DEPARTMENT OF DEVELOPMENT SERVICES – PLANNING DIVISION
REPORT: Comments on CRCOG Metro Hartford *RapidRoutes* Transit Priority Corridors Study for Consideration July 26, 2022

STAFF MEMO

TO: **Planning & Zoning Commission**

PREPARED BY: **Owen Deutsch, Principal Planner**
owen.deutsch@hartford.gov

PROJECT: **Capitol Region Council of Governments (CRCOG)**
Metro Hartford *RapidRoutes* Transit Priority Corridors Study

ZONE: **N/A (Citywide)**

TYPE: **Request for Public Comment**

BACKGROUND

In 2017, the Capitol Region Council of Governments (CRCOG), in coordination with the Connecticut Department of Transportation and CTtransit, completed a Comprehensive Service Analysis (CSA) of the CTtransit Hartford Division. The study included recommendations that infrastructure improvements be made in six major transit corridors, which are used by 68% of all Hartford area bus riders: Albany Avenue/Blue Hills Avenue, Farmington Avenue, Franklin Avenue, Main Street/Windsor Avenue, Park Street, and Burnside Avenue (East Hartford) (Figure 1 below).

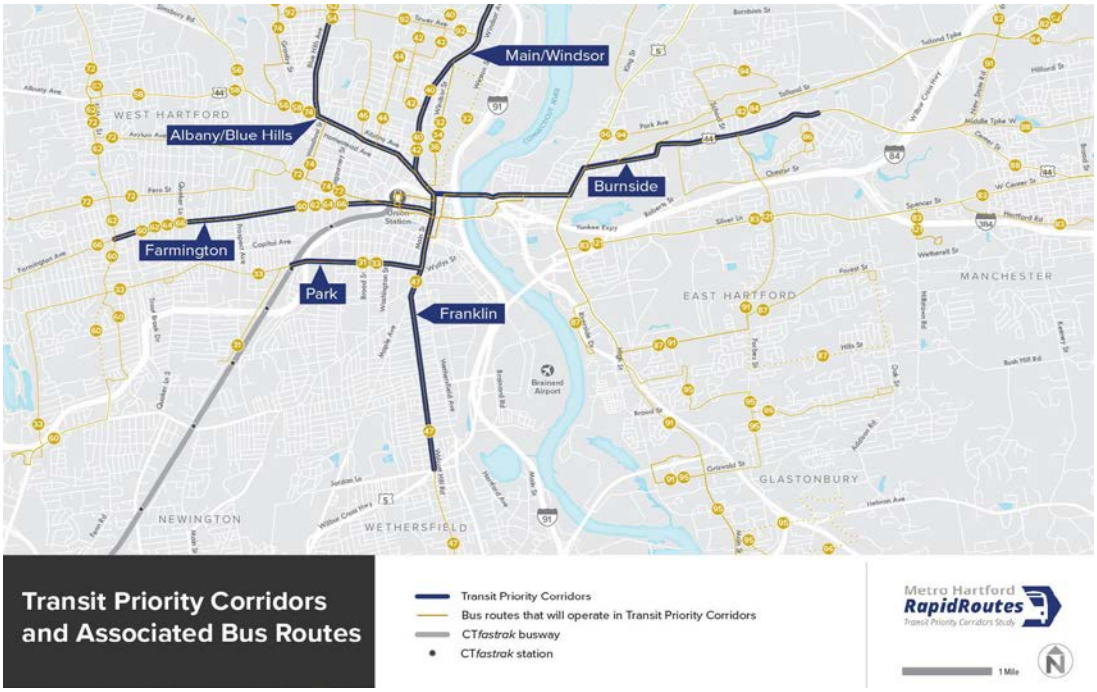

Figure 1. Transit Priority Corridors- *CRCOG*

The Metro Hartford RapidRoutes Transit Priority Corridors Study builds upon the recommendations of the CSA and presents recommendations on how the Transit Priority Corridors should be implemented, for the purpose of better service, reliability and passenger comfort. Six types of recommendations are made:

- Frequent and more consistent service, through schedule adjustments and coordination,
- High quality stops, with a range of facilities and amenities, from "basic stop" to "signature stop", depending on ridership,
- Transit signal priority, by coordinating with State and City agencies to reduce delays at signalized intersections,
- Bus lanes, in the form of dedicated lanes, peak-only lanes, or bus-only segments at intersections ("queue jump lanes"),
- Stop optimization, involving the proposed removal of 128 (40%) of the existing stops in the corridors studied, and
- Level boarding, by raising curb heights at most stops.

Technical analysis was performed by a Working Group and a Technical Advisory Committee consisting of representatives from CRCOG, Connecticut Department of Transportation, CTtransit, City of Hartford, and additional municipalities, planning organizations, and other stakeholders. The public engagement process included a website, survey, virtual public meetings, and four pop-up events. Survey comments and initial public comments are included in Appendix C to the Study.

Staff from the Department of Development Services Planning Division and Department of Public Works provided written comments on CRCOG's RapidRoutes Study during the Study's public comment period. These comments, and a presentation by CRCOG staff and consultants, were reviewed by the City of Hartford Planning & Zoning Commission at its meeting June 28, 2022. The Planning and Zoning Commission was not prepared to endorse the Study at that time, due to questions and concerns which had been raised by City staff and by Planning & Zoning Commissioners, relating especially to recommendations for the removal of bus stops, and the process by which those recommendations would be implemented. City and CRCOG staff were directed to address these questions and concerns, prior to returning to the Commission to seek endorsement of the Study. CRCOG staff and consultants subsequently provided substantial new information and clarification on the Study's recommendations and anticipated implementation process, which City staff found to be adequate for the Commission's continued review at its meeting July 26, 2022.

STAFF RECOMMENDATION

The attached comments are the product of multiple interdepartmental calls and meetings, including staff and Directors of the Planning and Zoning Division and Department of Public Works. CRCOG staff and consultants were responsive to written comments made by City staff, and provided assurances to staff's satisfaction that potential impacts to mobility-impaired riders would be avoided or mitigated. CRCOG will also update the Recommendations and Implementation Strategy section of the Study, to provide further information/clarification on:

- Bus stop spacing,
- Benefits of investment in Transit Priority Corridors,
- Additional opportunities for public input as conceptual designs are advanced,
- Existing review/evaluation processes used by the State for bus stop and service changes, and

- Recommendations for the development of maintenance agreements

The recommendations of the RapidRoutes Study would further the goals of the Plan of Conservation and Development (POCD) with respect to buses (Move 400), specifically: update routings and schedules, create bus-only lanes and bus-priority signals, and add high-quality bus stops.

With this, staff recommend that the Planning and Zoning Commission review CRCOG's response to comments and endorse the recommendations of the RapidRoutes Study. Following the Commission's review, CRCOG will seek endorsement by the Court of Common Council at its meeting September 26, and by the CRCOG Policy Board at its meeting September 28.

A draft resolution follows.

ATTACHMENTS

1. CRCOG Metro Hartford RapidRoutes Study- Comments and Questions with CRCOG Responses

REVIEWED AND EDITED BY;

Digitally signed by Aimee Chambers
DN: cn=Aimee Chambers, o=City of Hartford, ou=Director of Planning, email=aimee.chambers@hartford.gov, c=US
Date: 2022.07.22 11:56:18 -04'00'

Aimee Chambers, Director

CITY OF HARTFORD
PLANNING & ZONING COMMISSION RESOLUTION
COMMENTS ON CAPITOL REGION COUNCIL OF GOVERNMENTS (CRCOG)
METRO HARTFORD *RAPIDROUTES* TRANSIT PRIORITY CORRIDORS STUDY

Whereas, In 2017, the Capitol Region Council of Governments (CRCOG), in coordination with the Connecticut Department of Transportation and CTtransit, completed a Comprehensive Service Analysis of the CTtransit Hartford Division, including recommendations that infrastructure improvements be made in six major transit corridors, which are used by 68% of all Hartford area bus riders; and

Whereas, The Metro Hartford RapidRoutes Transit Priority Corridors Study builds upon the recommendations of the Comprehensive Service Analysis and presents recommendations for implementation, with the goals of improved service, reliability and passenger comfort along the six Transit Priority Corridors; and

Whereas, The recommendations of the RapidRoutes Study include schedule adjustments, upgrades to existing bus stops, transit signal priority, dedicated bus lanes, level boarding, and stop optimization, involving the removal of many existing bus stops identified as impediments to overall efficiency of service; and

Whereas, Staff from the Department of Development Services (Planning Division) and Department of Public Works provided written comments on CRCOG's RapidRoutes Study during the Study's public comment period, for consideration by the City of Hartford Planning & Zoning Commission at its meeting June 28, 2022; and

Whereas, The Planning & Zoning Commission reviewed staff comments, as well as a presentation by CRCOG staff and consultants on the RapidRoutes Study, and directed City and CRCOG staff to address questions and concerns which had been raised by City staff and by Planning & Zoning Commissioners before the Commission could endorse the Study; and

Whereas, CRCOG staff provided responses to the aforementioned questions and concerns in writing and in subsequent meetings with City staff; and

Whereas, City staff found that CRCOG's responses addressed the questions and concerns raised, with substantial new information and clarification of recommendations proposed in the RapidRoutes Study, and of the process through which those recommendations may be implemented; and

Whereas, CRCOG has provided its written responses to City staff comments and a second presentation to the Planning & Zoning Commission, prior to seeking endorsement of the RapidRoutes Study by the City of Hartford Court of Common Council and CRCOG Policy Board; and

Whereas, The recommendations of the RapidRoutes Study would further the goals of the Plan of Conservation and Development (POCD) with respect to buses (Move 400), specifically: update routings and schedules, create bus-only lanes and bus-priority signals, and add high-quality bus stops; and

Now therefore Be It

Resolved, The City of Hartford Planning & Zoning Commission does/does not hereby endorse the recommendations of the CRCOG Metro Hartford RapidRoutes Transit Priority Corridors Study, with the understanding that: no commitment is hereby made regarding maintenance of CTtransit bus facilities by the City, and in any future maintenance agreements non-municipal funding sources should be maximized; and that in the implementation of recommendations for removal of bus stops, due consideration will be given to concerns raised specific to the environment or population local to those stops, and any impacts on riders with mobility challenges will be avoided or mitigated to the extent possible.

Be It Further,

Resolved, This 26th day of July, 2022.

Attachment 1- CRCOG Metro Hartford Rapid Routes Study – Comments and Questions

Responses from CRCOG and its consultants are shown in red.

Background. The CRCOG Metro Harford Rapid Routes Study is intended to examine ways in which to improve the speed and reliability of transit services along the 6 major Metro Hartford corridors: Albany Avenue, Farmington Avenue, Franklin Avenue, Main Street, Park Street, and Burnside Avenue. For more information, the Executive Summary, Recommendations and Implementation Strategy, and other study documents are available at metrohartfordrapidroutes.com.

The Metro Hartford RapidRoutes Transit Priority Corridor Study is a planning study that has identified improvements and progressed them through the conceptual phase. Implementing the recommendations will require close coordination between state and local partners as the project advances through definition, design, and construction. Continued public consultation will also be needed. Ongoing monitoring of traffic and transit operations, shelter maintenance, and service performance will ensure benefits are realized and encourage implementation of similar investment in the future. Following municipal approvals, this study will conclude with approval from the CRCOG Policy Board. These approvals will establish transit priority corridors as a policy priority for the region and will be critical for sustaining ongoing support for transit priority measures, including aligning other planning efforts, directing capital resources, and planning for ongoing maintenance and monitoring.

There are numerous next steps that will need to happen before the implementation of the recommendations from this Study. Using the recommendations from this study as a base, additional coordination and refinement will be required. Next steps include:

- Operations: Before implementing service changes, CT*transit* conducts a Service Review Process. This process is initiated in response to service requests identified from planning studies, internal analysis, and/or service requests from members of the public, businesses, or local governments. In coordination with CTDOT, this process includes analysis of ridership, operational impacts, potential impacts to riders, and costs associated with the service change that is being considered. Based on this analysis, CTDOT determines whether or not to implement the change. For a "Major Service Change," a Title VI review must be conducted to determine if the change constitutes a disparate impact to minority populations, or a disproportionate burden to low-income populations. Impacts on individuals with disabilities may also be gleaned during this analysis, though it is not the primary focus. Due to the density of existing bus stops and the service frequencies and spans within these corridors, the proposed bus stop changes would not qualify as a "major service change." Therefore, the recommendations would not trigger an official Title VI review. However, CT*transit* appreciates the sensitivity of bus stop placement and will work to ensure that any concerns are addressed before implementing changes.

- Engineering/Design: For the proposed capital improvements (signals, bus lanes, shelters, etc.), there will be a need to advance the conceptual recommendations from this study through the design process. This will include substantial coordination between CTDOT and the City of Hartford, as well as CRCOG and other stakeholders, including the public.
- Public Outreach: Both of the above aspects will include public outreach. This could include in-person outreach by representatives from CTDOT's Customer Experience Unit at locations along the corridors, as well as informational signs at bus stops. Ensuring that changes to the system serve riders is a top priority.
- Maintenance: The report outlines several potential approaches to maintenance, but agreements would need to be put in place to ensure the upkeep of the new assets within these corridors.

A resolution of support from the City may reiterate any concerns or expand upon opportunities for continued coordination.

The following questions and comments are the result of an initial review of the draft report:

- **Bus Stops:** Of the 319 bus stops considered by this study, 128 stops (40%) are proposed for removal.

  Comments:

  1. The number of bus stops proposed for removal is a high number and likely a focus of concern for many residents. Almost all of the public comments included in Appendix C (Public Engagement) express opposition to removal of one or more bus stops. The City recommends more explicit highlighting and discussion of this proposal in the body of the Recommendations and Implementation Strategy, possibly as a separate section, including acknowledgement and discussion of the concerns below.
     - Although several written comments expressed concern related to the removal of bus stops, we also heard from 100+ riders during our in-person outreach efforts that they were in support of stop consolidation if it meant better on-street amenities at stops and more efficient and reliable bus service. The majority of the concerned comments are from individuals along the Farmington Avenue corridor. This underscores the need for additional outreach and coordination with individuals within this corridor during the design and implementation phases.
     - While a 40% reduction sounds high, it should be noted that the recommendations show five (5) stops per mile on Farmington, Franklin, and Main. This equates to an average stop spacing of 0.2 miles. Six (6) stops per mile are recommended for Park and Albany, which equates to even shorter maximum walking distances between stops.
     - 98% of residents who are currently within ¼ mile of a bus stop would still be within ¼ mile of a bus stop.

- 93% of residents who are currently within 1/8 mile of a bus stop would still be within 1/8 mile of a bus stop.

2. In the Existing Conditions and Corridor Selection report and Recommendations and Implementation Strategy, it is stated repeatedly that the number of bus stops is a "major reason that bus service is slow", and that "travel time is reduced by eliminating dwell times from unnecessary stops". However, in a table of corridor improvements and projected increases of bus travel speeds (pg. 5 of Recommendations and Implementation Strategy), the percent increase from stop optimization is only estimated at 2-6% (versus as much as 40% for Transit Signal Priority and 23% for bus lanes). Although stop optimization is likely to increase bus travel speeds, the connection is not adequately substantiated by the data provided. Given the significant number of stops proposed for removal, more evidence should be provided indicating that stop optimization will have a significant effect on travel speeds, if this is the case.
    - Closely spaced bus stops prioritize short walks to bus stops over service speed and reliability. By spacing bus stops closely together, the bus network sacrifices service speed and reliability, which results in lower quality service for the majority of riders. Buses that stop more often are slower. They are also less reliable because not all buses will stop at all stops and trips that stop less often will run fast, while those that stop more often will run slow.
    - Consolidating bus stops is widely acknowledged as an industry best practice to reduce travel times, increase reliability, and save on costs without sacrificing ridership. Optimal stop spacing varies based on the density of the urban fabric, with less space between stops recommended in dense downtowns and more space recommended in suburban areas. CTDOT's Statewide Bus Study (2018) recommended a maximum of 4 bus stops per mile in even the densest areas (10+ householders per acre). The recommendations from CRCOG's study are more generous than that standard.
    - According to NACTO, routes with more than 8 stops per mile may benefit the most from stop consolidation treatments. Its experts recommend 5 stops or more per mile only along routes where trips tend to be short and replace walking trips, such as in commercial or entertainment districts. The standard at District Department of Transportation (DDOT) in Washington, D.C. is 5 or fewer stops per mile for local service; Southeastern Pennsylvania Transportation Authority (SEPTA) aims for a similar spacing with stops every 1,000 feet (0.2 miles). Metro Transit has implemented a program redistributing bus stops to be ¼ mile apart, and Human Transit advises that this distance is generally accepted as the farthest a rider will walk to a stop, noting that people are willing to walk farther for more rapid service. The estimated time savings per stop eliminated per trip is 10 to 15 seconds. One study on stop consolidation in Portland, OR, showed that a reduction of 9% of stops reduced travel times approximately 6%. A similar study in San Francisco showed that bus travel times were reduced by 4-14% after rebalancing stops from an average of six stops per mile to an average of fewer than three stops per mile. TransLink developed a bus priority program

that includes stop consolidation (among a few other measures) and estimated annual operational savings of one to two million dollars, that could be reinvested into improving services.

3. Corresponding to the closure of bus stops identified as unnecessary in the study, projections should also be estimated for any increases in rider queuing times and decreases in ridership. It may also be helpful to provide background on why these stops were originally installed, and whether conditions have changed since their installation.
    - Over time, stops have been added throughout the CT*transit* system in response to specific service requests. This has resulted in stop spacing of 8-11 stops per mile within the priority corridors. Current ridership shows that many of these stops are no longer well used, but up to this point there has not been a comprehensive assessment to identify an updated configuration of stops that would result in improved system operations and reliability while causing the least negative impact to existing riders.
4. In the Recommendations and Implementation Strategy (pg. 4), it is stated that four elements to making transit attractive are for it to be frequent, fast, reliable and comfortable. Accessibility is another critical element, especially for those with disabilities or other mobility challenges. The standard used of a quarter-mile walk to bus stops may not be feasible for these riders. Neighborhood and local intersection context is also important for determining the accessibility of bus stops, rather than distance alone. The City recommends more analysis and discussion of this with respect to the stops proposed for removal, in particular in areas which are less walkable or have a higher proportion of residents with mobility challenges.
    - Today, bus stops are spaced too closely together which discourages more people from using transit than they attract; more widely spaced stops will increase ridership. A primary goal of this effort is to make service attractive to more people, and ensure that the proposed stop spacings are accessible to nearly all people. For those that are unable to get to a stop due to mobility challenges, they may be eligible for existing complimentary paratransit services offered by GHTD.
    - In addition, the study included a field review as part of a transportation audit to assess gaps in the bicycle and pedestrian infrastructure along the Priority Corridors. The study team, using the CRCOG Active Transportation Audit for Streets, conducted audits at key bus stop locations along the corridors. A record was made of pedestrian, ADA, bicycle, and traffic facilities and elements at each location. This information can be used as corridors enter into project development, to ensure investment to improve accessibility is considered fully.
    - Signage at stops proposed for removal would be part of the public outreach efforts during the implementation phase. If an individual were to express concerns related to the proposed stop removal, a field visit involving a representative from the Kennedy Center (a rehabilitation

facility that provides transit travel training for persons with disabilities), CT*transit*, and the concerned individual could be conducted to identify if the challenge of the stop removal was strictly related to distance or if it was also a result of the physical environment between the stop to be removed and the nearest option.

5. The ridership data used for identifying unnecessary bus stops is from October 2019 average weekday ridership. Ridership data for 2020 also included in the Study shows a decline in ridership for some stops and an increase in ridership for others, including some of the stops proposed for removal. The bus stops at the intersection of Oxford Street and Girard Avenue were proposed for removal, but appear from public comments to be highly valued. The City therefore recommends more recent and comprehensive ridership data to support the closure of any stops proposed for removal.
    - As part of their service review process, CT*transit* performs a ridership analysis for proposed changes. Updated ridership numbers would be reviewed before finalizing any stop removals. It should also be noted that the Girard Avenue stop was put back into the Study's recommendations following the feedback received.
6. As part of the Cost Estimates section in the Recommendations and Implementation Strategy, the City recommends including estimated reduction in maintenance costs from the removal of stops identified as unnecessary, as well as increase in maintenance costs from the installation of higher-quality stops. Any other costs relevant to maintenance should also be included in this, such as labor and equipment costs.
    - Maintenance costs for basic stops (sign only) is minimal, however since the City is responsible for stop maintenance, this cost savings would best be determined by City DPW. The costs related to proposed improvements in stop amenities is discussed in Chapter 5.
7. The City recommends inclusion of various scenarios or policy options and their anticipated outcomes or trade-offs, such as investing in higher-quality stops or Transit Signal Priority, without stop optimization.
    - The report identifies potential improvements by type and by corridor. Selection of various combinations of improvements would be decided upon during the implementation phase.
8. The City recommends that notice be posted at any bus stops proposed for removal advising local residents and riders of such proposal, and that any comments received be considered in CRCOG's recommendations for which stops are removed or retained.
    - Agreed. Signage at stops proposed for removal would be part of the public outreach efforts during the implementation phase. Based on discussions with CT*transit*, such signs would include an indication that the stop was proposed for removal, information about the closest alternative stop, and a customer service phone number for people to ask questions or express concerns related to the proposed stop removal.

9. The City underscores its limited capacity and funding for maintenance. It is strongly preferred that alternative funding sources for maintenance costs be identified. Alternative funding sources could also help ensure better uniformity in service and approach to maintenance.
    - The report outlines several potential options for how maintenance could be handled. We recognize that maintenance funding and agreements will need to be in place prior to implementation.

Questions:

- For the purpose of increasing bus travel speeds, as an alternative to removing bus stops with low ridership (stop optimization), have "express" routes been considered as an option for these corridors? For clarity, this does not refer to the existing intercity express buses, but rather the concept of additional local routes with streamlined, limited service at major stops. Though not a one-to-one comparison, CTfastrak overlaps with local routes to provide service to major areas.
    - While limited stop service could be considered in the future, the Comprehensive Service Analysis Study, which informed this effort, looked closely at bus service along these corridors and did not recommend a limited stop service, most likely due to the steady ridership along the corridor. Overlay service can also be frustrating on high ridership corridors, as limited stop service typically only serves stops at ½-mile intervals, which would miss many riders. The proposed spacing of bus stops, along with other priority treatments, is intended to provide speed and reliability benefits to all riders without sacrificing transit access.
- The number of higher-quality stops is quite high in comparison to the basic and regular stops. Though higher-quality improvements are appreciated, is there an alternate priority list, in case funding is limited or needs to be shifted to other areas?
    - The proposed bus stop improvements reflect opportunities to improve the transit experience on these high ridership corridors in locations where ridership and proximity to key destinations merit consideration of investment. These proposed high-quality stops are also opportunities to improve sidewalk infrastructure for pedestrians. As these planning level recommendations move into project development, funding and maintenance requirements may inform modifications to the level of investment at each stop.
- What will the anticipated frequency of necessary maintenance be at signature and enhanced stops?
    - Stops will require regular cleaning, and costs associated with ongoing cleaning are assumed at intervals of approximately once per month. The inclusion of trash cans would increase this schedule. Maintenance or repairs due to graffiti or vandalism would be more incident-based.

- Farmington Avenue appears to have more signature and enhanced stops than other Transit Priority Corridors, even those which might be longer or have higher ridership. Is there a reason for this?
    - The project team applied a consistent set of metrics (ridership, transfer locations, nearby destinations, physical constraints) to determine stop-level investment across all corridors.
- For areas further than ¼ mile from the new stop, could an additional stop be added (e.g. Burnside and Main)?
    - The vast majority of proposed stop locations are within a 1/5-mile distance from each other, with the exception of Burnside Avenue which averages ¼ mile stop spacing. The spacing at Burnside and Main is technically 1/3 mile, however this decision was made due to the farther distance to destinations and pedestrian accessibility, reflecting the multiple factors that inform stop placement. The Town of East Hartford has already endorsed the recommendations, which includes the current proposed stop spacing Burnside and Main.
    - Also, during the public outreach process, two stops on Farmington Avenue were reinstated based on public feedback. Additional modifications to stop changes could be considered on a case-by-case basis, but the proposed stop locations reflect the project team's recommendations, with adjustments based on rider input.
- What are the snow removal challenges with the different types of stops?
    - Snow removal would be similar at each stop type as accessibility standards dictate the siting of shelters, so placement and design will be similar across different shelter types.

- **Enhanced/Extended Service:** The City recommends that in addition to studying improvements for more frequent service, CRCOG consider studying options for extended service hours and/or more staggered service along some routes (potentially in advance of or separate from capital improvements, as an interim solution). Is extended service under consideration, and if not, why?
  The 2018 Comprehensive Service Analysis, the study that informed this effort, focused on service improvements. This effort is focused on implementing physical improvements to support corridors with high levels of service. However, improvements to service quality and ridership may lead to future increases in frequency and span on routes that serve these corridors. Any near-term increase in service investment would be the decision of CT*transit* and outside the scope of this study.
    - Is there a particular reason Franklin, as the busiest corridor, only has one route along the entire length? How will frequency be addressed on this corridor? Route 47 seems to have enough ridership to warrant extra service.
      The number of routes is not a direct correlation for level of service. Although there is only one route on Franklin Avenue, that route offers 10-minute weekday service frequency between the Wolcott Hill Park and Ride and Downtown

Hartford from approximately 6 a.m. to 6 p.m., with additional service offered less frequently outside of those 12 hours.

- Like Franklin, is there a particular reason the 40 is the only route along the entire length of Main / North Main Street? The ridership may or may not warrant extra service depending on the breakdown between the different branch routes.
  The number of routes is not a direct correlation for level of service, and segments of this corridor are serviced by at least six additional routes. The existing conditions review did note frequency may not be well matched to demand in the 0.4 miles between Westland and Capen, where service levels are closer to 20-minute frequency, however this section includes proposed bus lanes which could improve service frequency.

- **Ridership Data:** Is there survey information or other data, from this or other studies, that includes:
  - reasons for ridership (e.g. work, school, health, food, recreation, etc.),
  - rider demographics, or
  - information on riders with disabilities or other mobility challenges?
  - Survey information was collected at the beginning of the study to better understand rider needs and desired improvements (Appendix C). While not statistically representative, when considering different travel modes, speed of the transit service was the top priority. When asked about barriers to choosing transit, all comments were associated with bus stops, including:
    - Lack of arrival time information
    - Inadequate snow removal
    - Poor sidewalk conditions or dangerous traffic impacting access
    - Lack of benches and shelters
    - Lack of bike racks
  - CTDOT is anticipated to be conducting a full ridership survey in Fall 2022. This would include all runs of all routes and be conducted in a way that is statistically significant. This information could be used to inform adjustments to stop spacing based on the most recent rider information available.

- **Signalization:**
  - Will the transition to Transit Signal Priority align with and support other signal improvement needs (e.g. equipment or systems)?
    - Yes, it will.
  - Outside of Transit Signal Prioritization, could standard signal improvements be funded to reduce congestion overall for all users?
    - Potentially. If existing signals are not currently timed properly, adjustments will improve travel times for all users, including transit. TSP provides further benefits through prioritizing transit vehicles over oncoming traffic at intersections.

- There has been some shift to concurrent signals for pedestrians and potentially a complementary shift to leading pedestrian intervals. How would Transit Signal Priority work with this?
    - Transit signal priority can be utilized where pedestrian intervals are utilized, as long as there is coordination of signal phases and timing in order to realize benefits for both transit vehicles and pedestrians. In addition, pedestrian signals also benefit transit riders, so it is particularly opportune to coordinate these signal improvements.

- **Real Time Communications:** The City recommends that, in lieu of, or complementary to, the Real Time Display Information, alternative means of communications be considered. One such option is text-based messaging for real-time information, for those without a smartphone or access to standalone display infrastructure. Moreover, this could augment the existing email service alerts that CT*transit* currently utilizes.
    - Such considerations are outside the scope of this study but are something to be discussed with and assessed by CTDOT and CT*transit* during the implementation phase, or potentially in addition to this effort.

- **Prioritization:** The City recognizes the potential for improvements of each corridor identified in the Rapid Routes study. Franklin Avenue would have the higher ridership impact, Park Avenue is the shortest length, and Albany Avenue has the greatest congestion. Farmington Avenue and Main Street improvements would benefit commuters (higher employment density).
    - Chapter 5 discusses the relative impacts of improvements on each corridor to help prioritize investments moving forward. These recommendations are consistent with our findings. Each corridor has independent utility.

- **Street Infrastructure.**
    - Street design recommendations and amenities should align with the City's streetscape design projects on Farmington, Main, and North Main as the City and community have been invested in these designs.
    - Bumpouts/Curb extensions are noted to impede bus priority lane efforts. Could these instead coexist with modifications to a floating/raised platform?
    - The floating platform design should align with the Reimagine Main St concept. Included within the plan was an option for dedicated bus access and platforms at Main St.
    - Where the City's Bicycle Master Plan recommends bike facilities on the Main/Windsor, Franklin, Park and Farmington Corridors, the potential for these facilities should be considered as part of other planned improvements.
    - Recommendations for Main Street should take into account the Arrowhead Gateway Study, DOT's study, and N Main St considerations.

- Is there perhaps If there is an opportunity to introduce a road diet between Victoria Ave and Jordan Lane, this should be considered as part of planned improvements.
- Note: the City is considering a multiuse sidepath on Albany Ave for pedestrians and bicyclists.
- Franklin Avenue has on-street parking, the protection of which is a priority for residents and small businesses.

The project team met with City staff early in the study to identify existing or planned streetscape improvement projects. The development of the proposed transit priority treatments was done with consideration to these projects, working to avoid conflicts and where possible, and to advance more seamless and coordinated improvements.

- **Bus Lanes.**
  - As mentioned above, Franklin Avenue on-street parking should be preserved as much as possible in the context of any street improvements.
  - For streets with poor LOS, how will the bus priority lanes impact street traffic at peak times? Note: ultimately Vision Zero and safety are the priorities; on Farmington, N Main, and Main, the City is anticipating road diets and Complete Streets.
  - Bumpouts/Curb extensions are noted to impede bus priority lane efforts. Could these instead coexist with modifications to a floating/raised platform?
  - On Farmington Ave, bus priority lanes are recommended east of Sigourney Street. Note: the City and DOT are working on a project with some impacts to Farmington in that area. There will be some transition bike lanes in that space. Adjacent property owners may have parking concerns. The Farmington Ave Streetscape also has unique design considerations.
  - The City, in its support for Complete Streets, promotes any opportunity to modify street configurations to allow both bicycle and bus lane use.

  - The project team worked closely with the City early in the study process to consider and mitigate any impacts to on-street parking as a result of bus lanes. The City Parking Administrator was provided a map of all proposed stop locations and lane treatments and concluded that there were no fatal flaws in our proposed concepts. Stop consolidation may also result in new on-street parking opportunities. As the project moves into project development, further analysis can determine if on-street parking impacts require bus stop or bus lane revisions.
  - The project team also identified during its existing conditions review the location of all potential projects, in both planning and development, to avoid any perceived or planned conflicts. We also met with City staff later in the project to review any new development. Modifications to the proposed lanes, including

alternative treatments such as floating/raised platform, could be considered during project development, in order to accommodate bike lanes or other modal needs.

- **Funding.** The City reiterates its limited capacity, and supports funding sources other than municipalities' budgets. In addition to the sources identified for capital funding, other sources recommended for consideration include Safe Streets and Roads, and bus shelter advertising.
    - Great suggestions, and we acknowledge the outstanding concerns related to funding. Chapter 5 of the report discusses potential capital funding sources, including discretionary funds available through the Federal Transit Administration. Partnership models for ongoing maintenance are also discussed.

- **Other Questions/Comments**
    - Alternate Study Locations: The study notes that the 6 major corridors are used by 68% of riders. Among the remaining 32%, will other sub-corridors be considered for future study? (Specifically, the population density and ridership information seem to indicate that New Britain Ave / its surrounding area could warrant further consideration.)
        - CRCOG completed a Comprehensive Service Analysis (CSA) of the Hartford Division of CT*transit* in 2017. The report documents are available at www.crcog.org/csa. That study recommended a series of route-level improvements as well as larger system improvements, including the development of priority corridors. At the onset of the Metro Hartford Rapid Routes Study, we revisited the identification of corridors. This effort confirmed the six corridors, with some adjustments to their endpoints. New Britain Avenue was considered as an additional priority corridor but was not included because ridership was more moderate than the other corridors.
    - When considering stop enhancements, please consider impacts to trees and stormwater runoff treatment.
        - These considerations will be part of the engineering/design process.
    - In the Recommendations and Implementation Strategy section on Cost Estimates (pg. 76), the unit cost of a basic stop is highest ($80,000), compared to higher-quality stops. Why?
        - This is a typo, the cost for a basic stop is $8,000. The table and references will be changed in the final version of the report.
    - Is there any consideration to reduce idling of buses in the downtown area, perhaps by shifting waiting areas to side streets?
        - No. While reducing idling is important, it is outside the scope of this study. The study assumes that the pulse point in downtown remains on Main Street.