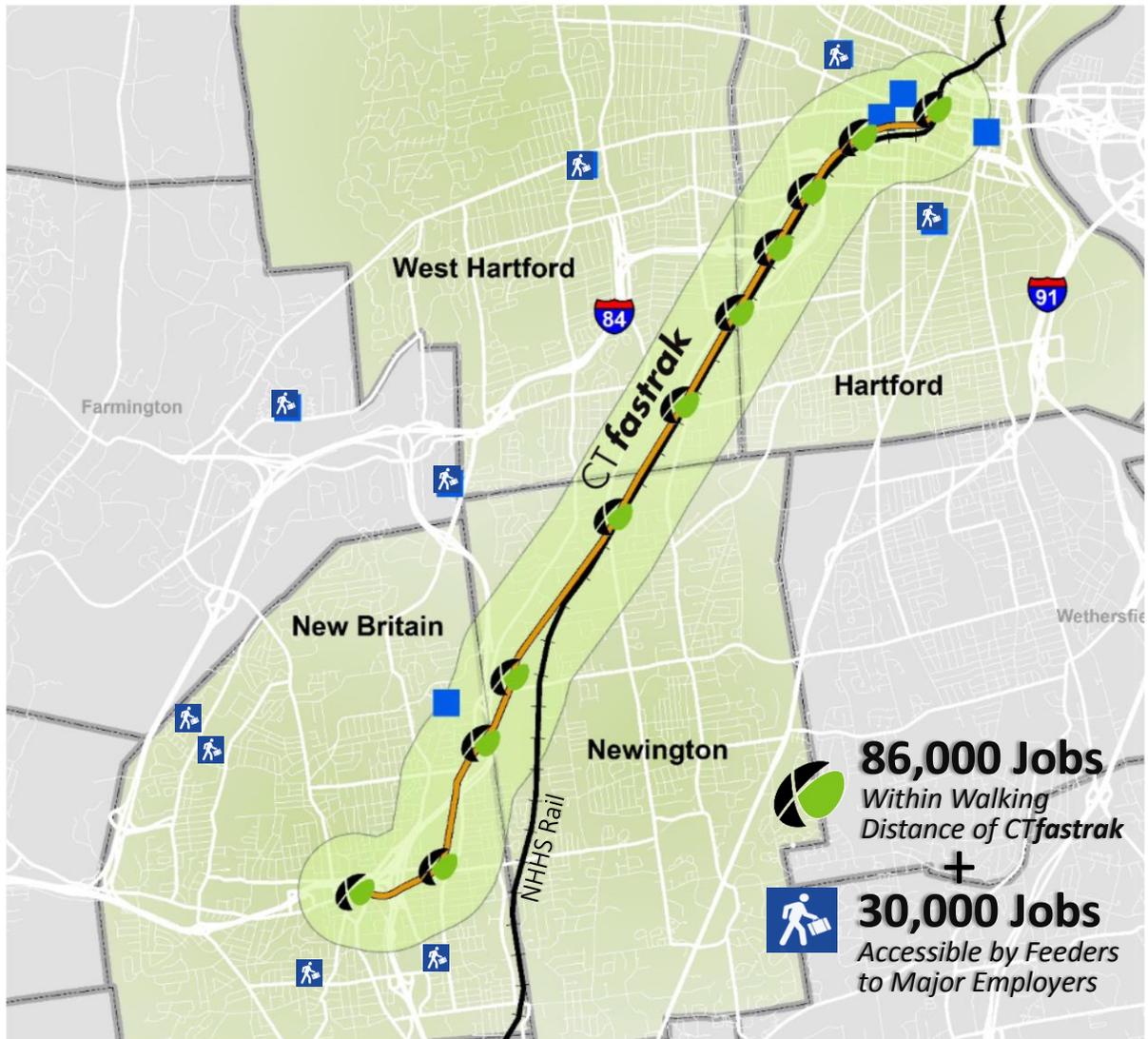


TIGER Discretionary Grant FY 2015

CTfastrak Ladders of Opportunity: Complete Streets to Improve Access Between BRT Stations and Employment



*Connecting Communities
Strengthening Active Transportation and Transit
Improving Access to Employment*

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Title Page

Project Name

CTfastrak Ladders of Opportunity:
Complete Streets to Improve Access between BRT Stations and Employment

Project Location

State of Connecticut
1st and 5th Congressional Districts
Counties: Hartford County
Towns: Hartford, New Britain, West Hartford, Newington,

Type of Application

Urban / Transit / Bicycle & Pedestrian / Complete Streets

Grant Recipient

Name of Applicant: Connecticut Department of Transportation (CTDOT)
Type of Applicant: State Government
DUNS number: 807854583
Primary Contact: Michael Klick
Phone Number: (860) 594-2815
Email Address: michael.klick@ct.gov
Address: 2800 Berlin Turnpike, PO Box 317546, Newington, CT 06131
Website: <http://www.ct.gov/dot>
Grant Administration: CTDOT

Amount of Funds Requested

TIGER Request: \$15,000,000
Non-Federal Match (44%): \$11,850,000 (Originally \$6,430,000 in Pre-Application)

Other Project Parties

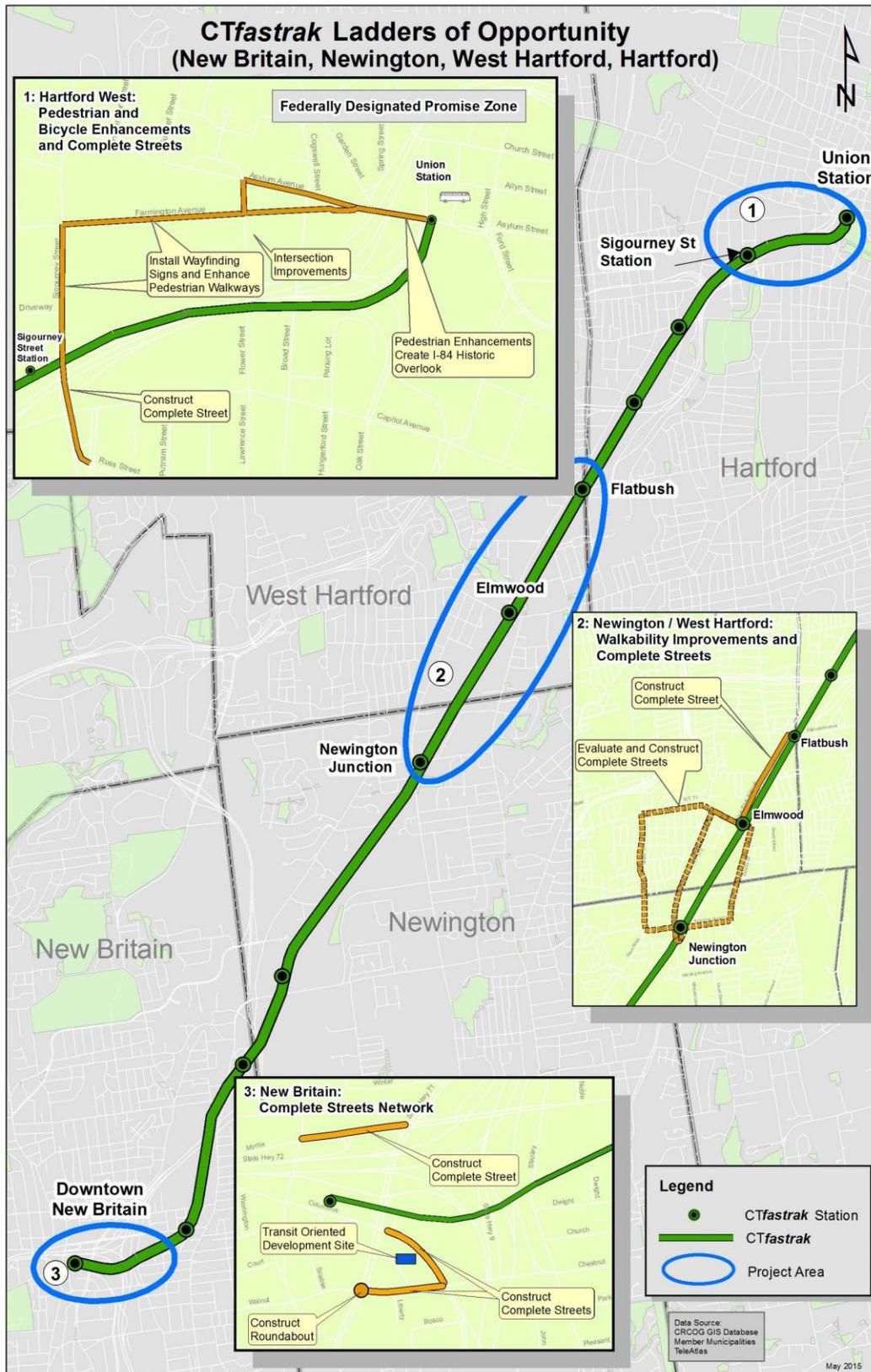
City of Hartford / City of New Britain / Town of West Hartford / Town of Newington
Capitol Region Council of Governments (CRCOG)
Central Connecticut Metropolitan Planning Organization (CCMPO)

Changes to Preapplication Project Description (*deletions in red and additions in green*)

This project will create Ladders of Opportunity in the Hartford/New Britain CTfastrak BRT corridor through strengthening connections between low-income, transit-dependent neighborhoods that surround most stations, and the corridor's large employment base of 115,900 jobs. Access to employment will be improved by constructing complete streets, enhancing transit operations, and improving infrastructure that supports transit oriented development. The project includes: reconstructing New Britain's Columbus Boulevard, Chestnut and East Main Streets as complete streets, extending CTfastrak's multi-use trail, implementing West Hartford's New Park Avenue road diet, and evaluating and implementing ~~Main Street transit signal priority and~~ **Sigourney Street, Farmington Avenue, and Asylum Avenue** improvements adjacent to Hartford's Promise Zone neighborhood.

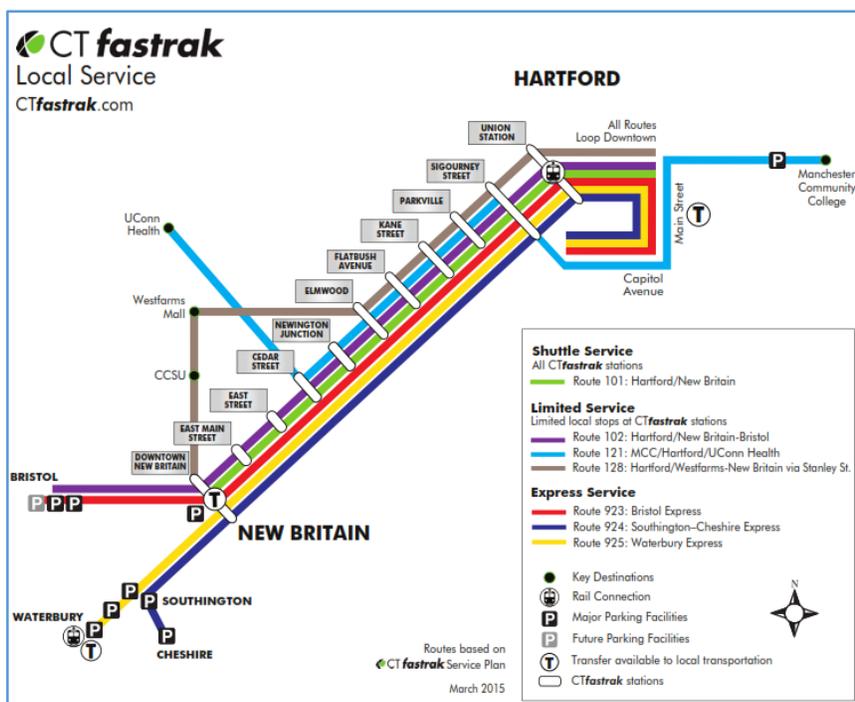


Project Map



I. Project Description

Connecticut's first bus rapid transit system, **CTfastrak**, opened this March providing state-of-the-art transit service on a bus-only roadway running between New Britain and Hartford and serving communities extending outside of the Capitol Region. **CTfastrak** offers a one-seat ride to many major regional employment, healthcare and shopping destinations as well as connections to rail line services in Waterbury and New Haven. Preliminary ridership numbers have exceeded expectations and **CTfastrak** is quickly becoming integral to residents and commuters.



Of the 975,000 residents and approximate 400,000 households within the Capitol Region, 11% of the population is below the poverty line and 10% do not have access to a vehicle. Thirty-three (33) percent of the region consists of minority populations. Findings from a recent [market analysis](#) of **CTfastrak** and [New Haven–Hartford–Springfield rail](#) investments indicate that the growing number of aging baby boomers and young urban professionals in the region will fuel market demand for walkable, compact neighborhoods that are likely to be developed in station areas. Continuing to strengthen the pedestrian, bicycle and vehicular areas that access **CTfastrak** are critical to the continued success of this transportation ladder for multiple users: transit dependent populations, baby boomers, and young professionals.

Last year the CTDOT adopted a complete street policy and committed to making complete street considerations a core component of all work. This year Governor Dannel Malloy and the Connecticut Department of Transportation (CTDOT) released [LETS GO CT!](#), Connecticut's Bold Vision for a Transportation Future. This vision was developed with extensive public outreach revealing employers and residents are asking for a best-in-class transportation system and new multi-modal ways to travel. Project partners are also supportive of state-of-the-art, multi-modal transportation options and strengthening the first-mile / last-mile connections to **CTfastrak** stations, as evidenced in the letters of support found in Appendix A.

This project is requesting TIGER funds to assist in constructing complete streets within walking distance of **CTfastrak** stations, supporting multi-modal investments CTDOT proposes to make in the five-year ramp up plan of [LET'S GO CT!](#). Project elements in the City of New Britain, City of Hartford, and towns of Newington and West Hartford will collectively result in a number of

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benefits, particularly quality of life and safety benefits. A portion of this project also abuts North Hartford’s [Promise Zone](#), a federal designation from the U.S. Department of Housing and Urban Development intended to support invest in communities to create jobs, leverage private investment, increase economic activity, expand educational opportunities, and reduce violent crime (See Appendix B). The Hartford portion of this project also meets the existing limits of the City’s TIGER IV project.

a. Project Overview

This TIGER submittal builds upon the ongoing transformative change spearheaded by communities sharing the **CTfastrak** corridor. Uniformly the elements support continued growth in pedestrian and bicycle trips, increased transit usage, and safer vehicular maneuvers all while enhancing the corridor’s quality of life and access to jobs. A majority, six (6) of the existing **CTfastrak**’s eleven (11) stations will realize direct benefits from this project.

The following summarizes the key connected elements of the TIGER application:

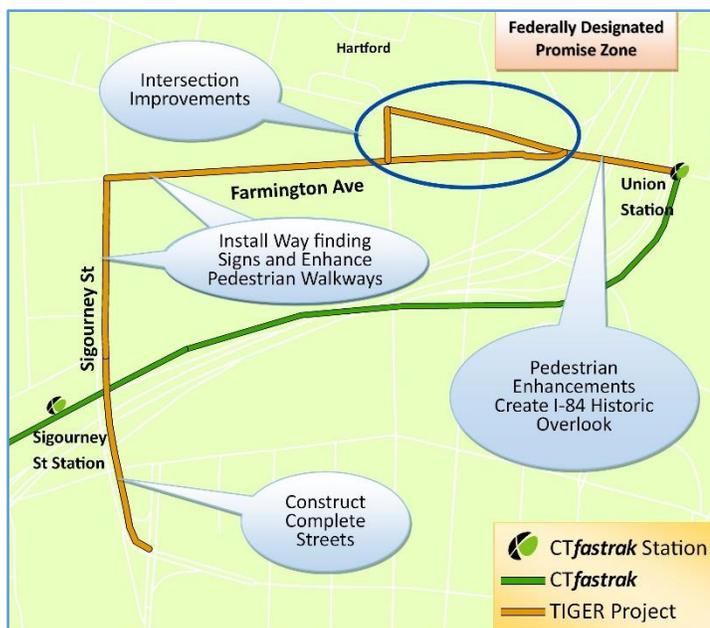
- **Element 1:** Hartford West: Pedestrian and Bicycle Enhancements and Complete Streets Network
- **Element 2:** Newington | West Hartford: Walkability Improvements and Complete Streets
- **Element 3:** New Britain: Pedestrian and Bicycle Enhancements and Complete Streets Network



Element 1: Hartford West: Pedestrian and Bicycle Enhancements and Complete Streets Network

The Hartford West Element will strengthen transit, pedestrian, bicycle and vehicular safety to major anchor institutions within walking distance of the **CTfastrak** Sigourney Street station and Union Station. The element will also enhance multi-modal access to educational opportunities and neighborhoods with zero-car households that abut North Hartford’s Promise Zone.

This element builds on multi-modal improvements already under construction for the [Hartford Intermodal Transportation Triangle Project](#) (TIGER IV project) scheduled for completion in November 2015, extending connections to



major employers, educational institutions, and neighborhoods divided by Interstate 84. Improvements will occur on Asylum Avenue, Farmington Avenue and Sigourney Street.

b. Asylum Avenue and the Trident Area

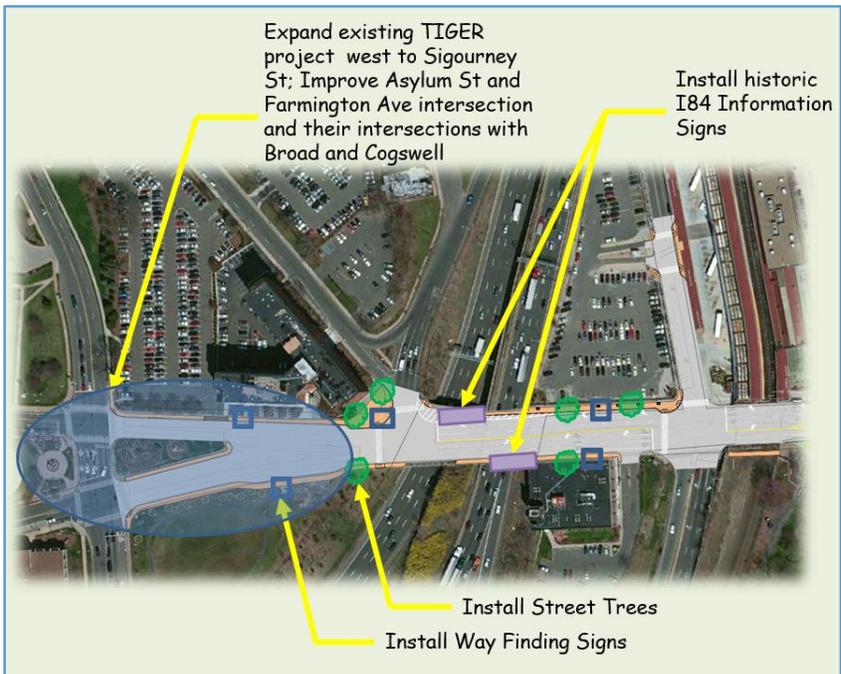
Asylum Avenue serves as one of the City’s few conduits providing east-west access across Interstate 84 (I-84) between Union Station (Amtrak train and bus station) and Hartford’s West end. This element proposes to address multimodal deficiencies along Asylum Avenue between Farmington Avenue and Union Station, and address deficiencies at the problematic intersection of Asylum Avenue at Farmington Avenue, Cogswell Street, and Broad Street (the “Trident Area”).

The section of Asylum Avenue between the Trident and Union Station is an uninviting environment for pedestrians and cyclists that lacks way-finding signs, has limited landscaping, and poor pedestrian amenities. In this segment, I-84 traverses Asylum Avenue, with eastbound and westbound traffic travelling over and under Asylum Avenue, respectively. Sidewalks are narrow, and Asylum Avenue is void of roadway shoulders for cyclists.

Element 1 Key Facts

- 1.2 miles
- Bicycle lanes
- Pedestrian Amenities
- Bus Shelter Replacements
- Way-Finding Signs
- Historic Interstate 84 Educational Signing
- Intersection Reconstruction
- Public Art
- Total Cost: \$9.15 million

In the long-term, issues of pedestrian connectivity along Asylum Avenue between the Trident and Union Station are anticipated to be significantly improved by the I-84 Hartford project, which will either significantly rehabilitate the existing I-84 viaduct in place or fully reconstruct the existing 50 year old structure with at or below grade alternatives starting in 2020. To realize CTfastrak’s optimum potential, it is imperative that this connection be transformed into a complete street, with the improvements to prioritize safe and efficient multi-modal access to and from Union Station with effective way-finding signs. This element also proposes to install educational signs on Asylum Avenue within the vicinity of I-84, summarizing the history of the highway viaduct construction including the burying of the Park River, summarizing the future project and creating a public comment wall. Incorporation of public art into the street fabric will also be considered in the design. Two bus shelters on Asylum Avenue will be replaced and assessed for solar panel usage.



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The Trident Area includes an atypical arrangement of roadway and intersections. Asylum and Farmington Avenues intersect to form a “Y” type configuration just west of the Asylum Avenue/Garden Street signalized intersection. The westbound left-turn lane for Farmington Avenue and eastbound lane from Asylum Avenue form a small angle “X” configuration which creates a long conflict area between westbound traffic bound for Farmington Avenue and eastbound Asylum Avenue vehicles. Due to this configuration, long gaps in westbound traffic are required to clear the conflict area, adequate gaps are difficult to judge, and eastbound drivers on Asylum Avenue routinely advance well beyond the stop bar and stop sign. The intersections of Asylum Avenue/Cogswell Street and Farmington Avenue/Broad Street are only 100 feet apart and, due to heavy demand in the PM peak period for access to the eastbound entrance ramp for I-84 on Broad Street, eastbound right-turning vehicles on Asylum Avenue routinely queue through the Cogswell Street/Asylum Avenue intersection. This queue creates conflicts for southbound vehicles trying to access Farmington Avenue and Broad Street.

The Trident area intersection roadways carry considerable traffic volumes (2009) including 15,000 to 15,700 vehicles per day (vpd) on Asylum Avenue; 9,900 to 16,000 vpd on Farmington Avenue; 14,000 to 16,000 vpd on Broad Street; 10,400 vpd on Cogswell Street; and approximately 15,800 vpd at the Garden Street/I-84 WB Exit. Due to the significant northbound left-turn traffic volume at the intersection of Farmington Avenue and Broad Street the lack of opposing left-turn lanes creates operational difficulties and reduces capacity. Also, significant westbound left-turn traffic volume on Farmington Avenue are opposed by significant eastbound through traffic volumes at this location. ***The combination of high traffic volumes, poor roadway/intersection geometry and operational difficulties results in severe congestion during both morning and evening peak periods.*** One solution has been identified for the Trident intersections and is ready to be implemented, however additional City planning efforts with neighborhood stakeholders are underway to identify a preferred solution.

c. Farmington Avenue

Farmington Avenue provides a critical east-west link between Asylum Avenue, Sigourney Street and points west into West Hartford Center. Located between Asylum Avenue and Sigourney Street are Aetna and The Hartford, two of the City's largest employers. Along Farmington Avenue further west of Sigourney Street are numerous urban apartment and condominium complexes, along with the Mark Twain House and Museum and the Harriet Beecher Stowe Center cultural/tourist destinations. Also located within walking distance of the project area are Saint Francis Hospital (within a half mile) and the University of Connecticut's School of Law (within a mile).



Farmington Avenue is approximately 40 feet wide which accommodates four 10-foot travel lanes with no shoulders. Due to the lack of shoulders, bicyclists have to share the travel lane with vehicles. This element will include minor widening on Farmington Avenue to provide bicycle lanes as well as strengthening pedestrian amenities and way-finding signs to fully complement CTfastrak busway investments. One bus shelters at the intersection of Farmington Avenue and Sigourney Street will be replaced and assessed for solar panel usage.

d. Sigourney Street

Sigourney Street, one of only three streets that connects Frog Hollow and Asylum Hill neighborhoods, is a major north south travel route within the City of Hartford serving a number of employers, educational opportunities and faith based organizations. The Asylum Hill neighborhood is one of Hartford's historic neighborhoods and provides a diversity of housing options. The population of this neighborhood is predominantly African American and Hispanic, and approximately 38% of residents are below the poverty line. The low-income nature of the neighborhood is likely tied to the fact that nearly 17% of Asylum Hill residents have limited-English proficiency, and 55% did not complete high school.



Originally full of workforce housing for the factories along Capitol Avenue, Frog Hollow has long been a working class neighborhood. Today, the residents of this neighborhood are predominantly Hispanic. Nearly 19% of residents have limited-English proficiency, and approximately half of the population has less than a high school education. As a result, more than 55% of Frog Hollow residents are living below the poverty line with a median household income of \$26,400.

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The area of Sigourney Street between Russ Street and Farmington Avenue (approximately 0.4 miles) is primarily two lanes in each direction. Mid-way along this section of roadway is Hawthorn Street, which provides direct access to the nearby Sigourney Street CTfastrak station. Interstate 84 passes over Sigourney Street and has westbound off and eastbound on ramps. This element will include installing bicycle lanes, pedestrian amenities and way-finding signs. Improvement alternatives are the result of a collaborative discussion with neighborhood representatives.

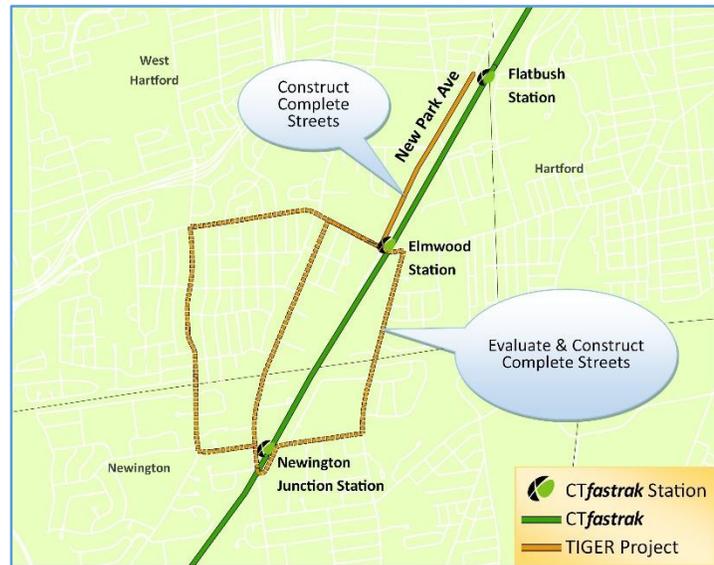


The general improvements associated with this Element include:

- Pedestrian enhancements on Asylum Avenue between Spruce Street and Farmington Avenue. Minor improvements to this segment are currently being constructed under the existing TIGER project (limited period lighting and new sidewalks). Improvements under this project would entail the installation of way finding signs to / from Union Station, Historic Educational signs about the Interstate 84 Highway Viaduct project, public art and street trees.
- Intersection improvements at Asylum Avenue and Farmington Avenue including the intersections of Broad Street and Cogswell Street, including improved pedestrian refuge and proper pedestrian signalization. Potential improvements range from standardized traffic signals to a roundabout solution (community input is on-going).
- Farmington Avenue improvements including minor widening to provide bicycle lanes, pedestrian amenities and way-finding signs.
- Sigourney Street redesign as a complete street. The inclusion of bicycle lanes between Russ and Farmington Avenue will be evaluated with area stakeholders and designed to strengthen the connection to the CTfastrak Sigourney Street station.

Element 2: Newington | West Hartford Multi-Use Trail Extension and Complete Street

This element focuses on strengthening the transit, pedestrian and bicycle connections to / from CTfastrak stations and ensuring vehicular safety and movement is optimized. It entails studying and then constructing an extension of the CTfastrak multi-use trail from its current terminus at the Newington Junction CTfastrak station to the Flatbush Avenue station in West Hartford, constructing both on and off-road sections.



Newington Junction is located in the northerly portion of the Town of Newington at the junction of the New Haven, Bristol and Waterbury railroad lines. As part of CTfastrak, a multi-use trail was constructed from New Britain to Newington, but it terminates at the Newington Junction CTfastrak station (due to right of way constraints). The existing trail provides multi-modal access options for those located to the south of the station, however the more densely populated suburban residential land uses to the east and northwest would benefit from the extension of the trail and/or other multi-modal investments. An up-and-over pedestrian bridge over the existing [Hartford Rail Line](#) will be constructed in the future allowing residents from both sides of CTfastrak in Newington to benefit from enhanced pedestrian and bicycle connections.

Element 2 Key Facts

- 3.3 miles
- Complete Streets
- Pedestrian Amenities
- Way-Finding Signs
- Traffic Signal Enhancements
- Transit Signal Priority Framework and System
- Total Cost \$8.54 million

The Capitol Region Council of Governments has been working with local stakeholders to conceptually define potential walking and bicycling connections north of the trail’s terminus, with the goal of eventually connecting to the [East Coast Greenway](#) in Hartford. Initial planning has been completed for the segment between Newington Junction Station and Elmwood Station in West Hartford. These planning efforts identified the following three alternate alignments as targets for multi-modal capital investments:

- West Hill and West Hartford Roads in Newington, and South Main Street and New Britain Avenue (Routes 173/529) in West Hartford
- Willard Avenue (Route 173) in Newington, and Willard (Route 173) and New Britain Avenues (Route 529) in West Hartford
- Francis Avenue and Main Street in Newington, and South Street and New Britain Avenue (Route 529) in West Hartford

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Given existing residential properties, existing right-of-way constraints and other design limitations it will be necessary to further refine which pathway option(s) are preferred with stakeholder and public input. Overall this element will work within the communities of Newington and West Hartford to refine conceptual plans, design, and construct on-road and off-road trail sections, sidewalks, bike lanes, and multi-modal amenities, with the purpose of strengthening connections between Newington Junction and Elmwood CTfastrak stations and the surrounding environs.

New Park Avenue runs parallel to CTfastrak in the southeastern portion of the Town of West Hartford. Average daily traffic volumes range between 13,100 and 17,500. The element area includes a one-mile long corridor between New Britain Avenue (State Route 529) in the south and the intersection with Flatbush Avenue in the north. Located along this corridor is a unique commercial/industrial district. This area includes a variety of commercial services, auto-related repair garages, small machine shops and storage yards, and retail development. Within this area are significant industrial employment centers, major commercial employers, a “Home Design District,” well established dense single and multi-family residential neighborhoods and community amenities.

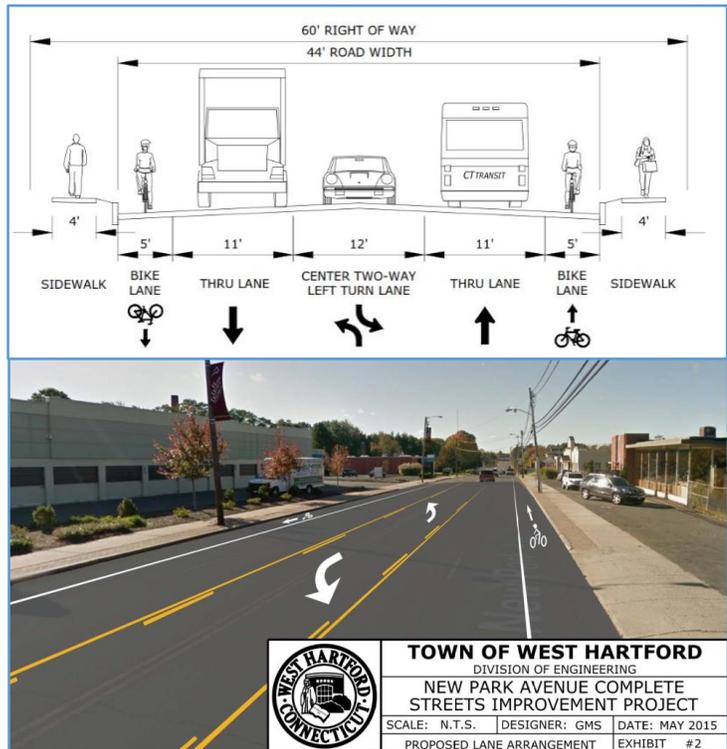


Both ends of the defined New Park Avenue corridor are served by CTfastrak stations, Elmwood Station in the south and Flatbush Station in the north. The long term goal is for the New Park Avenue corridor to evolve into a more mixed-use, pedestrian and bicycle friendly neighborhood with the characteristics that support transit ridership growth. The Town recently received a Transit-Oriented Development (TOD) Planning Grant through the state (Office of Policy and Management) to perform a New Park Avenue Transit Area Complete Streets Study. This element will study the feasibility of implementing complete streets design features, possibly including a road diet (modifying the existing four lane roadway to a single travel lane in each direction, a two way turn lane in the center and bike lanes in each direction) and an improved link between Elmwood Station and the existing Trout Brook multi-use trail terminus on New Park Avenue.

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The following summarizes key improvements of Element 2:

- Planning Workshops within the Newington and West Hartford Communities to better refine the three identified complete street/multi-use trail alignments and associated treatments between Newington Junction and Elmwood stations. Both the On-Road and Off-Road alternatives will be refined and a preferred alternative will be selected for design advancement and construction.
- Implementing findings from the Town of West Hartford’s TOD Planning Grant Study which will include complete street elements along New Park Avenue. Enhancements will include bicycle accommodations, visible crosswalks, pedestrian islands, and more attractive, better-situated, sustainable bus stops. A ‘Road Diet’ for a portion of the street may be a feasible complete street solution.
- Provisions for an improved connection between the Trout Brook Trail terminus at New Park Avenue and Elmwood Station.
- Incorporation of streetscape elements such as a mix of trees, planters, benches, trash receptacles, brick pavers, stamped concrete, and other amenities enhancing area aesthetics.
- Definition of a policy framework as it relates to ‘transit signal priority’ to existing traffic signals along New Park Avenue to encourage efficient transit movement parallel to *CTfastrak*. After a clear assessment of the framework for traffic signal priority, traffic signals and the supporting infrastructure will be upgraded to accommodate transit signal priority. Installation of real time bus arrival information signs along with way-finding signs.
- Replacement of three traffic signals on New Park Avenue at Talcott Road, Oakwood Avenue, and West Hartford Place (Shopping Plaza). In addition, the timing plans and offsets will be modified at the intersections of New Park Avenue and Flatbush Avenue and at New Park Avenue and Prospect Avenue.



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- Installation of fiber optic communication at all five traffic signals located along New Park Avenue (this includes two existing traffic signals at Flatbush Avenue and Prospect Avenue) to improve the communication and reliability of the traffic signal network. The proposed modifications and timing changes of these signals will improve the overall traffic flow through the corridor and reduce delay, unnecessary idling, and emissions.

Element 3: New Britain Complete Streets Network

The New Britain Complete Streets Element will improve pedestrian and bicycle access to Downtown New Britain and its CTfastrak BRT station, reconnecting neighborhoods that were cut off from downtown by Route 72. The improvement will also create new opportunities for TOD by increasing access to and from underutilized land adjacent to downtown. These improvements will build upon recently completed investments such as CTfastrak, as well as ongoing projects like the Transformation of the Main Street Overpass (one of the primary bridges over Route 72) and the implementation of [New Britain's Complete Streets Master Plan](#), which this project partially implements and extends.



Directly to the north of the downtown New Britain CTfastrak station is East Main Street, which is both a major retail destination and one of downtown's primary gateways. This quarter-mile stretch of road, however, presents a challenging pedestrian and bicycle environment with high traffic volumes, high speeds, long crossing distances, a lack of pedestrian-scale lighting, and the presence of Route 72, which separates the area from downtown. Traffic signals on this road are also past their useful life.

To the east of downtown is the triangle formed by Columbus Boulevard, Chestnut Street, and Route 71 (the Harry Truman Overpass). This area was home to the city's police headquarters, which was relocated in 2012, providing an exciting development opportunity in a largely built-out city. The area is dominated by busy roads, however, presenting a challenging environment for pedestrians and bicyclists.

Element 3 Key Facts

- 0.6 miles
- Bicycle Lanes
- Pedestrian Amenities
- Way-finding Signs
- Roundabout Construction
- Complete Streets and Road Diets
- Upgraded traffic signals
- Cycle track
- Transit Signal Priority Framework and System
- Total Cost: \$9.16 million

East Main Street

The portion of East Main Street between Main Street and State Route 71 (Martin Luther King Jr. Drive/Harry Truman Overpass) is a five lane arterial (for most of this stretch) with numerous left-turn pockets and channelized turn lanes. In the middle of this portion of the street is an on-ramp to State Route 72, a sunken limited-access highway running through the heart of New Britain. This section is one of the city's busiest retail destinations and is home to multiple discount department stores, a grocery store (a rarity in this USDA-designated "food desert"), and multiple restaurants. The five lanes (six in some places) of East Main Street are one part of the infrastructure barrier that separates Downtown New Britain from the city's northern neighborhoods. To get from these northern parts of the city to downtown, a pedestrian or bicyclist must traverse the five lanes of East Main Street, six lanes of Route 72 (utilizing one of the four bridges over the expressway), and a railroad track. The same infrastructure (minus the railroad) also separates these neighborhoods from the city's downtown CTfastrak station. Similarly, neighborhoods adjacent to downtown are separated from the shopping district on East Main St, as well as those in neighborhoods such as "Little Poland" along Broad Street, by this unfriendly array of infrastructure.



East Main Street Road Diet Plan

This element addresses these issues in two ways: a road diet and pedestrian improvements.

Road Diet and Traffic Signal Replacement: This improvement will reduce the number of travel lanes on this stretch of East Main Street from five lanes to three lanes (see above). Pocket left-turn lanes will be retained, as will channelized turn lanes providing access to the Route 72 on-ramp. The curb-to-curb width of the street will be reduced from 60 feet to 43 feet.

Traffic signal improvements are also part of this improvement. New Britain is in the process of designing and installing the first phases of a centrally-controlled coordinated signal system. The signal at Main Street and East Main Street and the signal at East Main Street and the Route 72 on-ramp will be replaced with hardware capable of being integrated into this system. As part of this element, a "policy framework" for traffic signal prioritization will also be developed and implemented.

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While the number of travel lanes will be reduced, the element is expected to improve traffic flow. This stretch of the road currently carries 15,000 cars per day, which is generally considered to be supportive of road diets. Furthermore, the upgraded traffic signals, which will be coordinated with other signals in the area, will improve traffic flow at the intersection with Main Street as well as for cars entering Route 72.

Bicycle and Pedestrian Accommodations: The reduction in travel lanes will provide enough room to increase the width of sidewalks along this stretch of road. A 10 foot wide concrete multi-use trail with a 5 foot wide brick paver shelf will be installed on the north side of the street, in front of the New Bright Plaza shopping center and on the south side of the road as well. Street trees will be added to both sides of the street (there are currently none on the south side), providing much needed shade and improving the aesthetics of the street. Pedestrian-scaled decorative lighting will also be installed at 75 foot intervals.

Columbus Boulevard

Columbus Boulevard is a five lane divide road that serves as the northern border of the City's central business district. On the northern side of the road is a railroad track, the CTfastrak guideway, and a shopping center. The south side of the road is currently dominated by the now empty former City of New Britain Police Headquarters, parking lots, and a pharmacy. The portion of the road being considered in this element is separated from downtown by the Harry Truman Overpass, a six lane divided highway that carries Route 71.

The road has previously been identified as a high accident location and presents a number of challenges for bicyclists and pedestrians.

The wide travel lanes with shifting pocket turn lanes promote high speeds. One of the City's primary downtown parking garages empties on Columbus Boulevard, generating high volumes of traffic at rush hour. The two shopping centers and the City's main CTfastrak station are major traffic generators and potentially attractive to bicyclists and pedestrians, but the current configuration of the road is unfriendly.

As with East Main Street, these deficiencies will be addressed through a road diet and bicycle/pedestrian accommodations.

Road Diet: The five lanes of Columbus Boulevard will be reduced to two through lanes and one turn lane. The landscaped median will be retained. These changes continue improvements being



Columbus Boulevard, before and after.

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implemented to the west of the Harry Truman Overpass that are being installed to address safety concerns.

As with East Main Street, the traffic signal at the intersection of Columbus Boulevard and Chestnut Street will be upgraded with hardware capable of being integrated into the city's coordinated traffic signal system. The signal system will be evaluated in the context of a policy framework for traffic signal prioritization.

Bicycle and Pedestrian Accommodations: The reduction in the number of travel lanes will permit the City to install a significant amount of bicycle and pedestrian infrastructure. A cycle track will be installed on the northern side of the road and a hybrid multi-use path will be constructed on the southern side that will serve both bicycle and pedestrian traffic.

These improvements will provide for safer travel along Columbus Boulevard in addition to decreasing crossing distances on a busy arterial. Pedestrian scale lighting will also create a more comfortable environment for non-automotive users (this is especially important as the Harry Truman Overpass stretches above a portion of this road) along with way-finding signing.

Chestnut Street

Perpendicular to Columbus Boulevard, Chestnut Street, between Columbus Boulevard and Route 71 (Elm Street/Harry Truman Overpass), is a six lane road providing access between Route 9 (a limited access state highway) and Downtown New Britain. Land use along this road is dominated by a low-rise post office building, a large parking lot, a three story office building, and one of the City's few undeveloped parcels of land.

The City has identified the north side of Chestnut Street as a prime location for Transit Oriented Development (TOD). The vacant parcel at the corner of Chestnut Street and Route 71 is one of the few undeveloped parcels in downtown. Directly to the north of that is the City's former police headquarters which is currently the subject of a TOD study. Just to the west of the improvement boundaries, along Chestnut St, is the former New Britain Herald Building, another location that is primed for redevelopment. All of these parcels are within walking distance of CTfastrak.

Chestnut Street presents an uninviting pedestrian and bicycle environment. There are no street trees or pedestrian-scale lighting on the north side. The walkability of the area is hampered by cracked sidewalks, crumbling curbs, and the difficulty of crossing six lanes of traffic. Furthermore, the overly wide street encourages speeding, making the street uninviting to bicyclists.

The improvement proposes three interventions on this road: a road diet, a roundabout, and accommodations for bicycles and pedestrians.

Road Diet: At six lanes Chestnut Street is greatly overbuilt. This improvement proposes reducing the number of lanes from six to two with left turn pockets at Herald Square and Columbus Boulevard. New Sidewalks will be installed on both sides of the street, as well as new curbs, drainage, and driveway aprons.



Roundabout: At the intersection of Chestnut Street and Route 71/Elm St, a roundabout will be constructed. An analysis of the intersection’s capacity shows that a one-lane roundabout will be sufficient for this location. A separate project will implement a road diet on Route 71 (the Harry Truman Overpass).

The roundabout will provide an attractive gateway and improve conditions for all users. The roundabout is located at the intersection of two primary links to Route 9 and is a highly visible location. The reduced size of the intersection will result in shorter crossing distances for pedestrians.

Pedestrian and Bicyclist Accommodations: As part of the road diet, new sidewalks and bicycle lanes will be installed on Chestnut Street. The reduction in travel lanes will permit the installation of six foot wide bike lanes on both sides. It will also accommodate wider sidewalks with street trees and pedestrian-scale lighting.

The following summarizes key improvements of Element 3:

- Rebuild portions of East Main Street, Columbus Boulevard, and Chestnut Street as complete streets, including: wider sidewalks with brick treatments; street trees; bump-outs at appropriate intersections; benches at bus stops; narrower travel lanes; upgraded traffic signals; and landscaped medians.
- Rebuild the intersection of Chestnut Street and Route 71 (the Harry Truman Overpass) as a roundabout.
- Perform road diets on East Main Street, Chestnut Street, and Columbus Boulevard.
- Install a cycle track on Columbus Boulevard and bicycle lanes on Chestnut Street
- Define a policy framework for ‘transit signal priority’ along East Main Street and Columbus Boulevard. After a clear assessment of the framework for traffic signal priority, traffic signals and the supporting infrastructure will be upgraded to accommodate transit signal priority.

II. Project Location

This Project is located within Connecticut’s 1st and 5th Congressional Districts. Improvement elements are adjacent to CTfastrak stations within the Cities of Hartford and New Britain as well as the Towns of West Hartford and Newington. All towns fall within the Capitol Region Council of Governments (CRCOG) regional planning boundary which consists of 1,046 square miles in size and approximately 975,000 people. The Capitol Region serves 38 municipalities and currently spans two Metropolitan Planning Organizations (CRCOG and CCMPO). Within the Capitol Region there are more than 528,000 jobs, over 20% of which fall within reach of CTfastrak and the proposed elements. Ten percent of the population within the region does not have access to a vehicle and just over 33% of the Region’s population identifies with an ethnic or racial minority group.

III. Project Parties

The Connecticut Department of Transportation (CTDOT) will be the administrator of the grant, controller/improvement coordinator, and reporting entity. The Capitol Region Council of Governments will be a project partner, assisting CTDOT in the project administration and coordinating with the Cities of Hartford and New Britain, and towns of West Hartford and

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Newington. The above listed municipalities will be engaged in furthering the element designs and implementation details in addition to providing support and guidance as it relates to local public engagement and outreach throughout the process.

Major employers and anchor institutions representing the insurance, educational and healthcare industries will continue be important stakeholders throughout the process. Neighborhood organizations, the Connecticut Department of Energy and Environmental Protection (DEEP), bicycling organizations, and the public will continue to be consulted with throughout the project.

IV. Grant Funds and Sources/Uses of Project Funds

This project requests \$15,000,000, which is 56 percent of the total costs needed to construct the proposed improvements surrounding CTfastrak stations. This TIGER Grant will significantly leverage state of Connecticut and municipal funding sources to improve bicycle and pedestrian access to CTfastrak, construct complete streets, and improve safety. CTDOT is committed to improving this type of infrastructure, as is evident in the commitment to complete streets and bicycle/pedestrian urban connectivity that is outlined in *LET'S GO CT!* (The State's five-Year Ramp Up / Call to Action plan and 30-year vision). A financial match of \$11,850,000 will be provided by CTDOT and the municipalities. The following table details the estimated costs for each Project element.

<i>Element 1</i>	
<i>Hartford West: Pedestrian and Bicycle Enhancements and Complete Streets</i>	
Asylum Avenue – Union Station to Farmington Avenue	\$ 1,170,000
Asylum Avenue - “Trident” Intersection	\$ 3,650,000
Farmington Avenue and Sigourney Street	\$ 3,996,000
Way finding	\$ 334,000
	\$ 9,150,000
<i>Element 2</i>	
<i>Newington/West Hartford Multi-use Trail Extension and Complete Streets</i>	
New Park Avenue (Flatbush Station to Elmwood Station)	\$ 4,476,000
Elmwood Station to Newington Junction Station	\$ 3,730,000
Way finding	\$ 334,000
	\$ 8,540,000
<i>Element 3</i>	
<i>New Britain Complete Streets Network</i>	
East Main Street, Columbus Boulevard, Chestnut Street	\$ 8,826,000
Way finding	\$ 334,000
	\$ 9,160,000
TOTAL ALL ELEMENTS	\$ 26,850,000



Selection Criteria

e. Primary Selection Criteria

i. State of Good Repair

In addition to integrating Complete Street elements into each corridor, this project also proposes to implement any necessary improvements to maintain a State of Good Repair. Currently, pavement and sidewalk deficiencies are evident along all project area roadways with the exception of the recently completed portions of Farmington Avenue in Hartford, portions of Asylum Avenue in Hartford, and New Britain Avenue in West Hartford. Additionally, antiquated traffic signal infrastructure exists at the Asylum Avenue/Farmington Avenue intersection, at the three New Park Avenue intersections located between the CTfastrak Elmwood and Flatbush stations, and along each of the three corridors in New Britain. Many of the signals still display 8” heads (CTDOT and the Manual of Uniform Traffic Control Devices standards are 12”), are lacking in detection and coordination abilities, and are not far sided (this design standard is safer for visibility).

This project addresses the above deficiencies and reaches a state of good repair by replacing or repairing pavement and sidewalks, and upgrading traffic signal infrastructure. Pavement improvements designed for a minimum 20-year life will be provided as needed along all streets. Sidewalk improvements, including construction and reconstruction will not only be made to ensure adequate pedestrian access, but also to upgrade the aging infrastructure while complying with American with Disabilities Act (ADA) regulations. Handicap ramps, truncated domes, pedestrian push buttons, and audible pedestrian signals will all be assessed and improved under this project.



A state of good repair also requires that operational aspects of road infrastructure, such as traffic signals, are maintained. Aging signals will be replaced with new equipment, including 12” minimum signal-heads, and the necessary detection devices and signal coordination abilities, all located as per current standards. Upgraded signals in New Britain and Hartford will be integrated into each city’s centrally coordinated traffic operations system. This will ensure that signal timings can easily be updated and coordinated to respond to changes in traffic patterns. Without the upgraded hardware, future maintenance on traffic signals would require greater amounts of employee time. West Hartford will install fiber optic communication at five traffic signals located along New Park Avenue (this includes two existing traffic signals at Flatbush and Prospect Avenues) to improve the communication and reliability of the traffic signal network

In addition to bringing the roads in this project up to a state of good repair, the proposed improvements will also reduce future maintenance needs and costs by removing unnecessary infrastructure. For example, by rebuilding the intersection of Chestnut Street and Route 71/Elm Street, the City of New Britain will reduce its long-term maintenance costs by removing two city-owned traffic signals; the State of Connecticut will also reduce its costs by removing two state-owned traffic signals. Narrower travel lanes, a result of the proposed road diets, will reduce the

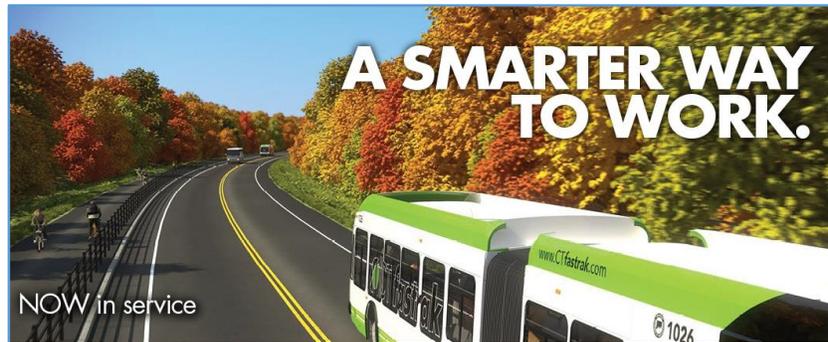
CTfastrak Ladders of Opportunity: Complete Streets to Improve Access between BRT Stations and Employment

square footage of pavement that must be maintained (and eventually replaced) by the municipalities.

CRCOG and its partners recognize that the proposed improvements are not one time fixes. All proposed improvements will be included in relevant maintenance plans for each municipality and will be maintained to a state of good repair in the future. For a project such as this, maintaining a state of good repair is not only important for traditional economic reasons (long-term it is cheaper to maintain pavement than ignore cracks and ruts until the road must be replaced), but becomes imperative in order to create an inviting streetscape that encourages people to use active modes of transportation.

ii. Economic Competitiveness

Within half a mile of the CTfastrak alignment there are over 115,900 jobs that are accessible by either walking, bicycling or directly from transit services (see Appendix C). In addition to existing anchor institutions such as Aetna and The Hartford insurance companies, the 9.4 mile corridor is



beginning to realize property reinvestment and an increase in available TOD sites. Educational institutions such as Central Connecticut State University (CCSU) and the Lincoln Culinary Institute will be immediate beneficiaries of the proposed improvements.

Jobs: CTfastrak, the spine of this project, runs through a suburban corridor between two major job centers in Hartford and New Britain. There are currently over 86,000 jobs within half a mile of the CTfastrak corridor; this number increases to 115,900 jobs when circulator buses are factored into the service shed. This value of 115,900 jobs reflects access to over 20% of the region's entire job base. In the first two months of service, CTfastrak ridership has seen growth almost every week and the provision of a one-seat, no-transfer ride to many major regional employment, healthcare and shopping destinations is promising.

Education: The CTfastrak corridor is strategically located within walking and biking distance of numerous educational institutions. Users of the service have easy access to: CCSU, with four-year and graduate programs; the CCSU Institute of Technology and Business Development, which is home to a business incubator and many of the university's continuing education programs; Capital Community College in Downtown Hartford; Rensselaer Polytechnic Institute's Hartford Campus; Lincoln Culinary Institute; University of Connecticut (UConn) School of Business; and the currently under construction Downtown Hartford Campus of UConn. Together these institutions provide access to a variety of educational opportunities, including: one-time skill-based classes, associate degrees, bachelor degrees, and graduate programs. Connections from CTfastrak are available to the UConn Medical Center, the University of Hartford, Trinity College, and Goodwin College in East Hartford, providing further opportunities.

Development Potential: CTfastrak is presenting a once in a generation opportunity to redevelop this corridor. CRCOG has been actively working with its member municipalities to develop plans to encourage TOD in the station areas. New Britain, for example, is in the process of creating a plan for the redevelopment of the triangle formed by Chestnut Street, Columbus Blvd, and Route 71. This triangle is home to two large parcels that have long been underutilized, partially due to the isolating effect of the transportation infrastructure that surrounds them. Similarly, complete streets improvements on Sigourney Street will assist adjacent TOD sites in the vicinity of the CTfastrak station.

“We’re working to transform Connecticut’s transportation system to boost jobs, improve our economy, and enhance quality of life to build a brighter tomorrow. The early indicators of success of CTfastrak indicate that Connecticut residents are clamoring for a best-in-class transportation system now and in the long term. People are embracing new ways to travel, and a renewed focus on improving our transportation system is good for businesses and residents. CTfastrak demonstrates just that.”

Governor Dannel P. Malloy
Press Release, May 16, 2015

Zero Car Households: Within ½ mile of each improvement element, there are a total of 5,561 zero car households that will realize a benefit from the improvements. According to a 2007 report by the American Public Transportation Association (*A Profile of Public Transportation Passenger Demographics and Travel Characteristics Reported in On-Board Surveys*) over 43% of roadway transit (buses and streetcars) riders live in households with no vehicles available; another 31% have only one vehicle available and 62% of riders reported that no vehicle was available for the trip they were taking when surveyed. Furthermore, over 68% of riders surveyed walked to transit. These results indicate that zero car households, to a greater degree than others, rely on both transit *and* walking. The improvements in this proposal will greatly improve access for these transit-dependent populations.

Quality of Life

This project addresses all six livability principles, established by the Partnership for Sustainable Communities. Significant quality of life impacts, especially in disadvantaged communities, will be realized by this project and the six (6) CTfastrak stations benefiting from improvements. The primary benefits will come from improved non-automotive access to transit services which will provide an affordable and convenient alternative to driving. By providing this alternative, people will have greater access to jobs and greater access to services.

This Project Addresses all Six Livability Principles Established by the Partnership for Sustainable Communities:

- ✓ *Provide More Transportation Choices*
- ✓ *Promote Equitable, Affordable Housing*
- ✓ *Enhance Economic Competitiveness*
- ✓ *Support Existing Communities*
- ✓ *Coordinate Policies and Leverage Investments*
- ✓ *Value Community and Neighborhoods*

Neighborhoods to the north of Downtown New Britain were cut off from downtown (and its adjacent neighborhoods) by the construction of the Route 72 expressway. This project (along with bridge improvements funded by an FTA Bus

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Livability Grant) will help to bridge that gap for pedestrians and cyclists to the Downtown New Britain CTfastrak station. This same trend of dividing neighborhoods by the construction of highways through them is what the City of Hartford has been living with since the construction of Interstate 84 in the late 1950s. The proposed project will strengthen an important north-south roadway that crosses Interstate 84 by constructing bicycle lanes on Sigourney Street and Farmington Avenue and improving the pedestrian network to/from the Sigourney Street CTfastrak station.

The entire region will also benefit by extending the terminus of the CTfastrak multi-use trail northerly between the Newington Junction and Flatbush Avenue intersections (approximately 2.5 miles). On-street alignments will offer an opportunity to strengthen the local pedestrian connections to CTfastrak stations from area neighborhoods. The pedestrian network will also provide recreational opportunities (especially important in this densely developed corridor) that have significant health benefits.

The quality of life improvements that will be realized from this project have been proposed in numerous regional and local plans. CRCOG is a founding member of the Knowledge Corridor Consortium, which recently completed a number of plans funded through a \$4.2 million Sustainable Communities Regional Planning



An artist's rendering of the soon to be rebuilt Main Street Overpass in New Britain

Grant from HUD. With this grant, CRCOG and its partners developed model land-use codes which prioritize TOD and increased livability, a Complete Streets Master Plan for New Britain (which was the genesis of the New Britain element of this proposal), model affordable housing codes, a regional Comprehensive Economic Development Strategy, and transit-enhancement studies. This proposal is a direct extension of the work done under the Knowledge Corridor Consortium.

One recent example that speaks to this livability principle of providing more transportation choices: high school students within the Capitol Region are working to provide bicycles to the homeless and those where transportation is a barrier to getting to work or finding healthy food options, as highlighted in [this article](#).

iii. Environmental Sustainability

This project will reduce environmental impacts by increasing the capacity of the transportation system with zero to negligible increases to the width of any of the subject roads. Through road diets, intersection improvements, and the addition of bicycle lanes, a greater volume and variety of transportation users will be accommodated. As traffic signals are



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replaced as part of this project, equipment that is capable of transit signal priority (TSP) will be evaluated for inclusion in the project. TSP will improve the efficiency of the transit system, reducing emissions, improving reliability, and reducing fuel costs. The end result of these improvements is a more efficient transportation system that reuses existing infrastructure to transport more people.

Reduced vehicle miles traveled and automobile emissions in addition to the inclusion of green infrastructure treatments make the proposed project an environmentally sustainable ‘best practice’ for Connecticut. Being the first BRT system within the State, this project will be the blueprint for how Connecticut should strengthen multi-modal connections to transportation systems.

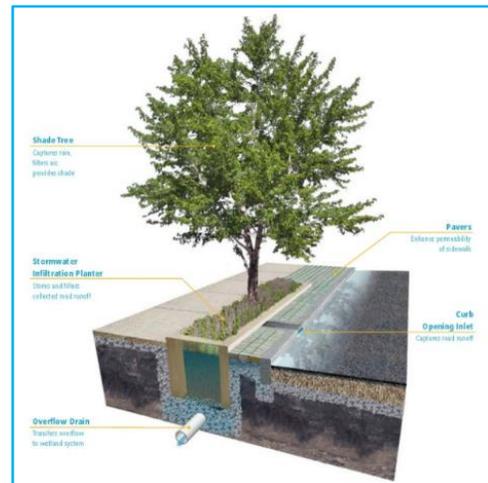
Complete streets improvements are expected to result in a reduction of 54,014 vehicle miles traveled in 2020, resulting in reduced automobile emissions, maintenance costs, oil consumption, noise and congestion. This is a conservative estimate as it does not consider future transit oriented development in the corridor and improvements under this project will likely attract more choice riders. Finally, as part of the complete streets improvements, low cost green infrastructure will be installed where possible. For example, runoff will be funneled to stormwater tree pits in strategic locations to help treat runoff in place and rain gardens will be considered in the complete streets designs.

iv. Safety

CTfastrak Ladders of Opportunity will significantly improve safety by providing enhanced bicycle and pedestrian accommodations, shortening crossing distances for pedestrians, calming vehicular traffic, and improving intersection geometry.

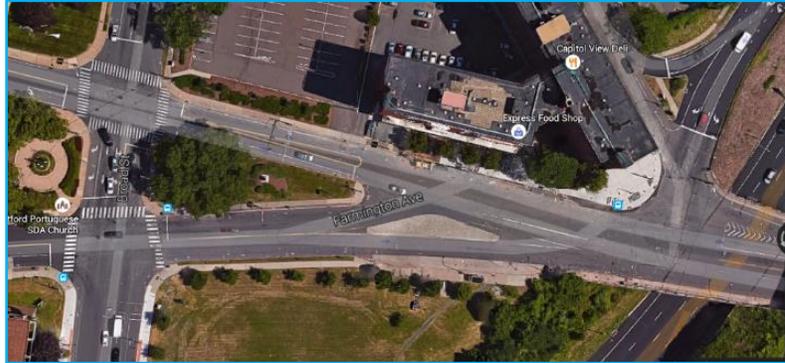
Within the specific improvement areas there were approximately 401 accidents recorded over a three-year period. Of these accidents 13 were pedestrian or bicycle related, none of which were fatal and 12 of which involved injuries. Overall, crashes are expected to decrease by 28% throughout the corridor as per complete streets effectiveness cited by the FHWA.

In addition to the pedestrian and bicycle safety improvements that will be realized by all elements, two specific areas will realize safety benefits:

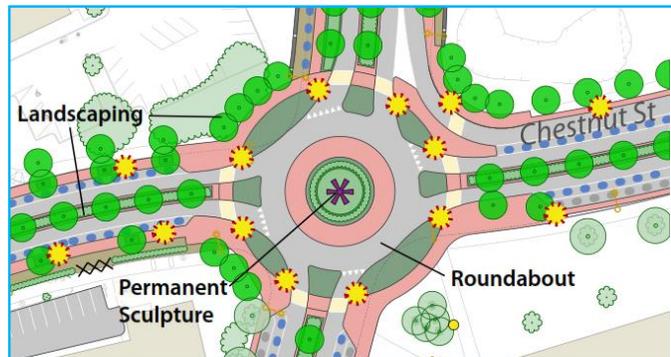


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Complex vehicular maneuvers at the intersection of Asylum Avenue / Farmington Avenue / Broad Street / Cogswell Street will realize safer vehicular movements. Accident records indicate there were a total of 83 accidents at this location over a three-year period, including one involving a pedestrian.



The intersection of Chestnut Street and Route 71 will realize safety improvements by the installation of a roundabout. Accident records indicate there were a total of 12 accidents at this location over a three-year period.



This project also addresses U.S. Department of Transportation Secretary Anthony Foxx's [Mayor's Challenge for Safer People and Safer Streets](#). Hartford is a participating community, working to achieve safer people and streets. CTDOT is a partner in the effort, supporting municipalities in their efforts.

f. Secondary Selection Criteria

i. Innovation

CTfastrak Ladders of Opportunity is one part of a transformation of the Capital Region's transportation system. The CTfastrak service implemented many innovative ideas, such as bus rapid transit, real-time bus information, new transit payment systems, and many innovative construction techniques. This project builds on that innovation by organizing a variety of funding sources and infrastructure solutions to improve regional mobility. Proposed infrastructure ranges from standard bicycle lanes and sidewalks to hybrid multi-use trails, cycle tracks and green infrastructure.

This project could also be considered a statewide best-practice, spanning between two Metropolitan Planning Organizations and continuing partnerships that were established through CTfastrak implementation and the [Sustainable Knowledge Corridor Consortium](#). The mature, established partnerships allow this project to leverage a number of other initiatives such as transit oriented development planning in West Hartford and New Britain, and Federal Transit Administration bus livability funding allocated to New Britain and Hartford. This project further leverages other initiatives as it support infrastructure improvements that connect to the recently designated 'promise zone' in Hartford.

Innovation as it relates to design elements, such as the inclusion of green infrastructure for stormwater management where feasible and the usage of solar panels on bus shelters, will transform areas around CT**fastrak** to be more environmentally sustainable.

ii. Partnership

The CT**fastrak** Ladders of Opportunity project initiated from planning work through CT**fastrak** service planning efforts and through the Sustainable Knowledge Corridor Consortium. Both of these initiatives were interdisciplinary, involving multiple partners (the Sustainable Knowledge Corridor Consortium alone has over 30 partners), including land-use, economic development, transportation, social services, workforce development, and environmental organizations with significant public outreach and stakeholder involvement.

The project is and will be the product of considerable partnerships between local, state, regional, and private entities. Four municipalities (Hartford, New Britain, West Hartford, and Newington) are directly involved in planning and implementing this project. The project is also the product of coordination between two Metropolitan Planning Organizations, CRCOG and the Central Connecticut MPO (which includes New Britain). The four municipalities and two MPOs have been working closely with CTDOT to develop this proposal to best serve CT**fastrak** and integrate with state-initiated infrastructure projects.

The CTDOT and CRCOG have a proven history of working together collaboratively to complete transportation projects within the Capitol Region. Most recently this partnership was realized with the successful opening of CT**fastrak** and it continues with the work being undertaken on the Interstate 84 Reconstruction and the Hartford Rail line projects. CRCOG has positive, ongoing working relationships with all of its member communities, particularly the cities of Hartford and New Britain, and the towns of West Hartford and Newington. As such, all of the necessary relationships are in place to proceed immediately with the implementation of this Project.

Additional project partners include the Connecticut Department of Energy and Environmental Protection (CT DEEP) who supports green, sustainable transportation options as well as Bike Walk CT, downtown districts and major employers within the project area (see Appendix A).

V. Results of Benefit-Cost Analysis

A benefit-cost analysis (BCA) was conducted for CTDOT's CT**fastrak** Ladders of Opportunity project for submission to the United States Department of Transportation (U.S. DOT) as a requirement of a discretionary grant application for the 2015 TIGER program. The complete street elements conceived to enhance CT**fastrak** ridership, safety and quality-of-life are presented as a single project for a 25-year analysis period after construction begins in 2017, with analysis conducted in accordance with the benefit-cost methodology as recommended by the U.S. DOT in the Federal Register (80 Fed. Reg. 18283). The complete analysis and accompanying spreadsheets can be found in Appendix D and Appendix E, respectively.

The project proposes to make investments in complete streets and pedestrian and bicycle systems to six (6) of the eleven (11) CT**fastrak** stations. These will occur in three connected elements as follows:

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1. *Hartford West: Pedestrian and Bicycle Enhancements and Complete Streets* including upgrading and enhancing 5 major intersections, making complete street connections on three major thoroughfares and an enhanced way-finding system for area patrons.
2. *Newington / West Hartford: Walkability Improvements and Complete Streets* which includes pedestrian and bicycle connections and safety improvements around the Flatbush, Elmwood, and Newington Junction CTfastrak stations, while enhancing the recreational potential of a multi-use trail that follows the CTfastrak corridor from its current terminus at the Newington Junction to the Elmwood station in West Hartford.
3. *New Britain: Complete Streets Network* which includes rebuilding portions of East Main Street, Columbus Boulevard, and Chestnut Street as complete streets, rebuild the intersection of Chestnut Street and Route 71 (the Harry Truman Overpass) as a roundabout to improve traffic safety and install a cycle track on Columbus Boulevard with complementary bicycle lanes on Chestnut Street.

Table 1: CTfastrak Ladders of Opportunity Project Costs

Cost Category	Costs (2014 \$)	Present Value Costs (2014 \$ discounted at 7%)	Present Value Costs (2014 \$ discounted at 3%)
Construction Costs (2017-19)	26,848,785	20,872,419	24,045,697
Incremental O&M Costs (2020-40)	462,000	169,962	292,537
Incremental R&R Costs (2020-40)	1,000,000	241,513	537,549
Residual Value (2041)	(7,159,676)	(1,152,209)	(3,223,208)
Total	21,151,109	20,131,686	21,652,575

Operations and maintenance (O&M) costs are projected to average \$22,000 per year. Over the 25-year evaluation period from 2016 through 2040, these costs accumulate to \$462,000 in constant, 2014 dollars, or \$169,962 when discounted back to a 2014 present value using a 7 percent (7%) real discount rate and \$292,537 when discounted at 3 percent (3%). Rehabilitation and replacement (R&R) costs are expected to total \$1.0 million in 2014 dollars over this same period, or \$241,513 when discounted at 7% to 2014 and \$537,549 when discounted at 3% to a 2014 present value.

Overall project costs through 2040, including operating and maintenance (O&M) costs, rehabilitation costs, and an offsetting residual value at the end of the evaluation period total \$21.1 million in constant 2014 dollars. When discounted to a 2014 present value, the overall costs sum to \$20.1 million at a 7% discount rate and \$21.6 million at 3%.

The CTfastrak Ladders of Opportunity Project creates \$38,610,031 in benefits in 2014 dollars using a discount rate of 7%, or \$66,458,886 in benefits in 2014 dollars using a 3% discount rate. The majority of positive benefits resulted from safety (86 percent) and livability benefits (12 percent), typical for complete streets projects. The project benefits by category are summarized in Table 2.



Table 2: CTfastrak Ladders of Opportunity Project Impact and Benefits Matrix

Current Baseline & Problem to be Addressed	Change to Baseline/ Alternatives	Type of Impact	Population Affected by Impact	Economic Benefit	Results Summary (2014 \$ discounted at 7%)	Results Summary (2014 \$ discounted at 3%)	Page Reference in BCA
Incomplete linkages to stations	Additional sidewalks/ bicycle lanes	Reduction in auto use	All drivers in study region and society	State of good repair in terms of reduced vehicular pavement damage	486	839	8
Incomplete linkages to stations	Additional sidewalks/ bicycle lanes	Reduction in auto use	Society	Economic competitiveness in terms of reduced fuel consumption, reduced oil importation, reduced operating expense	169,268	291,113	8 - 10
Level of roadway accidents adjacent to stations	Complete streets/ intersection improvements	Safer roadways, accident reductions	Society	Safety in terms of reductions in accidents	33,376,462	57,446,982	10 - 12
Incomplete linkages to stations	Additional sidewalks/ bicycle lanes	Improved health and increased mobility	Society and surrounding communities	Enhanced livability in terms of improved health, increased mobility, and recreation	5,060,267	8,719,109	13 - 18
Incomplete linkages to stations	Additional sidewalks/ bicycle lanes	Reduction in auto use	Society and surrounding communities	Sustainability in terms of reductions in noise and improved annual health (includes emissions benefit)	3,545	6,102	18-19

Table 3 shows the results of the benefit-cost analysis. At a 7% real discount rate, the project yields a benefit-cost ratio of 1.92 over a 25-year post-construction evaluation period, while using a 3% real discount rate yields a benefit-cost ratio of 3.07.

Table 3: Benefit Cost Analysis Summary Results

Scenario	Net Present Value (2014 \$)	Benefit-Cost Ratio
Case A (7 percent discount rate)	\$18,478,000	1.92
Case B (3 percent discount rate)	\$44,806,300	3.07

VI. Project Readiness

The Project is ready to proceed and has a high degree of readiness. Upon grant notification, design phases of the Project can be immediately accelerated. Designs can be completed by 2017 with construction beginning that same year. It is anticipated that the Project will be fully completed by 2019.

a. Technical Feasibility

The physical nature of the proposed improvements mainly consist of minor shoulder widening, implementation of road diets, implementation of state of the art traffic signal equipment, intersection reconstruction, inclusion of sidewalk amenities (e.g. street trees, lighting, way-finding signs), and sidewalk construction/reconstruction. No significant environmental impacts are anticipated and therefore all work is anticipated to be performed under a Categorical Exclusion. Almost all the proposed work is located within existing state and municipal roadway rights-of-way and the improvements are to be designed utilizing standards and procedures as detailed in the CTDOT Highway Design Manual, Manual on Uniform Traffic Control Devices (MUTCD), American Association of State Highway and Transportation Officials (AASHTO), Institute of Transportation Engineers (ITE), and other authoritative sources. With the exception of the improvements envisioned for the Newington Junction to Elmwood Station segment, cost estimating for each roadway has advanced to a preliminary design level, based on itemized quantity cost estimates including 10% and 25% percentage assumptions for unidentified items, between 10% and 15% for construction contingencies, and between 20% and 25% for construction incidentals (inspection, materials testing, etc.). Additional planning efforts are needed for the Newington Junction to Elmwood Station segment, including selection of the preferred alignment for improvements/multi-use path extension. Therefore, cost estimating for this segment has been advanced to a planning level for each potential alternate alignment, with the figures for the highest costs alignment applied to this application.

The proposed roadwork will employ standard industry construction methods with no major technical challenges anticipated. Perhaps the most challenging design issue will be coordination with affected utilities in the more urban areas. However, both New Britain and Hartford have recently completed multiple nearby projects and have intimate working relationships with affected utility companies. In fact, other City of New Britain initiatives have recently resulted in the completion of the Main Street and Chestnut Street downtown area complete streets projects and Main Street and West Main street complete streets projects (just west of the project area). The City of Hartford is currently completing a similar major complete streets reconstruction effort funded

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through TIGER IV (Intermodal Triangle project). Therefore, both the technical and coordination aspects of this type of work have been recently successfully addressed by both Cities’ municipal staff and their consultants.

b. Financial Feasibility

This Project requests \$15,000,000, which is 56 percent of the total costs needed to construct the proposed improvements surrounding CTfastrak stations. The State is focused on improving this type of infrastructure, as is evident in the commitment to complete streets and bicycle/pedestrian urban connectivity that is outlined in *LET’S GO CT!*, the State’s five-year ramp up plan and 30-year transportation vision. A match of \$11,850,000 will be supplied by CTDOT and the municipalities (see Appendix A).

c. Project Schedule

The Project is ready to proceed immediately. Upon notification, the Project can be swiftly progressed, with a start date of October 2015. Construction would follow in 2017, and the Project would be fully complete by 2018 for Elements 1 and 3 and by 2019 for Element 2. A summary Project schedule is shown below.

		2015				2016				2017				2018				2019			
		Q1	Q2	Q3	Q4																
Elements 1 and 3	Preliminary Design/NEPA																				
	Final Design (including minor ROW)																				
	Obligation, Advertising, and Award																				
	Construction																				
Element 2	Completion of Final Planning Efforts																				
	Preliminary Design/NEPA (S. of N.B. Ave.)																				
	Preliminary Design/NEPA (N. of N.B. Ave.)																				
	Final Design (including minor ROW)																				
	Obligation, Advertising, and Award																				
	Construction																				
<i>Notes:</i>																					
1. Assuming TIGER Award by September 30, 2015																					
2. Dates displayed represent calendar year																					

d. Required Approvals

i. Environmental Approvals

Although National Environmental Policy Act (NEPA) documentation has not been initiated, the vast majority of improvements will be made within existing rights-of-way. The Project, based on CTDOT experience with similar actions, will not involve significant environmental impacts. The Project will not induce significant impacts to planned growth or land use; will not require the



relocation of any of people; will not have a significant impact on any natural, cultural, recreational, historic or other resources; will not involve significant air, noise, or water quality impacts; will not have significant impacts on travel patterns; and will not otherwise, either individually or cumulatively, have any significant environmental impacts. As such, the Project meets the definition contained in 40 CFR 1508.4, and it is anticipated that any improvements would only require a Categorical Exclusion. Environmental analysis and documentation will be undertaken as part of the planning efforts that will occur at the onset of the Project.

ii. Legislative Approvals

It is not anticipated that this Project will require additional legislative approvals. As evidenced by the letters of support in Appendix A, however, this Project has the support of local legislators. In the event that additional approval is needed, CTDOT will ensure that the appropriate approvals are secured.

iii. State and Local Planning Approvals

The CRCOG Long Range Transportation Plan (LRTP), which was updated and approved in April 2015, includes a section on the importance of complete streets as a policy to support a sustainable regional transportation system.

Although the CTDOT Long Range Transportation Plan is not project specific, in 2014 CTDOT adopted a complete streets policy and committed to making complete street considerations a core component of all of the work that CTDOT does. The State is also focused on improving this type of infrastructure, as is evident in the commitment to complete streets and bicycle/pedestrian urban connectivity that is outlined in *LET's GO CT!*.

This Project is not yet included in the Transportation Improvement Plan (TIP) however both MPOs have acted on a resolution to authorize the inclusion of this Project within their respective TIPs by March 30, 2017, pursuant to Federal regulations. The signed resolution and commitment by the MPO boards are included in Appendix F.

It should also be noted that the Project is consistent with local planning efforts in the associated cities and towns.

e. Assessment of Project Risks and Mitigation Strategies

Few risks are anticipated to impede the Project's ability to proceed upon an award of funding. Improvement activities will take place almost exclusively on property owned by the partnering municipalities or state, and therefore only minimal land acquisition activities will be required. Additionally, the match funds are available and the construction materials necessary for completing the Project are readily available. Weather interruptions could impact the project schedule. Such interruptions, however, would most likely be minor, and the schedule could be easily adjusted to work around such natural disturbances. The CTDOT has a strong performance record of completing work on time and within budget, and there are no anticipated risks that would make the Project stray from this trend.

VII. Federal Wage Rate Certification

The grant applicant, CTDOT, agrees to fully comply with the requirements of subchapter IV of chapter 31 of title 40, United States Code [Federal wage rate requirements], as required by the FY 2015 Appropriations Act). A certification letter can be found in Appendix G.

List of Appendices

- A. Letters of Support
- B. Hartford Promise Zone
- C. Map: CT*fastrak* and Jobs Surrounding CT*fastrak*
- D. Benefit-Cost Analysis Technical Paper
- E. Benefit-Cost Analysis Spreadsheets
- F. CRCOG/CCMPO Resolutions of Support
- G. Federal Wage Rate Certification