bachmann manufactured models. These new fareboxes cannot interface with GFI Odyssey fare media.

A potential solution would be an Odyssey-readable magnetic swipe unlimited ride universal pass stamped with a start and end date (like the existing 31 day passes at many systems). This type of fare media could be read by the agencies using the Odyssey farebox while also allowing for CTTRANSIT drivers to accept appropriately dated passes.

Such a pass can be set up with a unique identifier that represents each transit agency. GFI would assist in the development of a report where each system could monitor and collect ridership data relevant to the usage of the shared pass being accepted on their vehicles that differentiates the passes by point of sale.

- All the agencies that interface with the 7 Link have a common base fare of \$1.50, except for GBT, at \$1.75. To overcome the difference in base fares, the universal pass could be priced at a premium rate hinging off \$1.75 or even a higher base fare. The additional cost of the pass could be promoted as a convenience fee.
- The revenue sharing/reimbursement process would be established through administrative processes agreed upon by the partnering agencies. The agency from which the pass was purchased would initially receive the revenue. Ridership and pass sales trends could be periodically reviewed and reimbursements to other agencies adjusted accordingly.
- According to GFI, such a pass can be set up with a unique identifier that represents each transit agency. GFI would assist in the development of a report where each system could monitor and collect ridership data relevant to the usage of the shared pass being accepted on their vehicles that differentiates the passes by point of sale.
- One operating agency would be assigned the role of coordinating reimbursements.

GFI engineering time would be required to ensure that “Friendly Agency” is set-up properly to successfully operate in all the transit agencies fare collection systems. The cost is projected at \$17,950 per transit system.

NTD and HARTransit could be the first to pilot a shared pass program on the 7 Link based on these recommendations.

Regional providers offering a universal pass would be a step towards enhancing connectivity across systems and modes and set the stage for fare media integration with other mass transit providers such as Metro-North. Emerging cellphone technologies are a potential future resource here. The metropolitan Chicago area bus systems of Metra, PACE and CTA recently rolled out a smartphone app that allows for virtual tickets to be purchased on iOS or android devices and also provides trip planning information.

Installation of Wi-Fi on buses – Wi-Fi can act as a marketing tool to bring additional riders on board transit bus fleets. Cellular Wi-Fi routers are installed on many transit systems in the US, including on CTfastrak.


Statistics suggest that trips of 15 minutes or more are best suited to Wi-Fi installations on buses. Equipment designed for transit may run up to \$2,000 per bus, but some operators such as Chittenden County Transportation Authority in Vermont, have purchased much less expensive business class routers that have proven adequate for transit use. Other costs include ongoing monthly cellular service charges per vehicle, depending on the amount of bandwidth delivered to the bus.

Installations on CTfastrak reduce recurring costs by not allowing video streaming. According to CT DOT staff, the Wi-Fi option has been popular among riders.

Onboard Wi-Fi could be rolled out as a pilot with selected buses identified as having Wi-Fi hotspots then expanded depending on results.


5. APPENDIX

English Language Customer Survey




Route 7 LINK
Danbury Norwalk

NORWALK TRANSIT DISTRICT



Please take a moment to complete this brief survey. Return form completed to driver. Please submit only one survey.

Take this survey online at
www.HARTransit.com



What town/city do you live in? _____

Where did you board the Route 7 Link today?
☐ Norwalk WHEELS Hub ☐ Danbury Pulse Point
☐ Other: _____
 LIST LOCATION, STREET AND TOWN

What time did you board the 7 Link? _____

At what location will you get off the 7 Link?
☐ Norwalk WHEELS Hub ☐ Danbury Pulse Point
☐ Other: _____
 LIST LOCATION, STREET AND TOWN

Where are you going today?

 LIST LOCATION, STREET AND TOWN

List the other places you travel to using the 7 Link:
 • _____
 • _____
 • _____

How many days a week do you ride the 7 Link?
 Circle: 1 2 3 4 5

Do you make connections to other bus or train services from the 7 Link? Circle: YES or NO
 If "YES", please explain: _____

Do you own a smartphone? Circle: YES or NO
 Check type: ☐ iPhone ☐ Android ☐ Other: _____

How often do you visit the HARTransit website for service information and updates?
☐ Never ☐ Less than once a month ☐ One day a week
☐ A few days a week ☐ Almost everyday

How often do you visit the Norwalk Transit District website for service information or updates?
☐ Never ☐ Less than once a month ☐ One day a week
☐ A few days a week ☐ Almost everyday

	POOR	----	OK	---	EXCELLENT
	1	2	3	4	5
Overall Satisfaction.....	1	2	3	4	5
Dependability of the service.....	1	2	3	4	5
Appearance and cleanliness of the bus.....	1	2	3	4	5
Adherence to the schedule.....	1	2	3	4	5
Ability to connect to other services.....	1	2	3	4	5
Helpfulness of route maps and schedules.....	1	2	3	4	5
Friendly and informative customer service.....	1	2	3	4	5

Rate the Route 7 Link on a scale of 1=POOREST to 5=EXCELLENT

Please write any comments or suggestions below: _____

Spanish Language Customer Survey



La Ruta 7 LINK
Danbury | Norwalk

NORWALK TRANSIT DISTRICT



Por favor tome un momento para completar esta breve encuesta. Devuelva la encuesta completada a su conductor. Por favor, complete solo una encuesta.

¿En qué ciudad vive Usted? _____

¿Dónde empezó su viaje en La Ruta 7 LINK hoy?

☐ Terminal de WHEELS en Norwalk ☐ Pulse Point en Danbury

☐ Otro: _____
EL LUGAR, CALLE Y CIUDAD

¿A qué hora subió a La Ruta 7 LINK? _____

¿Hasta donde correrá La Ruta 7 Link?

☐ Terminal de WHEELS en Norwalk ☐ Pulse Point en Danbury

☐ Otro: _____
EL LUGAR, CALLE Y CIUDAD

¿Para donde vá hoy?

EL LUGAR, CALLE Y CIUDAD

Lista de los otros lugares que su viaje a usando el LINK:

- _____
- _____
- _____

¿Cuántos días por semana toma La Ruta 7 LINK?

Marque: 1 2 3 4 5

Esta encuesta se puede completar a www.HARTransit.com



¿Usa La Ruta 7 LINK para conectar con otros servicios de tren o bus? SI or NO

Si "sí", por favor explique: _____

¿Tiene SmartPhone? SI o NO

Marque tipo: ☐ iPhone ☐ Android ☐ Otro: _____

¿Con qué frecuencia visita a www.HARTransit.com para información de servicio y anuncios?

☐ Nunca ☐ Menos de una día por mes ☐ un día por semana

☐ Más de una vez por semana ☐ Casi todos los días

¿Con qué frecuencia visita a www.norwalktransit.com para información de servicio y anuncios?

☐ Nunca ☐ Menos de una día por mes ☐ un día por semana

☐ Más de una vez por semana ☐ Casi todos los días

Califique La Ruta 7 LINK usando la escala de 1=POBRE a 5=EXCELENTE

	POBRE	1	2	3	4	5	EXCELENTE
Satisfacción general.....	1	2	3	4	5		
Fiabilidad del servicio.....	1	2	3	4	5		
Apariencia y limpieza del bus.....	1	2	3	4	5		
Adherencia al horario.....	1	2	3	4	5		
Conexiones a otros servicios.....	1	2	3	4	5		
Mapas y horarios.....	1	2	3	4	5		
Servicio al cliente.....	1	2	3	4	5		

Por favor escriba cualquier comentarios o sugerencias de servicios: _____

Driver Focus Group Survey

NTD and HARtransit are looking at options for improvement to the Danbury-Norwalk Route 7 LINK. As part of that analysis, we are asking drivers of the route their opinion on the service. Please complete the following survey and return it to a supervisor by Friday, November 6.

1. Is there adequate running time in the schedule to do the route?

In the AM Y N Comments _____

In the PM Y N Comments _____

2. Are the time points accurate? Y N Comments _____

3. Are there any new locations along the route that should be designated as time points?

Y N Comments _____

4. Are there time points that should be eliminated? Y N Comments _____

5. Are there any route improvements you would recommend (for example, 7 connector AM vs. PM deviation, travel through Wilton Center, service to Cartus and Danbury Fair Mall)?

Y N Comments _____

6. Are the transfers at the Hub and/or Pulse Point timed properly?

Y N Comments _____

7. Have you found that customers have problems with tickets, tokens transfers and passes and what is acceptable?

Y N Comments _____

8. Have customers suggested weekend or midday service?

Y N Comments _____

9. Where do you pull off along the route if you are running ahead of schedule? _____

10. Do you have any problems interacting with the partner bus system? Y N Comments _____

11. Are there any other issues with the route that come to mind? _____

12. Do you have any other suggestions for improvement? _____

