

To: CRCOG Transportation Committee
CRCOG Policy Board

From: Cara Radzins, Principal Transit Planner

C: Jennifer Carrier, Director of Transportation
Devon Lechtenberg, Transportation Planner

Date: May 11, 2018

Subject: New Britain/Bristol Comprehensive Transit Service Analysis – Final Report

CRCOG's Comprehensive Transit Service Analysis (CSA) of the New Britain/Bristol Division of CTtransit is nearing completion. This effort, which began in late 2015 following the expansion of the CRCOG Region, included collection of ridership data, an analysis of existing bus routes, a market analysis to identify new areas in need of service, a significant outreach program to stakeholders and the public, and the development of service improvement recommendations. The study area for the effort includes Berlin, New Britain, Plainville, Southington, and the neighboring municipality of Bristol.

The Executive Summary of this effort's DRAFT Final Report is attached to this memo for review by Transportation Committee and Policy Board members. The full DRAFT Final Report and its Appendices are available for download under "Study Documents" on the study website at <http://hartfordtransitstudy.com/new-britain-bristol/>. These DRAFT documents have also been released to stakeholders and interested parties for a final comment period. Comments on the DRAFT documents are due to Cara Radzins at cradzins@crcog.org by June 13, 2018.

We will be looking for the endorsement of the CSA's recommendations by the Transportation Committee, acting as the Policy Board, on June 18, 2018. Once endorsed, the report documents will be considered final, and the recommendations therein can be incorporated into future updates of CRCOG's Long Range Transportation Plan and other planning documents.



New Britain-Bristol Division Comprehensive Service Analysis

FINAL REPORT

DRAFT

MAY 2018



IN ASSOCIATION WITH



EXECUTIVE SUMMARY

OVERVIEW

The Capitol Region Council of Governments (CRCOG), in coordination with the Connecticut Department of Transportation (CTDOT), commissioned a Comprehensive Service Analysis (CSA) to conduct an inventory of transit needs in the Greater Hartford area and review existing services provided by **CTtransit**'s Hartford Division. In the time since the Hartford Division CSA was initiated in late 2014, four municipalities in Central Connecticut have been added to CRCOG's region: New Britain, Berlin, Plainville, and Southington. As a result, the original scope of the CSA was expanded to include analysis of bus service in these added municipalities, as well as service in the neighboring municipality of Bristol.

This CSA is an assessment of the strengths and weaknesses of the existing **CTtransit** services in the New Britain-Bristol Division, and identifies opportunities for service improvement and expansion in the five-town study area. The overall goal of the CSA was to develop recommendations that:

- Improve transit service for the system's current and prospective transit riders
- Ensure that **CTtransit** operates as efficiently as possible by addressing under-performing routes and service redundancy
- Identify opportunities for new service in unserved areas with potential transit demand
- Complement recent and planned transit investments such as **CTfastrak** and the **CTrail** Hartford Line

This document serves as a planning tool for future **CTtransit** bus service in the New Britain-Bristol Division. The recommendations of this study represent a potential scenario and are not a final service plan. The document will serve as an example for improved bus transit service in the study area and provide a potential blueprint for future service. Any service changes will need to be approved by CTDOT and further subjected to **CTtransit**'s service change process including Title VI analysis, public hearings, and/or technical assessments. The public meetings conducted over the course of the CSA were intended to educate and inform the public and study team, but were not intended to replace **CTtransit**'s public outreach process.

PROCESS

The Comprehensive Service Analysis consisted of several tasks:

- **Existing Service Analysis:** A review of the overall transit network in the New Britain-Bristol Division, including local services, major transit facilities, and other regional services.
- **Market Analysis:** An assessment of existing and potential demand for transit service based on population and employment density, socio-economic and demographic characteristics, and travel patterns across the service area. (Figure 1)
- **Identification of Service Issues and Opportunities:** A detailed analysis of each route in the system to evaluate service design, performance, ridership (Figure 2), and opportunities for improvement.

- **Development of Service Scenarios:** Using findings from the market and service analyses, as well as public input, the study team developed two service redesign scenarios aimed at improving ridership and productivity.
- **Preferred Service Scenario:** A set of recommendations designed to improve existing service and meet demand for new service. Final recommendations incorporated elements of the preliminary service redesign scenarios that were mostly well received by stakeholders, and reflected feedback provided online and at public meetings.

At key points in the project, the study team solicited feedback from stakeholders and members of the public. A community survey was conducted both online and at outreach events to reach riders and non-riders, in order gauge service design preferences and priorities. Public and stakeholder meetings were held after the development of the preliminary service redesign scenarios and again after development of a draft preferred service scenario. These meetings coincided with direct outreach to riders at major bus stops and transit centers to share ideas and solicit feedback. Project materials were shared on the project website, HartfordTransitStudy.com/New-Britain-Bristol.

KEY FINDINGS

The CSA was a data-driven process, but recommendations were also informed by the input of various stakeholders, including members of the public, representatives of service-area communities, and *CTtransit* and CTDOT staff.

For each route operated by *CTtransit*'s New Britain-Bristol Division, the study team developed a detailed route profile to evaluate existing service design and performance. Based on this analysis, the study team identified the following issues and opportunities:

Circuitous Route Alignments: Several routes operate along indirect and meandering alignments, or in large one-way loops, rather than traveling along the most direct path. This increases travel time for riders and makes service inconvenient and difficult to understand.

Unproductive Deviations: Many routes deviate from the most direct path to serve stops that are not located along their main alignment, on either some or all trips. In many cases, these deviations generate few or no riders, but force all other riders to travel out of their way and experience longer travel times.

Inconsistent Alignments: Route 502 operates along two different roads on inbound and outbound trips for a two-mile segment of the route, resulting in a walking distance between reciprocal stops of a third of a mile or more. Route 510 operates along different alignments traveling inbound and outbound, essentially operating in a large one-way loop that forces riders to travel out of direction to complete a round trip.

Duplicative Service: Route 502 operates along nearly the same alignment as Route 102, but with much lower service frequency. In addition, on many trips, Route 502 departs soon before or after Route 102, creating additional redundancy along the same corridor without effectively increasing the level of service.

Poor Service Frequency: Route 541 operates hourly service, but serves each of the two variants (north and south of Farmington Avenue) on alternate trips, which means that riders on each variant only have two-hour service frequency.

Inconsistent Branding: Route 542 Bristol Hospital is served by both *CTtransit* vehicles and *CTfastrak* vehicles depending upon the trip, as the route is currently interlined with *CTfastrak* Route 102. This makes service confusing for riders, and also dilutes the *CTfastrak* brand by using premium vehicles on a short, low-ridership route.

Unserviced Market Potential: There is currently no *CTtransit* local service in Southington. Underlying market potential, as well as the location of activity centers and services, indicates potential demand for new local service operating to and within Southington.

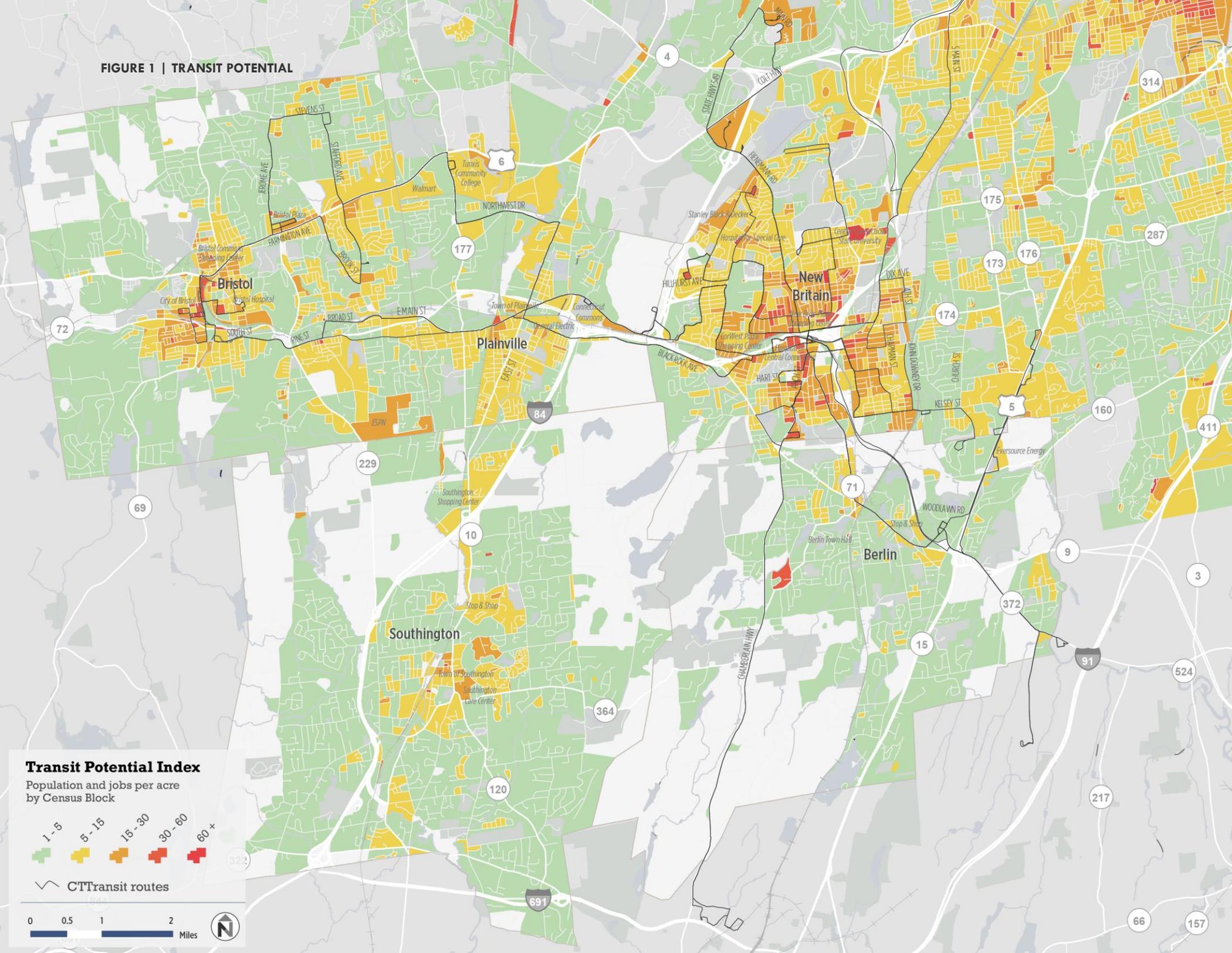
Low Ridership Potential: Route 501 offers fast and direct service between New Britain and Meriden, but the route operates mostly closed-door along the Chamberlain Highway. Other alignments, while approximately five minutes slower, demonstrate higher ridership potential through areas of Berlin that demonstrate underlying demand but are not currently served.

Overcapacity of Service: Route 509 operates every 30 minutes during the AM and PM peak periods on weekdays, but this is largely due to the short length of the route rather than demonstrated demand, as these trips carry very few passengers. Operating hourly service during these peak periods would better match demonstrated demand in the area and could improve productivity, allowing resources to be allocated towards better serving routes with higher demand.

Key finding from the market analysis included the following:

- The strongest market for transit is in New Britain, which has high population and employment densities, as well as high concentrations of individuals with a greater propensity to use transit. As a result, New Britain can support the highest levels of transit in the study area.
- Bristol also demonstrates a strong market for transit service, particularly in and around its downtown, based on population and employment density as well as demographic characteristics. There is also a market for moderate levels of service along Farmington Avenue based on population and employment densities.
- There is a market for service in downtown Plainville, particularly along Route 10. This part of Plainville has the potential to support transit service based on population and employment as well as several demographic characteristics. These characteristics are also present in Southington, especially along Route 10 and in the Plantsville section of town.
- Groups that tend to rely more on transit service are generally located in areas with higher densities that are already served by *CTtransit* today. The exception to this is Southington, where there is a concentration of low-income individuals and older adults that may indicate a need for transit, in addition to population and employment densities that could potentially support a modest level of service.
- There are many areas within the study area that demonstrate a potential market for transit. However, a dearth of corridors with robust transit demand poses a challenge to providing effective fixed-route service connecting these communities.

FIGURE 1 | TRANSIT POTENTIAL



Transit Potential Index

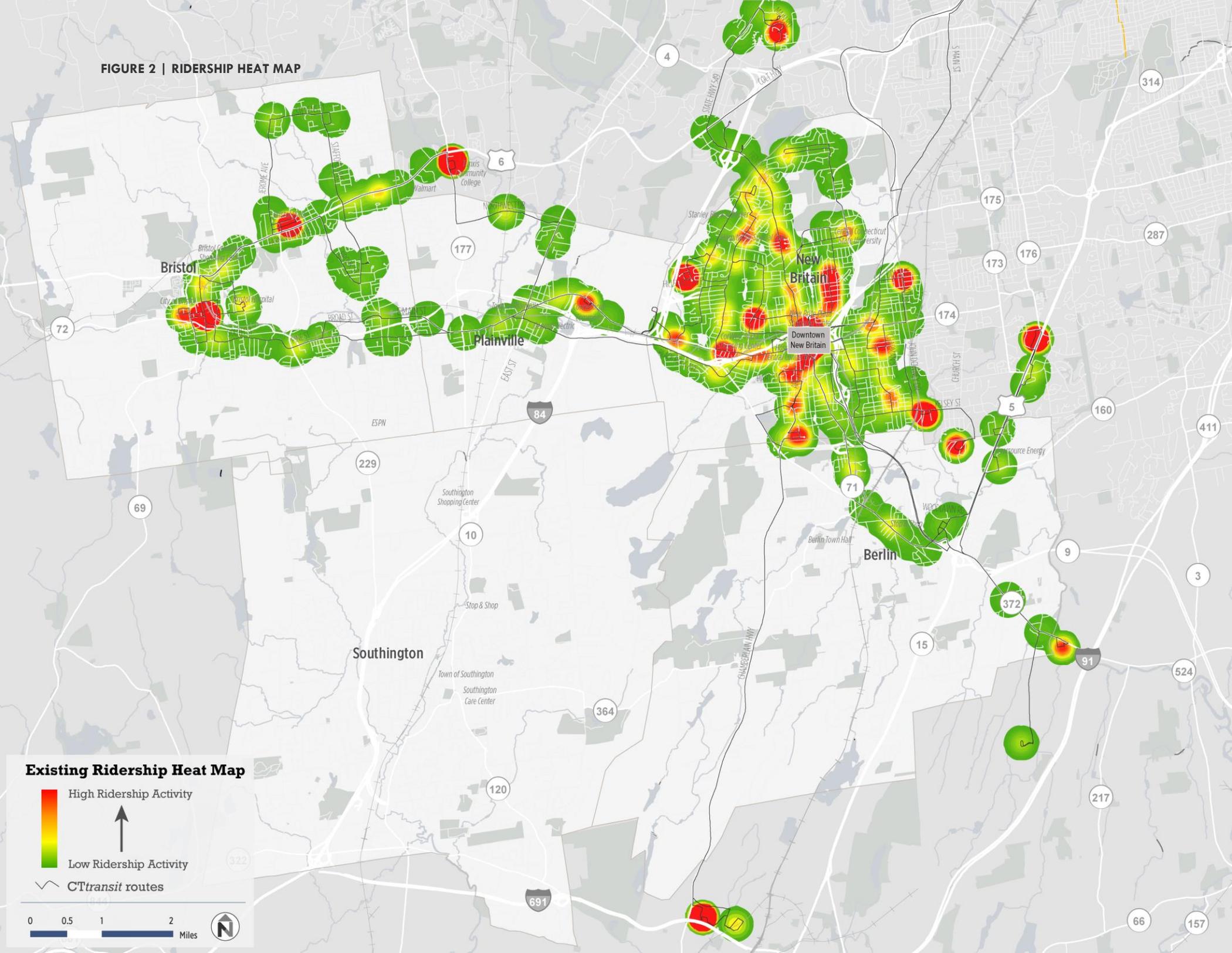
Population and jobs per acre by Census Block



CT Transit routes



FIGURE 2 | RIDERSHIP HEAT MAP



Existing Ridership Heat Map



CTtransit routes



RECOMMENDATIONS

Based on the technical analysis and stakeholder input, the study team initially developed two scenarios for improving transit service in the New Britain-Bristol Division. Each scenario included several improvements to existing services, but with differences in how to provide more direct connections between major destinations, as well as how to design new services to meet unmet demand, including in parts of Bristol, Southington, and Berlin.

The study team then developed a final recommended service scenario that includes elements from both Scenario I and Scenario II, as well as new recommendations developed in response to public and stakeholder feedback. The preferred scenario consists of three phases for implementation. Phase 1 (Figure 3) presents a set of “cost neutral” improvements that can be made almost immediately and within the current operating budget for *CTtransit* New Britain-Bristol Division service. Phase 2 (Figure 4) and Phase 3 (Figure 5) of the preferred scenario represent service expansions – including new coverage and longer service spans – that may be implemented in the future as resources become available.

The recommendations included in the preferred service scenario make several improvements that address the major issues and opportunities identified during the study process:

Streamlined Service: Several routes that currently operate circuitous or indirect alignments would be redesigned to provide more direct, streamlined service. Some deviations to stops that generate few or no riders would be discontinued to ensure that service is faster and more reliable for existing riders. These changes would also make it easier to understand which corridors and destinations are served by each route, making transit service more attractive and easy to use for both current and potential riders.

Simplified Service: Routes that currently operate multiple service patterns or serve different alignments on different trips make service confusing and inconvenient for riders. Recommended improvements would address this by making routes simpler, serving consistent alignments with predictable service patterns.

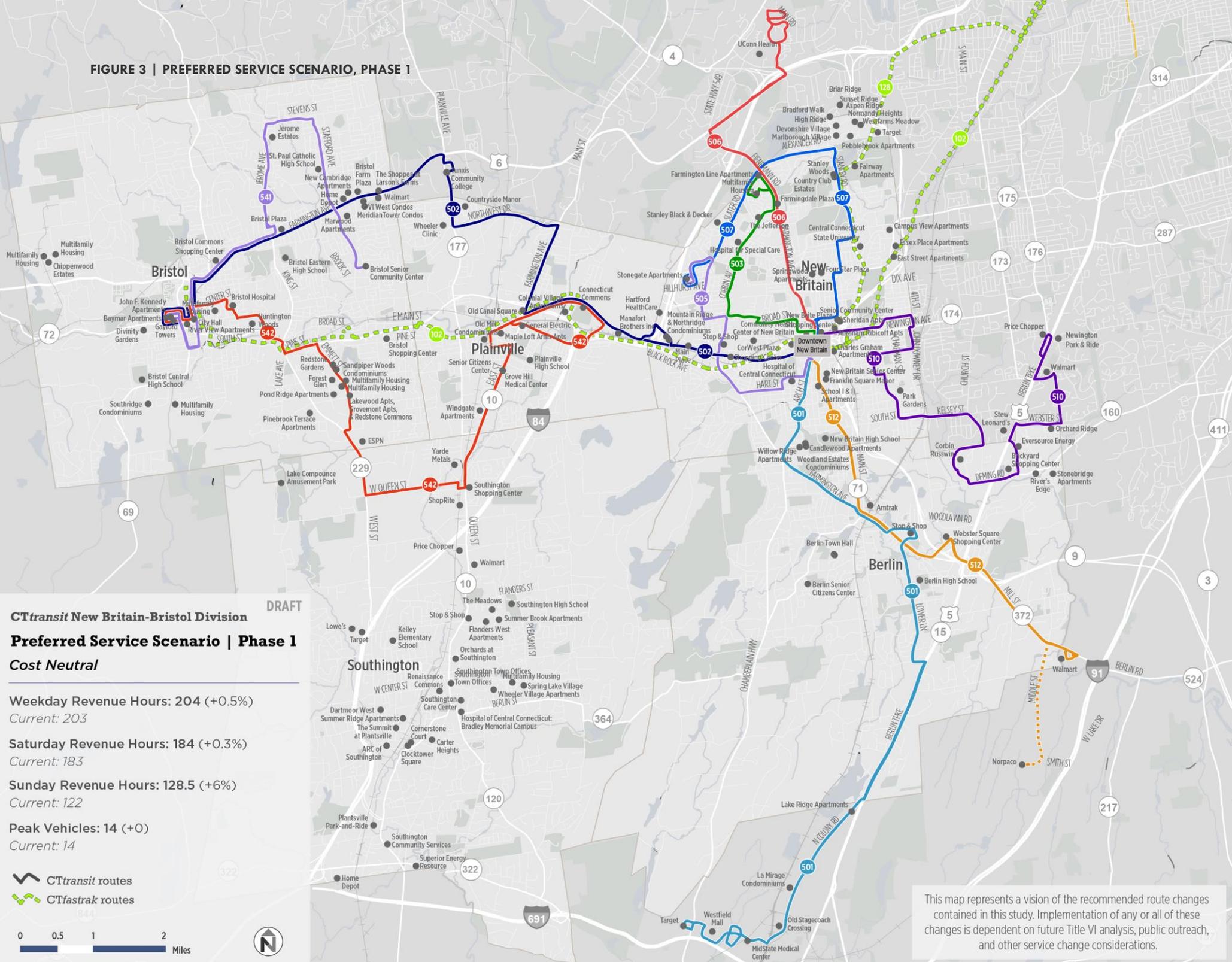
New Coverage: New service would be added in southeast Bristol, southwest Plainville, and Southington with a redesigned Route 542. This new coverage would introduce fixed-route service to areas where density and demographics indicate a demand for service. New service would also be introduced under Phase 3, with a redesigned Route 543 providing direct service from Bristol and Tunxis Community College north to Unionville Center.

Reduced Redundancy: Existing Route 502 provides almost identical service to *CTfastrak* Route 102, but is not coordinated with Route 102’s schedule. Public feedback revealed that riders often use the two routes interchangeably, so it is recommended that Route 502 be discontinued. The resources saved from discontinuing this service would be reinvested elsewhere in the system.

Crosstown Service: Most of the existing system operates radial service, where routes operate to and from downtown New Britain without opportunities for crosstown connections. A new crosstown service opportunity was identified for Route 507, which would be extended west along Alexander Road and south on Slater Road to terminate at Stonegate Apartments. This redesigned alignment also allows for transfers to Routes 506, 503, and 505 at multiple stops along the route.

Serve Stronger Transit Corridors: Most of Route 501’s alignment through Berlin is along the Chamberlain Highway, where it operates nonstop service. To the east, the Berlin Turnpike demonstrates potential demand for fixed-route service, but is presently unserved south of Webster Square Shopping Center. Redesigning Route 501 to operate along the Berlin Turnpike would reallocate existing service to a corridor with stronger transit potential.

FIGURE 3 | PREFERRED SERVICE SCENARIO, PHASE 1



CTtransit New Britain-Bristol Division
Preferred Service Scenario | Phase 1
Cost Neutral

Weekday Revenue Hours: 204 (+0.5%)
Current: 203

Saturday Revenue Hours: 184 (+0.3%)
Current: 183

Sunday Revenue Hours: 128.5 (+6%)
Current: 122

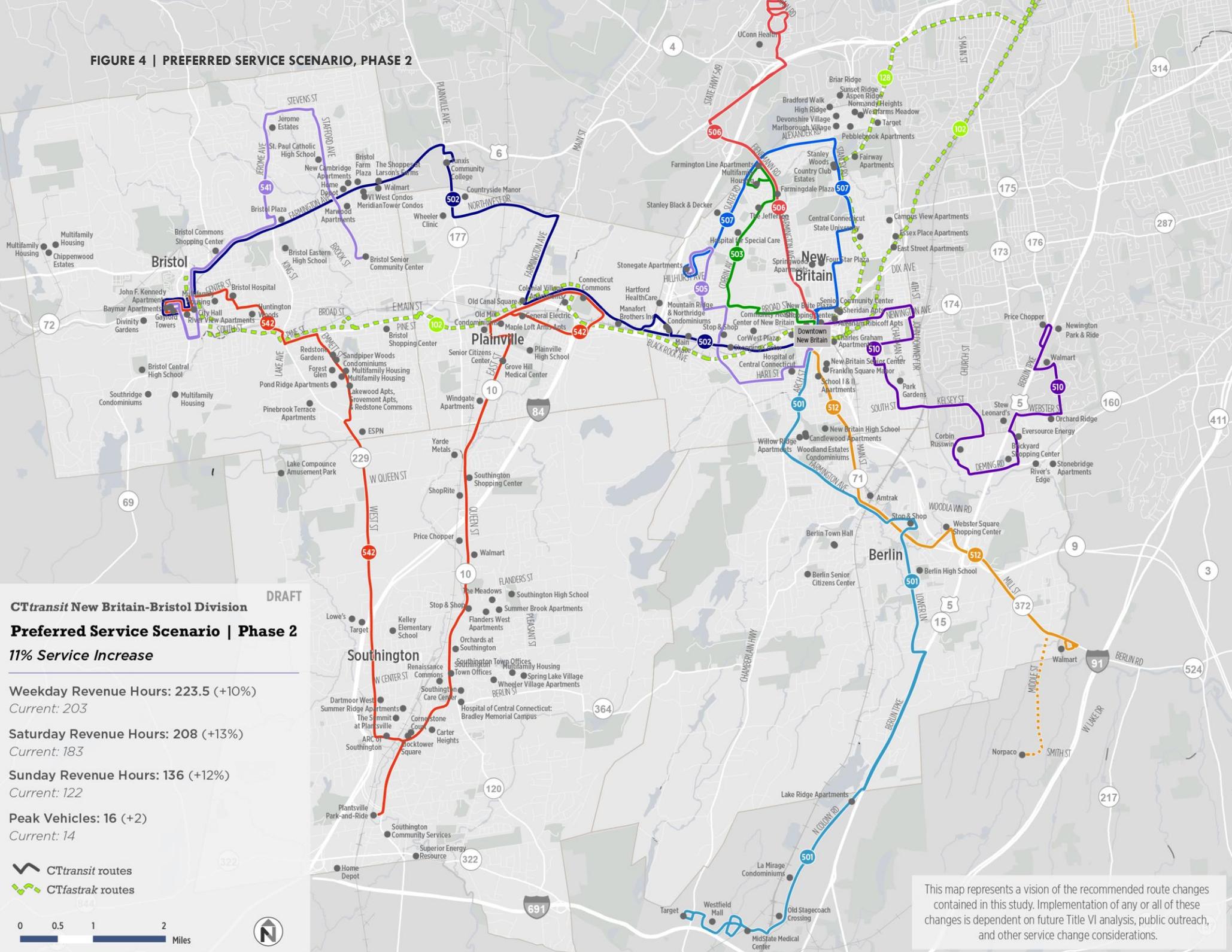
Peak Vehicles: 14 (+0)
Current: 14

CTtransit routes
 CTfastrak routes



This map represents a vision of the recommended route changes contained in this study. Implementation of any or all of these changes is dependent on future Title VI analysis, public outreach, and other service change considerations.

FIGURE 4 | PREFERRED SERVICE SCENARIO, PHASE 2



CTtransit New Britain-Bristol Division
Preferred Service Scenario | Phase 2
11% Service Increase

Weekday Revenue Hours: 223.5 (+10%)
Current: 203

Saturday Revenue Hours: 208 (+13%)
Current: 183

Sunday Revenue Hours: 136 (+12%)
Current: 122

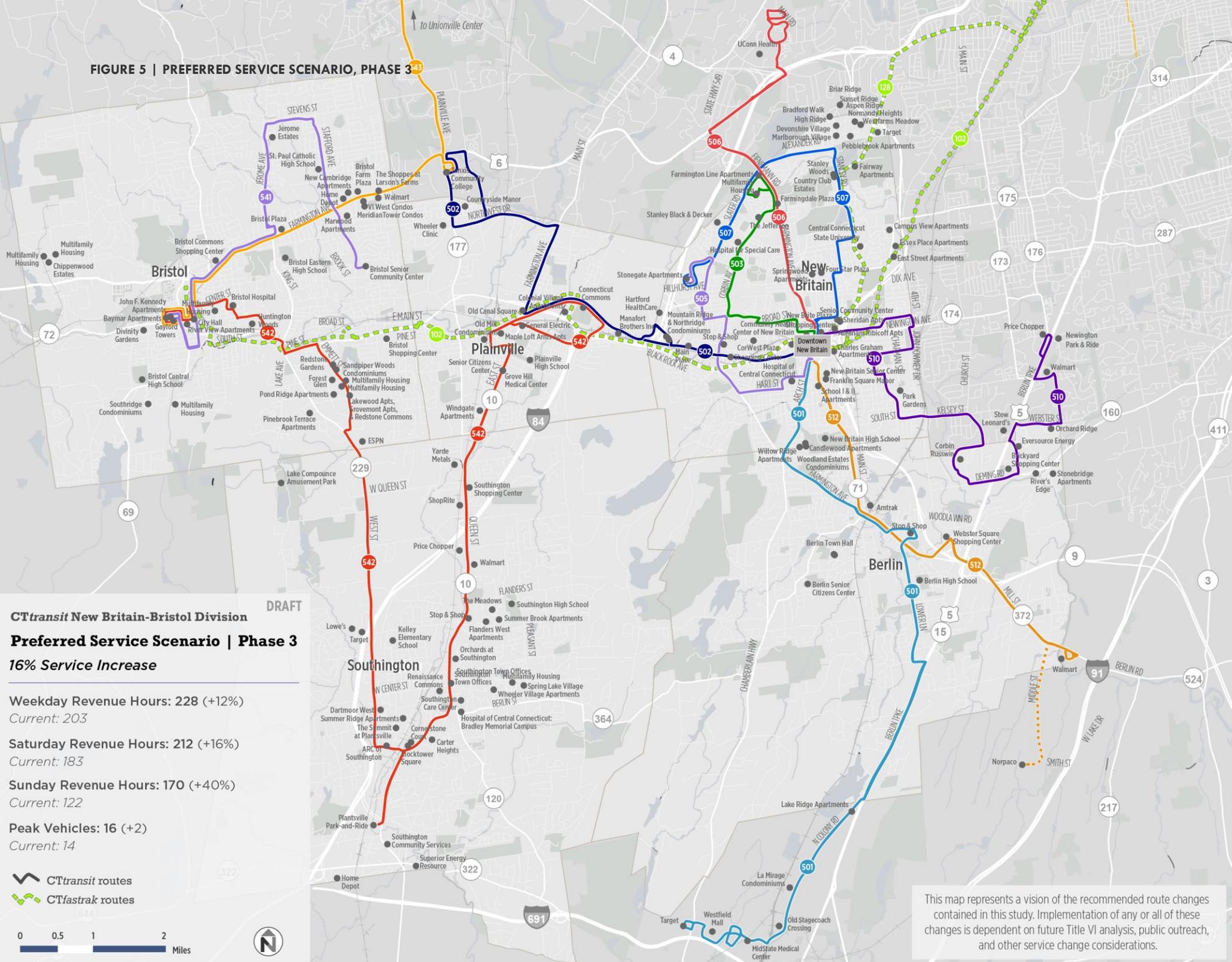
Peak Vehicles: 16 (+2)
Current: 14

- CTtransit routes
- CTfastrak routes



This map represents a vision of the recommended route changes contained in this study. Implementation of any or all of these changes is dependent on future Title VI analysis, public outreach, and other service change considerations.

FIGURE 5 | PREFERRED SERVICE SCENARIO, PHASE 3



CTtransit New Britain-Bristol Division
Preferred Service Scenario | Phase 3
 16% Service Increase

Weekday Revenue Hours: 228 (+12%)
 Current: 203

Saturday Revenue Hours: 212 (+16%)
 Current: 183

Sunday Revenue Hours: 170 (+40%)
 Current: 122

Peak Vehicles: 16 (+2)
 Current: 14

- CTtransit routes
- CTfastrak routes

0 0.5 1 2 Miles



This map represents a vision of the recommended route changes contained in this study. Implementation of any or all of these changes is dependent on future Title VI analysis, public outreach, and other service change considerations.

The preferred service scenario would have implications for ADA paratransit service obligations in the study area. The most significant expansion in coverage under the preferred service scenario would result from new fixed-route service in southern Bristol, southern Plainville, and Southington. The most significant potential loss in coverage would be due to discontinued Route 501 service along the Chamberlain Highway through Berlin. However, under the preferred service scenario, it is recommended that paratransit service continue to be provided under the existing Greater Hartford Transit District system, and that the coverage area be expanded to include any proposed new service. Therefore, under the preferred scenario all existing coverage would remain as it is today, with the addition of coverage expansion where fixed-route service is redesigned or added.

Assuming that existing paratransit service areas continue to be served even if fixed-route service to these areas is discontinued, the paratransit service coverage area under Phase 1 would increase by 21%. Under Phase 3, which represents the complete set of recommendations, the paratransit coverage area would increase by 39%. However, it is important to note that these figures may not directly correlate with how many potential riders may be located within this area, or project how many additional trips would be requested. A more in-depth projection of potential ridership based on the service area and existing paratransit ridership would be needed to provide additional insight into the potential operating costs of expanded paratransit service.

A new approach for providing mobility to residents of difficult-to-serve neighborhoods with transit need is incorporating on-demand services, including subsidized Transportation Network Company (TNC) service, into the broader transit network. TNCs such as Uber and Lyft operate a technology platform that connects drivers of privately owned vehicles with potential passengers via a smartphone application. Passengers are charged a fare, and drivers are charged a service fee for use of the TNC platform. TNC service has the potential to provide a more cost-effective solution for first/last mile connections to the regional transit network than the traditional approach of offering infrequent and often circuitous service using standard transit coaches. However, TNCs are not currently regulated in Connecticut, and thus may present challenges related to compliance with federal and state requirements governing the vetting and training of public transportation operators. To address these concerns, the CSA report also presents a case study for an alternate approach to innovative demand-response service using a dedicated fleet of transit agency-branded small vehicles.

Finally, there are many opportunities to prioritize capital investments to support improved service and make service more attractive to new and current riders. These investment strategies include the following:

- **Passenger Facilities:** Waiting for the bus is a significant part of nearly every transit trip. Well-designed bus stops enhance the transit experience, decrease perceived wait times for transit services, and can contribute to increased ridership. Conversely, poorly designed bus stops can decrease customer satisfaction, make transit less attractive to potential new customers, and make waiting at stops unsafe for riders. Investing in high quality bus stops is often a low-cost, high-reward strategy for transit agencies.
- **Pedestrian Access:** A good pedestrian environment is an essential foundation for good access to public transit. As such, it is critical for attracting new riders, increasing ridership among existing passengers, and improving the overall travel experience. Cities have found that focusing pedestrian improvements at transit facilities and beyond can be an effective way to increase transit ridership.
- **Bus Stop Spacing and Consolidation:** The spacing and placement of bus stops greatly impact transit travel times and reliability, as well as the types of facilities and amenities that can be provided. Stop consolidation can make service faster and more attractive while maintaining convenient access.

Figure 6 groups the study’s recommendations into short-term, mid-term, and long-term implementation phases. While the recommendations in the Comprehensive Service Analysis study provide a potential blueprint for future service, the implementation of any proposed changes will need to be approved by the Connecticut Department of Transportation. In addition, all proposed changes will be subject to CTtransit’s service change process, including Title VI analyses, public hearings, and technical assessments.

FIGURE 6 | IMPLEMENTATION TIMELINE

RECOMMENDATION	SHORT-TERM	MID-TERM	LONG-TERM
Route Adjustments	<ul style="list-style-type: none"> Review current ridership data to verify consistency with findings Assess operational feasibility of new service concepts (Route 501 via Berlin Turnpike, Route 542 to Southington, etc.) Identify recommendations that require additional Title VI or other assessment Implement Phase I service changes that do not require additional assessment 	<ul style="list-style-type: none"> Perform Title VI or other assessments on necessary routes Continue implementing service changes identified under Phase 2 as assessments allow 	<ul style="list-style-type: none"> Continue implementing service changes identified under Phase 3 as assessments allow Perform routine evaluations to ensure that service continues to meet demand
New Services	<ul style="list-style-type: none"> Implement new Route 542 to West Queen Street in Southington 	<ul style="list-style-type: none"> Expand Route 542 farther into Southington to Plantsville Park-and-Ride 	<ul style="list-style-type: none"> Implement new Route 543 to Unionville
Paratransit Service	<ul style="list-style-type: none"> Maintain existing paratransit service coverage, and expand coverage as necessary to complement route adjustments and additions 	<ul style="list-style-type: none"> Expand paratransit service coverage to complement the expansion of fixed-route service in Southington 	<ul style="list-style-type: none"> Expand paratransit service coverage to complement the extension of Route 543 to Unionville
First Mile/Last Mile Connections	<ul style="list-style-type: none"> Consider alternative service models for lower-density areas Identify potential operational or legislative challenges to implementing such models 	<ul style="list-style-type: none"> Implement alternative service options for lower-density areas Support legislation to regulate TNCs in Connecticut 	<ul style="list-style-type: none"> Monitor ridership to determine whether lower-density areas can support fixed-route service