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# Ulster County Transit Systems Integration Plan

## TASK 1 DRAFT REPORT



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Prepared by TransPro Consulting  
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## Introduction

**Task 1:** Update the 2006 Public Transit Integration Analysis and 2012 Transit System Coordination and Development Plan (2012)

The goal of this task is to assess the recommendations of prior integration assessments in the context of current transit conditions and to explore scenarios for system integration.

In exploring the integration of CitiBus and UCAT service, the focus was on the intersection of City service and County service. UCAT has a comprehensive fixed route network that serves the key destinations in the County. CitiBus provides transit access throughout the City. The City of Kingston also has a small geographic footprint relative to Ulster County, but a higher population density. The goal of the integration scenarios was to provide frequent service in the density of the City while connecting the City to the entire County.

To achieve this goal, we explored three integration scenarios: preserving the current routes, preserving the current UCAT routes and adopting the CitiBus route changes from the TSCD report, and a third scenario that incorporates the best of both worlds.

The scenarios presented in this report each generate approximately \$250,000 in annual operational savings. Combining two agencies into one yields some administrative savings, but the largest cost driver of a transit operation is the amount of service that is deployed. If one of the goals of integration is to preserve or expand existing levels of service, then the key driver of operational costs will not be reduced. Thus, the savings generated by system integration will be driven by reduced administrative and infrastructure costs.

## Task 1.1

# Analysis of Current Physical Assets of Citibus and UCAT

### Key Questions to Be Answered

1. What are the current physical assets of CitiBus and UCAT?
2. What assets are available to support an integrated transit system?
3. What redundancies or gaps exist in the combined physical assets?

### Key Question 1:

### What are the current physical assets of CitiBus and UCAT?

#### Fleet

##### UCAT

UCAT maintains a fleet of 31 vehicles. The vehicles range in age from 1 to 13 years and range in size from 26-foot cutaway vans to 35-foot transit coaches. The fleet includes gas, diesel, and hybrid-powered vehicles.

##### CitiBus

Citibus maintains a fleet of 11 vehicles. The vehicles range in age from 1 to 15 years and range in size from vans to 35-foot transit coaches. The fleet consists entirely of diesel-powered vehicles.

Fleet summaries for both agencies are provided in the two tables below.

<b>UCAT Vehicle Fleet</b>				
Model Year	Vehicle	Description	Useful Life <sup>1</sup> (Years/Miles)	Quantity
2004	Orion	30' Transit Diesel	10/350,000	2
2005	Orion	40' Transit Diesel	12/500,000	1
2005	Orion	40' Transit Hybrid	12/500,000	1
2008	Ford	26' Cutaway Diesel	7/200,000	1
2009	Ford	26' Cutaway Diesel	7/200,000	6
2010	Orion	35' Transit Hybrid	12/500,000	5
2012	Gillig	30' Transit Diesel	10/350,000	2
2013	Arcola	26' Cutaway Gas	7/200,000	2
2013	Chrysler	Paratransit Van	4/100,000	1
2014	El Dorado	30' Cutaway Diesel	10/350,000	3
2014	Arcola	26' Cutaway Gas	7/200,000	1
2015	Arcola	26' Cutaway Gas	7/200,000	1
2015	El Dorado	30' Cutaway Diesel	10/350,000	3
2015	Arcola	30' Cutaway Gas	10/350,000	1
2016	Dodge	Paratransit Van	4/100,000	1
<b>Total Vehicles</b>				<b>31</b>

<b>CitiBus Vehicle Fleet</b>			
Model Year	Description	Useful Life <sup>2</sup> (Years/Miles)	Quantity
2002	Coach and Equipment	5/150,000	1
2005	DuPont Trolley	7/200,000	2
2006	Ford Phoenix	5/150,000	1
2007	Gillig 35 Ft. Low Floor	12/500,000	2
2010	Ford Phoenix	5/150,000	1
2011	Gillig 35 Ft. Low Floor	12/500,000	2
2016	Ford Phoenix	5/150,000	2
<b>Total Vehicles</b>			<b>11</b>

*Note: Useful life refers to the expected amount of use of a federally funded transit vehicle. Agencies that dispose of a vehicle that has not met its useful life requirement must account for the non-depreciated value of the FTA's investment in the vehicle.*

## Facilities

### UCAT

UCAT's administration, operations, and maintenance functions are all housed in a single facility. The maintenance shop contains three bus repair bays. One repair bay has an in-ground bus lift, one has a pit, and one has a flat floor. There is also a bus wash bay in the maintenance shop, which is separated by a wall from the three

<sup>1</sup> FTA Circular 5010.1D, Revision 1 (August 2012),

[https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/C\\_5010\\_1D\\_Grant\\_Management\\_Requirements\\_2012\\_Page\\_Changes\\_8-27-2012.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/C_5010_1D_Grant_Management_Requirements_2012_Page_Changes_8-27-2012.pdf), IV-17

<sup>2</sup> Ibid

repair bays. The shop also contains a parts storage area and a fluid storage room. The UCAT facility also includes a fuel island and a tire storage building.

### CitiBus

CitiBus's administrative offices and maintenance facilities are housed in separate facilities located approximately a quarter mile away from each other. The maintenance facility, which is operated by the Kingston Department of Public Works, contains five bus bays. The Department of Public Works facility provides maintenance to other City vehicles in addition to CitiBus vehicles. The Department of Public Works facility also includes a fuel island and a bus wash.

## **Vehicle Storage**

### UCAT

UCAT vehicles are stored at the UCAT facility. Most, but not all, of UCAT's vehicles are able to be stored indoors when no service is operating. UCAT indicates that they routinely store 4-5 vehicles outdoors. There are nine engine block heaters that can be plugged into diesel vehicles that are stored outdoors in cold weather.

### CitiBus

CitiBus vehicles are stored indoors at the Kingston Department of Public Works facility.

## **Equipment**

### UCAT

The UCAT maintenance facility contains the necessary equipment to maintain and operate transit vehicles, including a bus lift and bus wash. UCAT owns all of the equipment in its bus facility, which means that equipment would be available to support an integrated transit system.

### CitiBus

Much of the equipment used to maintain CitiBus vehicles belongs to the City Department of Public Works and is used for other City purposes. City-owned equipment would likely remain with the City and would thus not be available for transfer to the UCAT facility if an integrated system were instituted.

CitiBus owns several pieces of federally funded equipment. Since this equipment is federally funded, it would need to be used for transit purposes should CitiBus cease operations (unless other arrangements were made with the FTA). The federally funded CitiBus equipment is listed in the table below.

<b>Federally Funded CitiBus Non-Vehicle Assets</b>			
<b>ACQUISITION DATE</b>	<b>DESCRIPTION</b>	<b>USEFUL LIFE</b>	<b>USEFUL LIFE ATTAINED (As of December 2016)</b>
11/27/2009	Electronic Security Gate	Unknown	Unknown
7/8/2010	Video Surveillance Equipment	Unknown	Unknown
10/5/2010	Heavy Duty Mobile Lift	15 Years	No
6/21/2010	Vehicle Wash Equipment	20 Years	No

## **Key Question 2:**

### **What assets are available to support an integrated transit system?**

#### **Fleet**

The full UCAT and CitiBus fleets are available to support an integrated transit system. UCAT could acquire CitiBus vehicles under the guidelines described in the Policy Guide submitted in Task 2 of this project.

#### **Facilities**

The existing UCAT facility would be available to operate an expanded UCAT operation.

Availability of the Department of Public Works vehicle maintenance and storage facility for use in an integrated transit system, if needed, would be contingent upon approval by the City of Kingston.

#### **Equipment**

All UCAT equipment would be available for use in operating an integrated transit system.

Equipment owned by the City of Kingston used to maintain CitiBus vehicles would likely not be available for use in an integrated transit system, as such equipment is used by the City Department of Public Works to maintain other City vehicles.

Federally funded CitiBus equipment (listed in the table above) would be available for use in an integrated transit system. The portability of the equipment needs to be considered, however. It may not be feasible to transfer the bus wash from the City facility to the UCAT facility, for example.



### Key Question 3:

#### What redundancies or gaps exist in the combined physical assets?

##### Vehicles

The combined fleets of UCAT and CitiBus would be sufficient to operate an integrated transit system with service equivalent to current service levels. Since there are currently enough vehicles to operate the two separate systems, there would be enough to provide the same service operating under a single agency umbrella. If UCAT chooses to expand service beyond current levels then additional vehicles may be required.

##### Facilities and Equipment

###### Administration

The UCAT facility is sufficient to absorb any current CitiBus administrative staff that becomes part of an integrated system.

###### Vehicle Maintenance

The current UCAT maintenance facility contains three repair bays, one of which has a lift, one of which has a pit, and one of which has a flat floor. While three bus bays are sufficient to maintain a 30-vehicle fleet, adding vehicles to the fleet could strain the capacity of the facility, depending on how many were added. This could in turn affect the timeliness of bus repairs.

To help increase the UCAT facility's maintenance capacity, UCAT can acquire the federally funded mobile bus lift owned by CitiBus and install it in UCAT's flat floor bus repair bay so that all three bays provide mechanics with access to the undersides of buses. This would increase UCAT's ability to conduct maintenance activities that require access to the undersides of buses.

Another option for increasing maintenance capacity within the existing UCAT facility is to reconfigure the layout and create an additional repair bay, if possible.

###### Vehicle Storage

Acquisition of additional vehicles by UCAT to operate an integrated transit system may cause storage space strain at the UCAT facility. As indicated by UCAT, approximately 5 UCAT vehicles are currently stored outdoors each night. Adding additional vehicles would result in more buses being stored outdoors.

While it may be possible to physically position additional vehicles on the UCAT property, doing so could create logistical challenges, depending on how many vehicles were acquired. Such challenges include:

- Buses may need to be positioned tightly end-to-end and side-by-side.
- Buses may need to be parked in columns and rows in the order in which they are scheduled to pull out in the morning. Such a parking process would require nightly management to ensure timely bus pullouts each morning, which would require staff resources.
- Employee and visitor parking space may be impacted.
- Traffic flow on the property could be impeded, which could result in safety issues.
- Diesel buses may not be able to be positioned conveniently for access to engine block heaters in cold weather.

## **Task 1.2**

# **Analysis of current route structures and proposed route changes and evaluation of TSCD route change recommendations**

### **Key Questions to be answered**

1. What is the profile and performance of the current UCAT and CitiBus service structure?
2. How appropriate are the TSCD route change recommendations?
3. What route scenarios can be considered for an integrated transit system?

### **Key Question 1:**

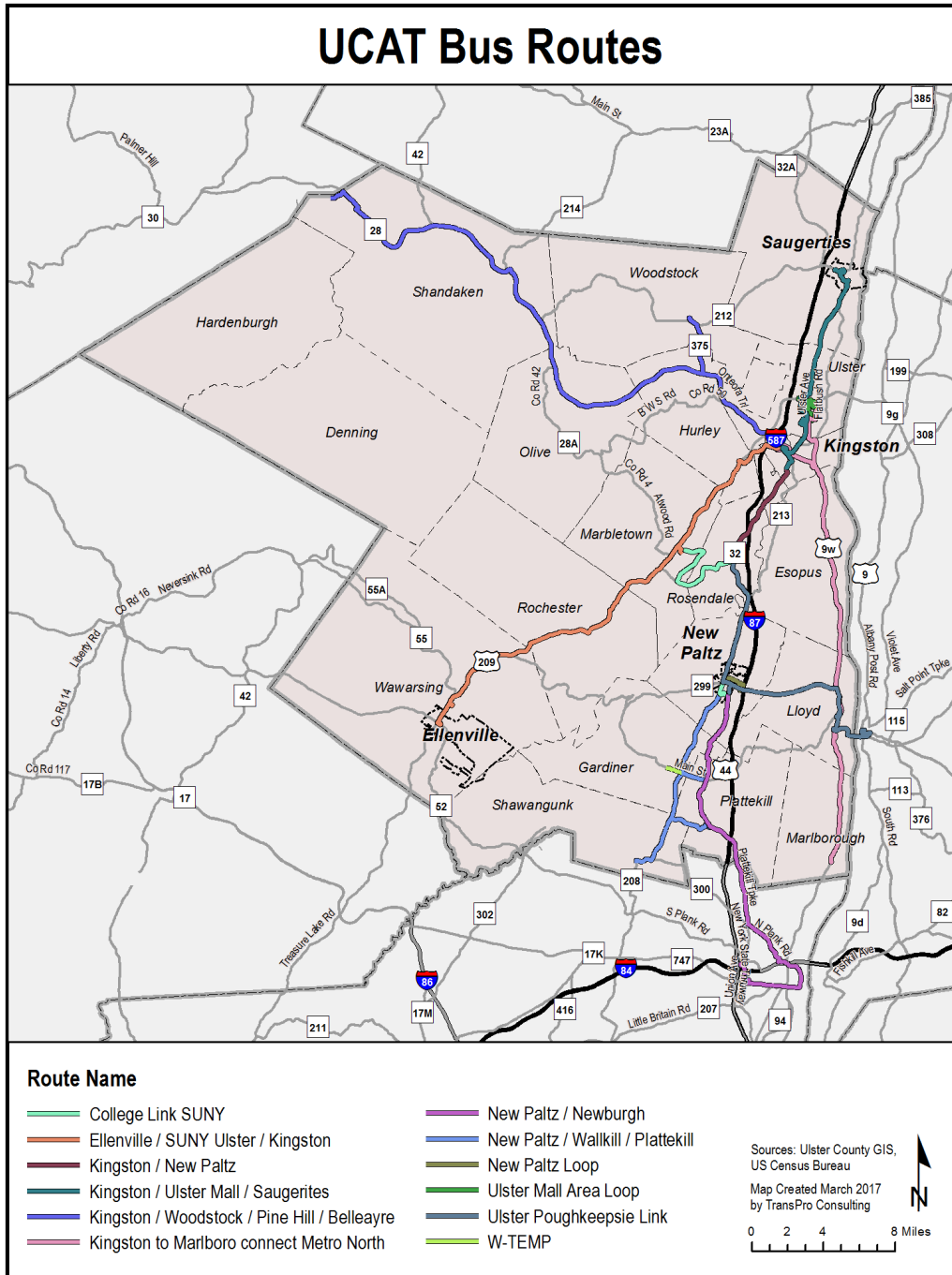
#### **What is the profile and performance of the current UCAT and CitiBus service structure?**

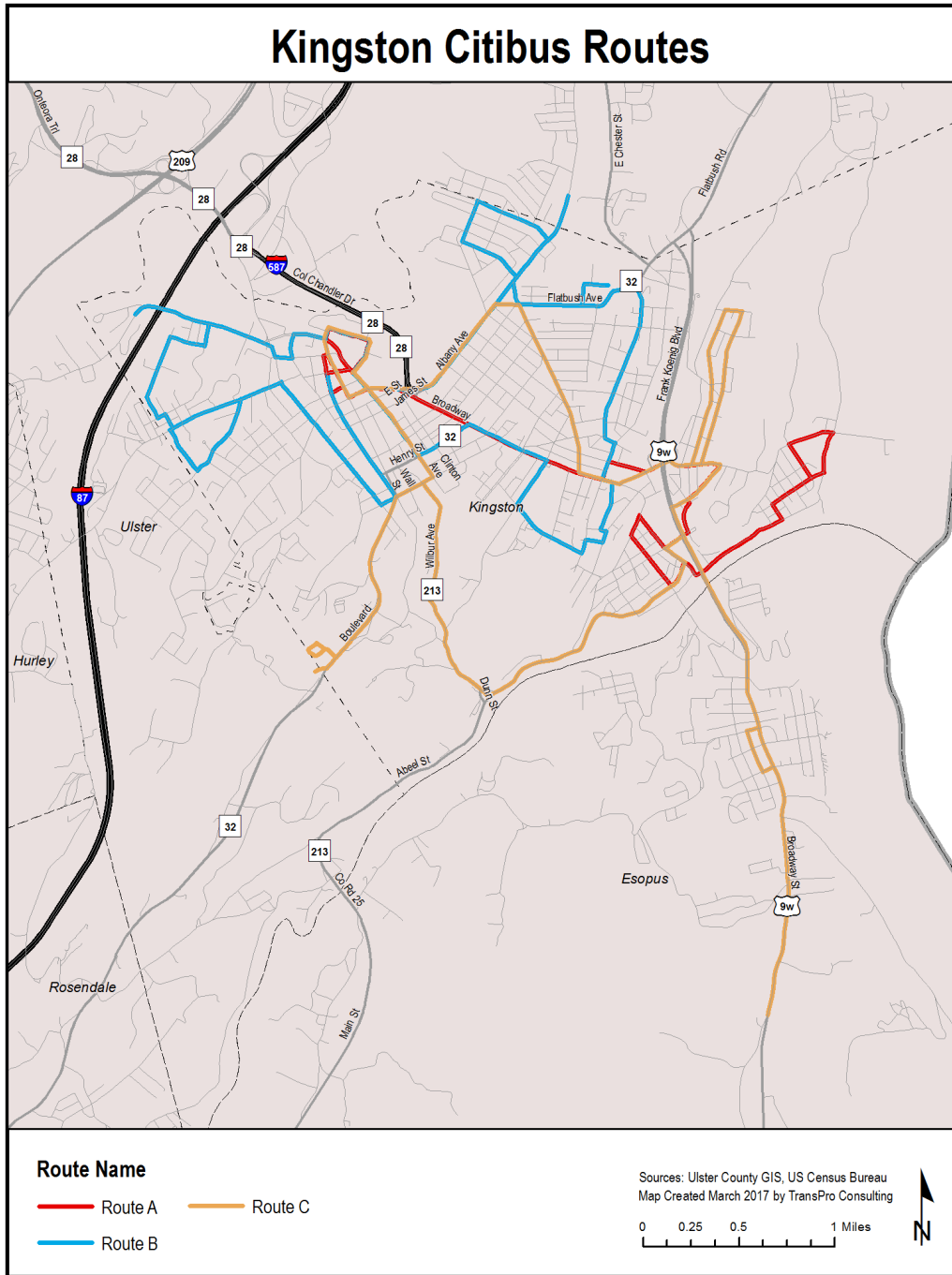
#### **Route Structure**

UCAT operates fixed route service on 11 routes throughout Ulster County. UCAT operates service outside of Ulster County to Newburgh via the X Route.

CitiBus operates fixed route service on 3 routes within the City of Kingston. CitiBus operates service outside of Kingston to Port Ewen via Route C.

The current UCAT and CitiBus route networks are displayed in the following two maps.





### Service Profile

UCAT operates eleven fixed routes on weekdays, five routes on Saturdays, and two routes on Sundays. CitiBus operates three fixed routes on Weekdays and three routes on Saturdays. CitiBus does not operate on Sundays.

The following tables provide an overview of service levels and times throughout the week for UCAT and CitiBus.

<b>Fixed Route Service Summary</b>			
<b>Service Day</b>	<b>Service Element</b>	<b>UCAT</b>	<b>CitiBus</b>
<b>Weekday</b>	<b># of Fixed Routes</b>	11	3
	<b>Fixed Route Service Hours</b>	5:10 AM-10:30 PM	6:25 AM-7:15 PM
<b>Saturday</b>	<b># of Fixed Routes</b>	5	3
	<b>Fixed Route Service Hours</b>	7:50 AM-6:40 PM	8:45 AM-5:20 PM
<b>Sunday</b>	<b># of Fixed Routes</b>	2	
	<b>Fixed Route Service Hours</b>	8:30 AM-6:30 PM	

<b>Weekday Trips and Service Span by Route</b>					
<b>Agency</b>	<b>Route ID</b>	<b>Route Name</b>	<b>Total Trips</b>	<b>1st Time Point</b>	<b>Last Time Point</b>
<b>UCAT</b>	<b>CL</b>	<b>College Link</b>	11	7:45 AM	5:10 PM
	<b>EU</b>	<b>Kingston-Ellenville</b>	18	6:15 AM	10:30 PM
	<b>KPL</b>	<b>Kingston-Marlboro</b>	14	5:10 AM	10:15 PM
	<b>KS</b>	<b>Kingston-Saugerties</b>	28	5:20 AM	10:45 PM
	<b>M</b>	<b>Mall Loop</b>	14	7:00 AM	10:17 PM
	<b>NPL</b>	<b>New Paltz Loop</b>	22	8:00 AM	10:00 PM
	<b>R</b>	<b>Kingston-New Paltz</b>	36	5:20 AM	10:16 PM
	<b>UPL</b>	<b>Rosendale-Poughkeepsie</b>	36	5:20 AM	10:15 PM
	<b>W</b>	<b>Wallkill</b>	4	6:00 AM	6:50 PM
	<b>X</b>	<b>New Paltz-Newburgh</b>	8	6:30 AM	8:30 PM
	<b>Z</b>	<b>Kingston-Woodstock-Pine Hill</b>	14	5:10 AM	8:10 PM
<b>CitiBus</b>	<b>A</b>	<b>A</b>	11	6:30 AM	7:10 PM
	<b>B</b>	<b>B</b>	11	6:30 AM	7:10 PM
	<b>C</b>	<b>C</b>	11	6:25 AM	7:15 PM

<b>Saturday Trips and Service Span by Route</b>					
<b>Agency</b>	<b>Route ID</b>	<b>Route Name</b>	<b>Total Trips</b>	<b>1st Time Point</b>	<b>Last Time Point</b>
<b>UCAT</b>	<b>EU</b>	<b>Kingston-Ellenville</b>	4	10:30 AM	6:40 PM
	<b>KS</b>	<b>Kingston-Saugerties</b>	10	7:50 AM	6:10 PM
	<b>NPL</b>	<b>New Paltz Loop</b>	15	10:00 AM	6:25 PM
	<b>UPL</b>	<b>Rosendale-Poughkeepsie</b>	10	8:30 AM	6:30 PM
	<b>Z</b>	<b>Kingston-Woodstock-Pine Hill</b>	4	7:50 AM	4:15 PM
<b>CitiBus</b>	<b>A</b>	<b>A</b>	7	9:30 AM	5:00 PM
	<b>B</b>	<b>B</b>	6	9:30 AM	4:30 PM
	<b>C</b>	<b>C</b>	8	8:45 AM	5:20 PM

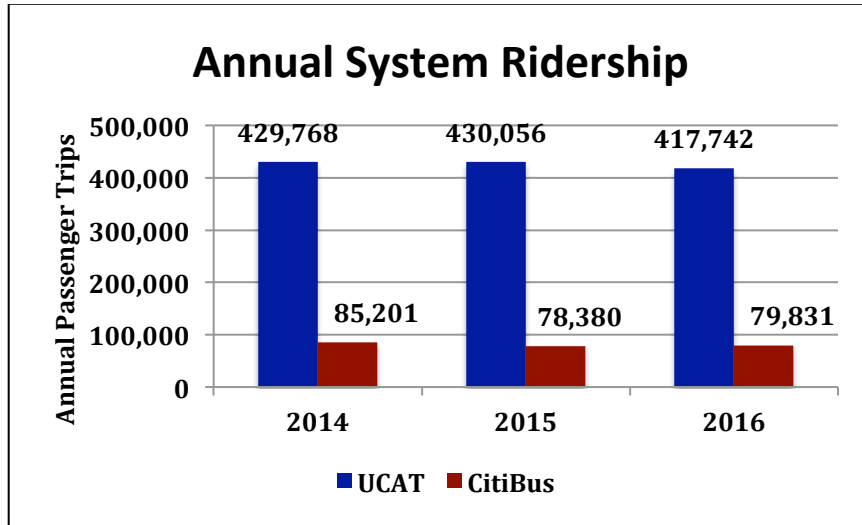
<b>Sunday Trips and Service Span by Route</b>					
<b>Agency</b>	<b>Route ID</b>	<b>Route Name</b>	<b>Total Trips</b>	<b>1st Time Point</b>	<b>Last Time Point</b>
<b>UCAT</b>	<b>NPL</b>	<b>New Paltz Loop</b>	15	10:00 AM	6:25 PM
	<b>UPL</b>	<b>Rosendale-Poughkeepsie</b>	6	8:30 AM	6:30 PM

In addition to fixed route service, UCAT provides rural demand-response service throughout the County. UCAT's rural service locations vary throughout the week, serving different parts of the County on different days of the week.

Both UCAT and CitiBus provide ADA complementary paratransit service.

**Annual System Performance**

UCAT provides approximately 400,000 annual rides. CitiBus provides approximately 80,000 annual rides. Annual ridership totals for both agencies are indicated in the following graph.



**Weekday Route Performance**

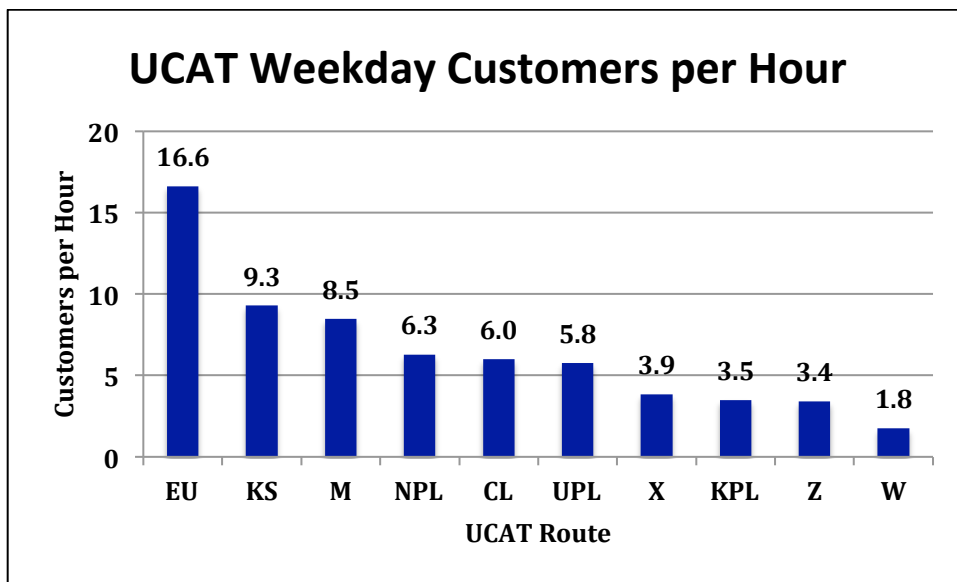
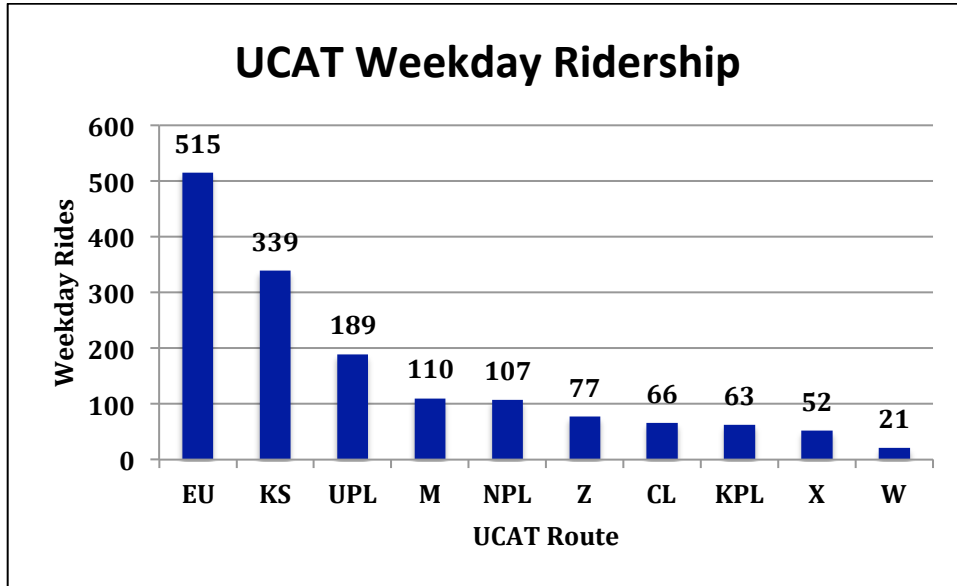
UCAT fixed route service provides approximately 1,500 rides per weekday. Daily route ridership ranges from 21 on W Route to 515 on EU Route.

The statistic Customers per Revenue Hour provides a reference for normalized productivity comparisons between routes. The most productive UCAT route is EU route, which carries 16.6 Customers per Revenue Hour. The least productive UCAT route is W route, which carries an average of 1.8 Customers per Revenue Hour.

UCAT weekday route performance is illustrated in the table and graphs below.

Weekday UCAT Performance by Route			
Route	Customers	Revenue Hours	Customers per Hour
CL	66	11.00	6.0
EU	515	31.00	16.6
KPL	63	18.00	3.5
KS	339	36.50	9.3
M	110	13.00	8.5
NPL	107	17.00	6.3
UPL	189	32.75	5.8
W	21	12.00	1.8
X	52	13.50	3.9
Z	77	22.50	3.4
<b>Overall</b>	<b>1,539</b>	<b>207.25</b>	<b>7.4</b>





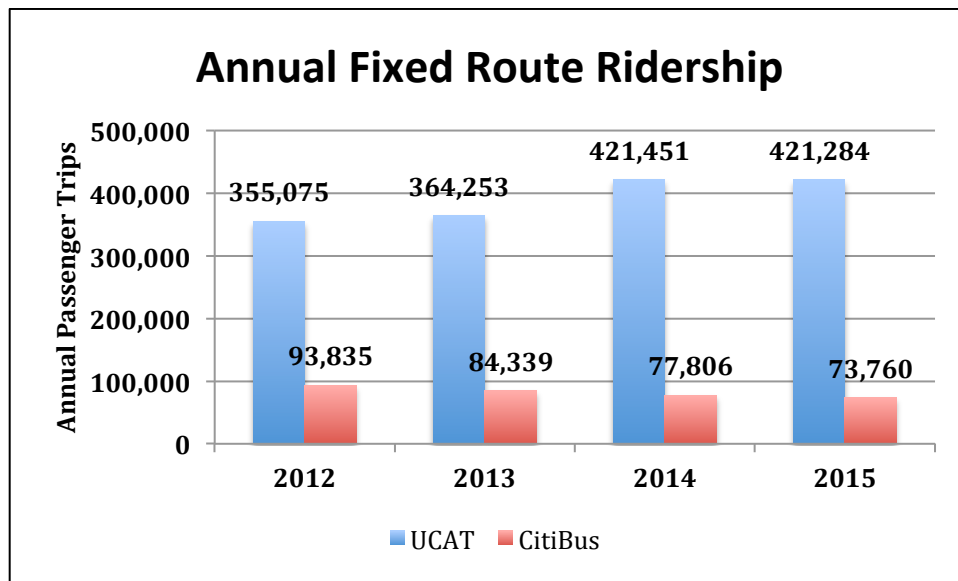
## Key Question 2:

### How appropriate are the TSCD route change recommendations?

The 2012 TSCD report identified route change recommendations for both UCAT and CitiBus fixed route services. While the TSCD report discussed the concept of system integration, no specific recommendations were made for an integrated route configuration. The recommendations made were specific to each system.

#### Impact of Route Recommendations

UCAT implemented multiple route change recommendations from the 2012 TSCD report. One criterion for determining if the route recommendations were appropriate is whether or not ridership increased as a result of the implemented recommendations. As illustrated in the graph below, UCAT fixed route ridership increased after the route changes were implemented. While it cannot be stated with full certainty that the ridership increase was a direct result of the route changes, it can be seen that the ridership increase coincided with the timing of the route changes.



In addition to a ridership increase, UCAT experienced a productivity increase after TSCD recommended route changes were implemented. UCAT's weekday fixed route Customers per Revenue Hour increased from 6.9 in 2012 to 7.4 in 2016, which represents a 7% increase.

CitiBus did not implement the route recommendations outlined in the 2012 TSCD report. As evidenced by the ridership decrease illustrated in the above graph, CitiBus did not enjoy the benefit of a ridership increase that the route changes may have generated.

Since the TSCD CitiBus route recommendations were not implemented, they cannot be evaluated in terms of their effect on ridership. They can, however, be evaluated based on whether or not the recommendations as written achieved their stated design goals.

The CitiBus route change recommendations in the TSCD were designed to preserve key origins and destinations, eliminate little-used route segments, reduce travel time by converting the routes from one-way loop routes to two-way point-to-point routes, and increase service frequency<sup>3</sup>.

<b>Evaluation of TSCD CitiBus Route Recommendations Compared to Service Goals of Recommendations</b>	
<b>Service Goal</b>	<b>Result of Recommendations</b>
<b>Preserve key destinations</b>	Goal partially achieved (Most destinations preserved. Key destinations not preserved include Golden Hill, Stony Run Apartments, Colonial Gardens Apartments)
<b>Eliminate little-used segments</b>	Goal achieved
<b>Reduce travel time</b>	Goal achieved
<b>Increase service frequency</b>	Goal achieved

As illustrated in the above table, were CitiBus to implement the TSCD route recommendations customers would experience the benefits of increased service frequency and reduced travel time. These benefits would be accompanied by the loss of several key CitiBus destinations. Some of these destinations could be served by existing CitiBus routes in an integrated system.

#### **Service to Traditional Demand Generators**

In evaluating current service and contemplating service changes, it is important to determine if the transit network serves key community locations. For example, concentrations of retail are known generators of transit demand. It is important to assess whether or not the transit network is serving these demand generators. This assessment is accomplished with a geographic analysis.

There are a number of demographic characteristics and key locations that traditionally generate transit demand. These include:

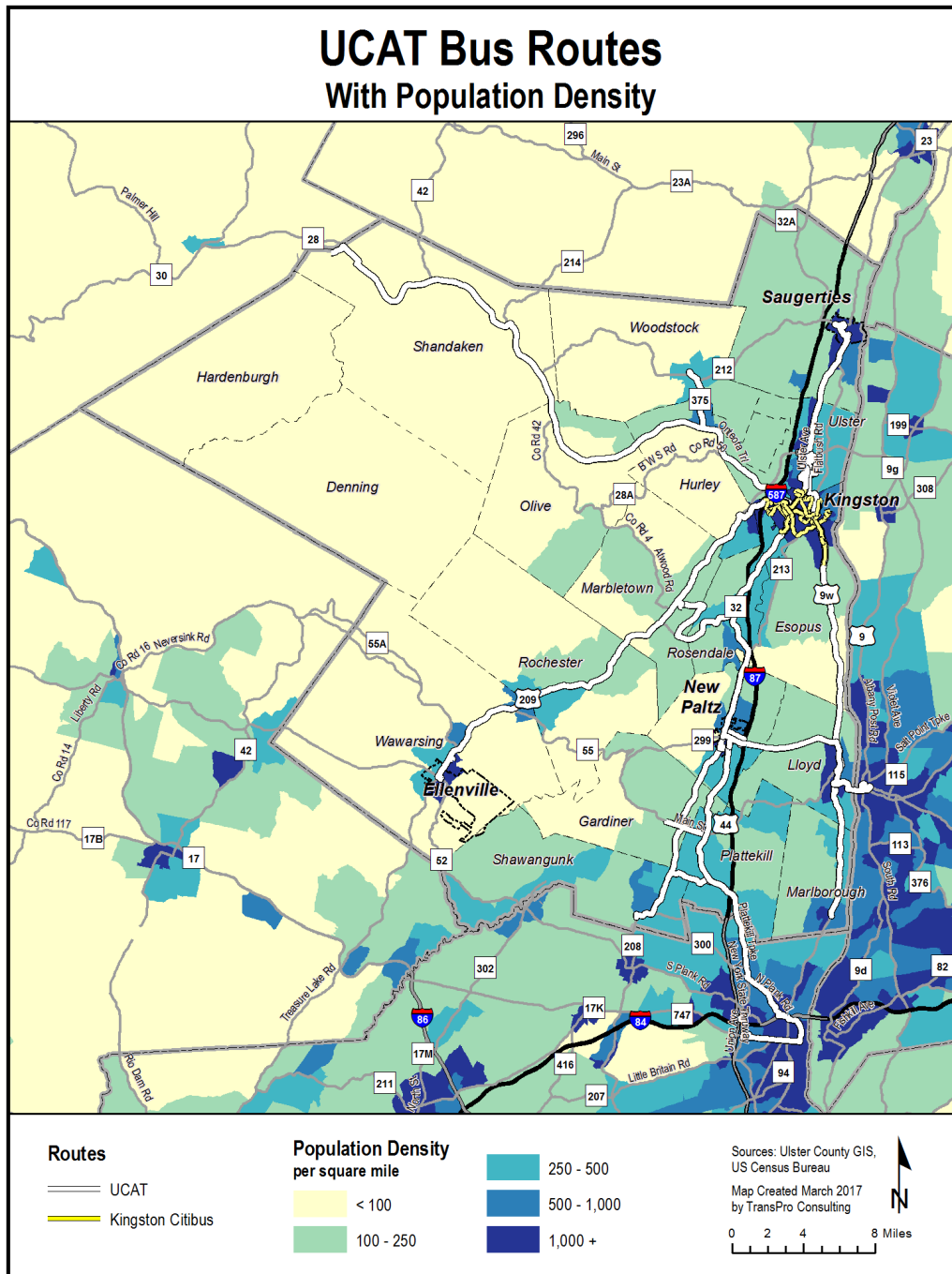
- Population density

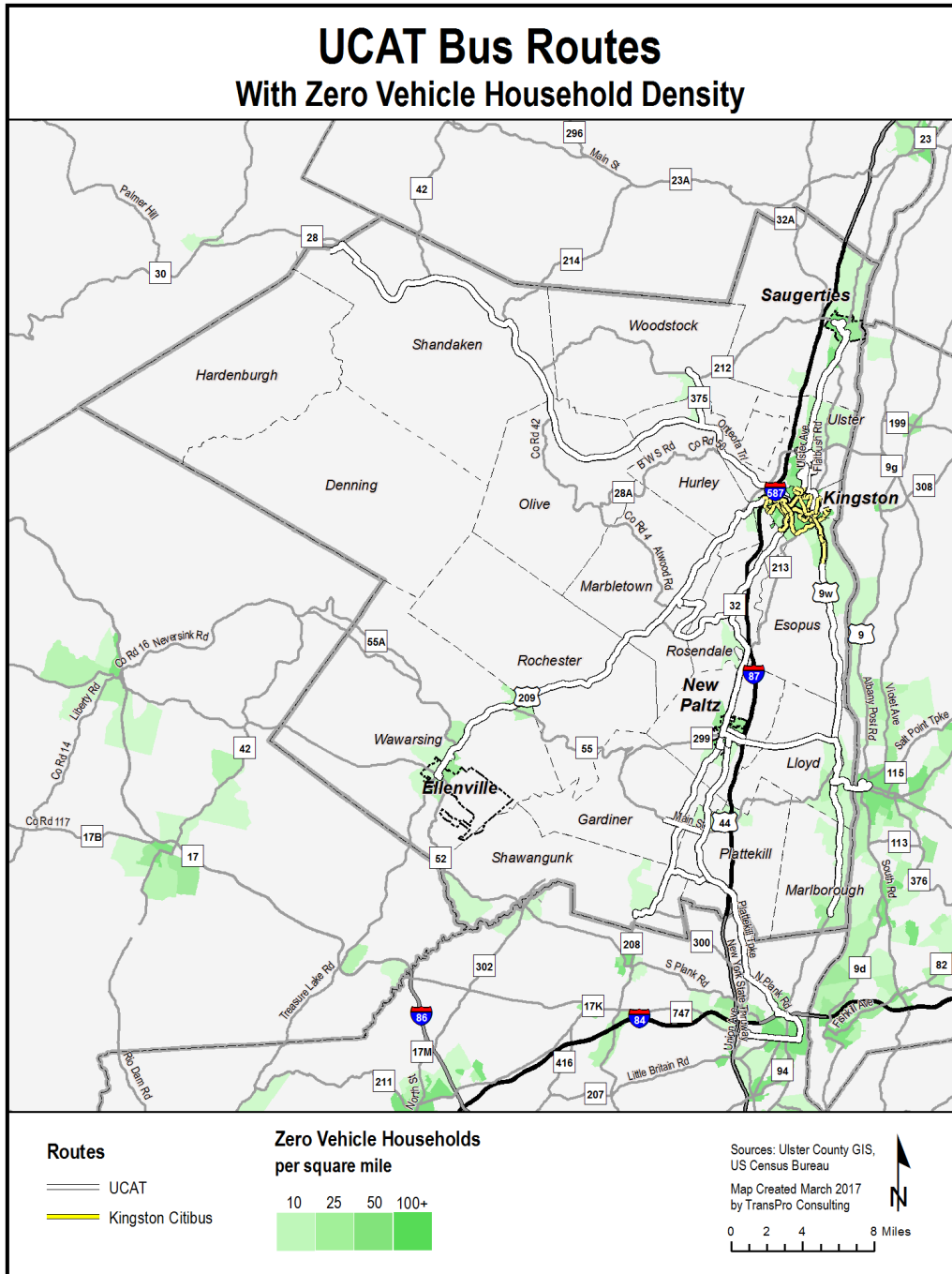
<sup>3</sup> *Ulster County Transit Development Plan Final Report* (December 2012), [http://ulstercountyny.gov/sites/default/files/documents/planning/UC\\_Transit\\_Development\\_Plan.pdf](http://ulstercountyny.gov/sites/default/files/documents/planning/UC_Transit_Development_Plan.pdf), 5-32 – 5-40

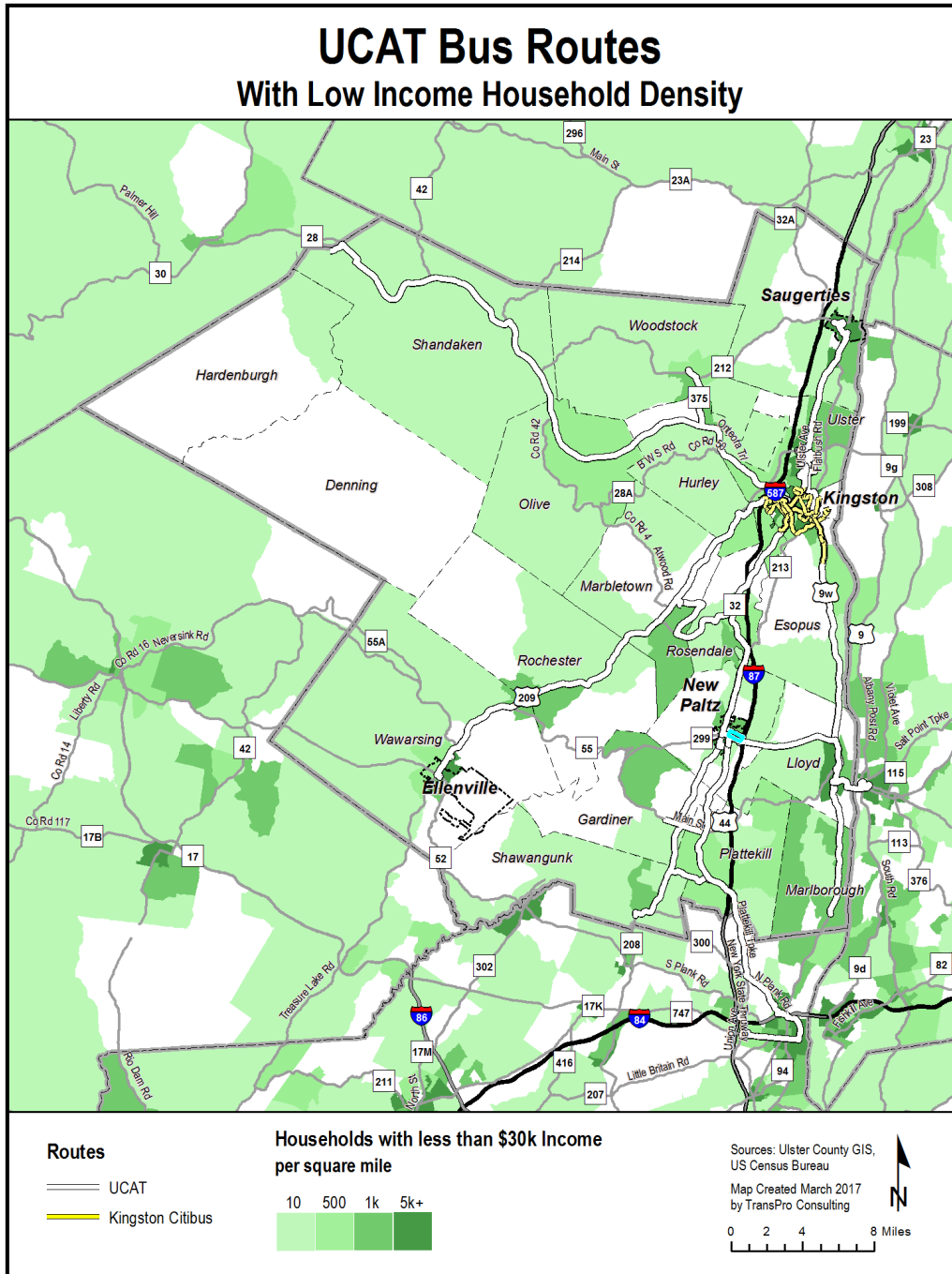
- Zero vehicle households
- Concentrations of low-income households
- Employment areas
- Retail locations
- Medical facilities
- Post-secondary educational institutions

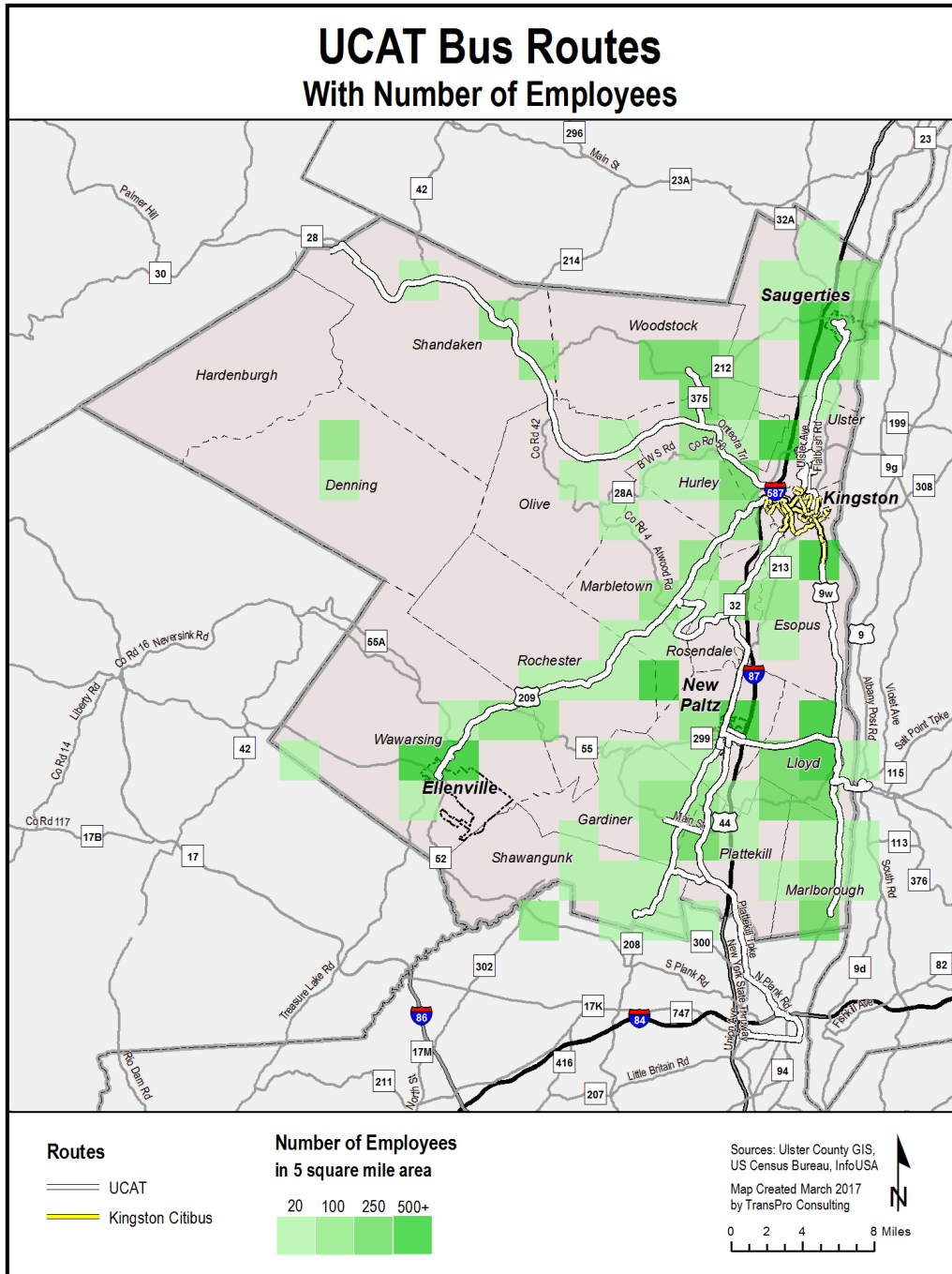
The current UCAT and CitiBus route networks were imposed on maps displaying the geographic distribution of the above elements, thus indicating if these demand generators are currently being served. The following maps illustrate how effectively the current transit networks are serving these traditional generators of transit demand. In the case of UCAT, the maps reflect TSCD route recommendations that have been implemented. In the case of CitiBus, the maps do not reflect TSCD route recommendations, as the recommendations were not implemented by CitiBus.

UCAT Geographic Coverage

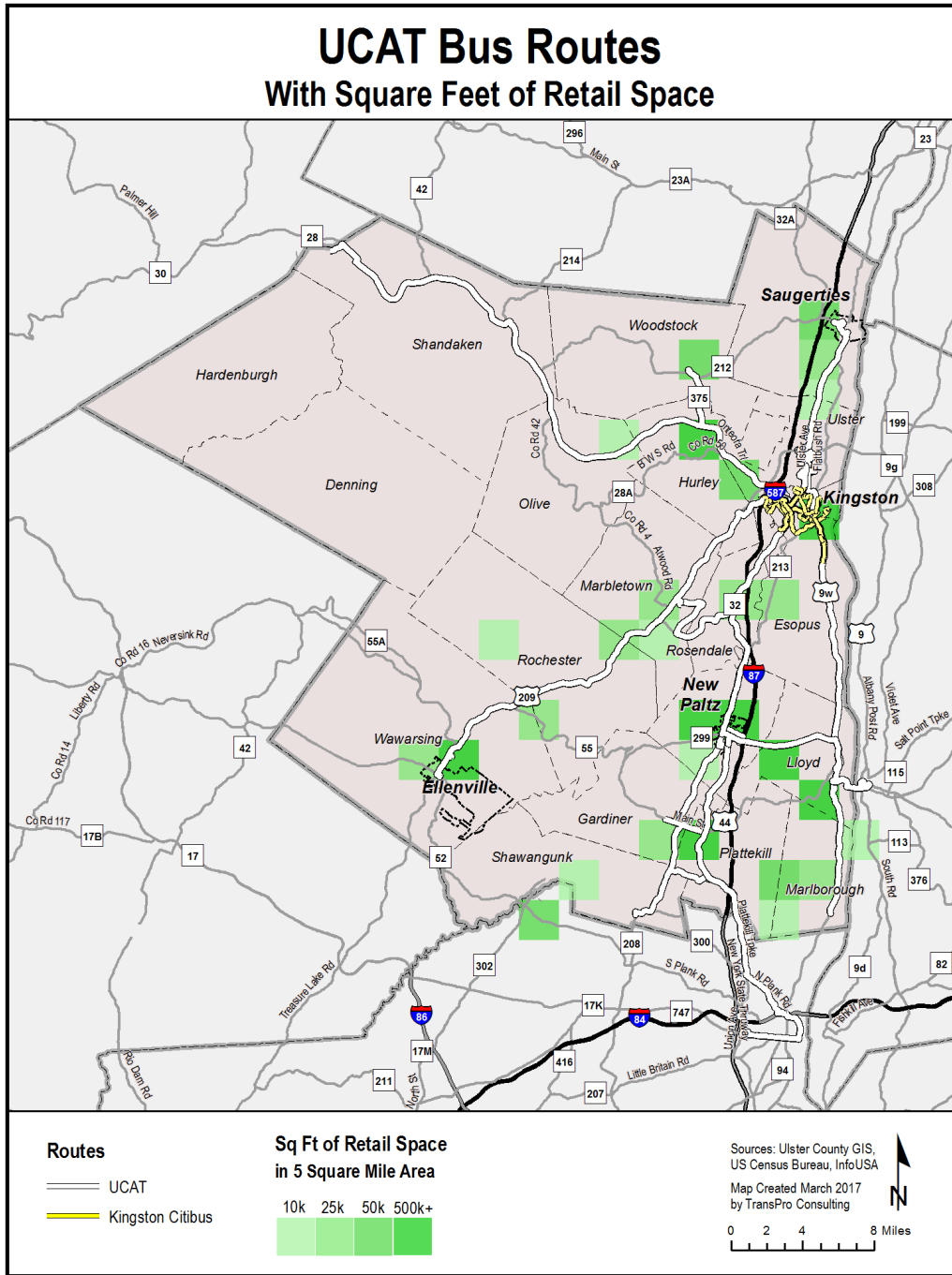


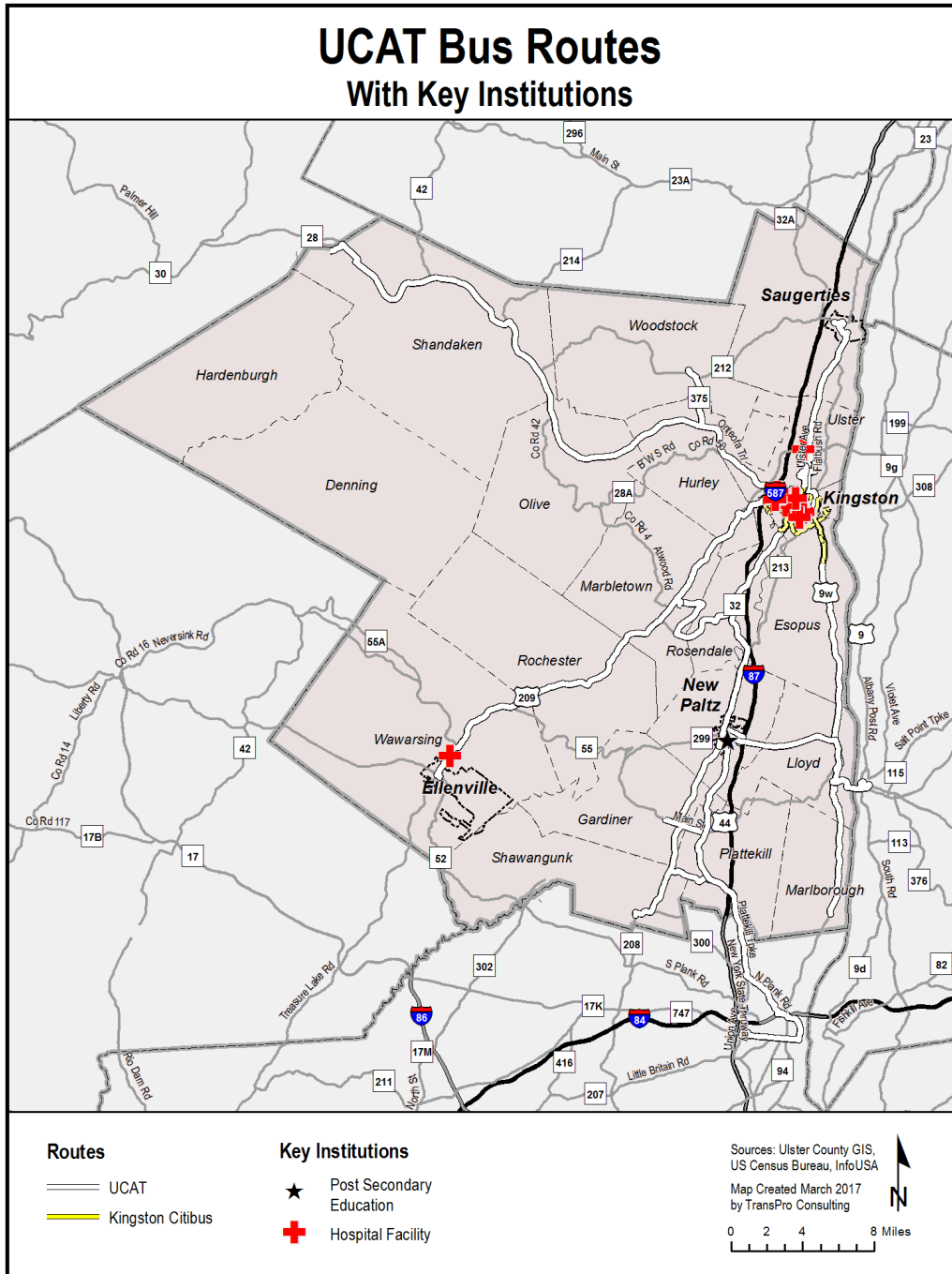




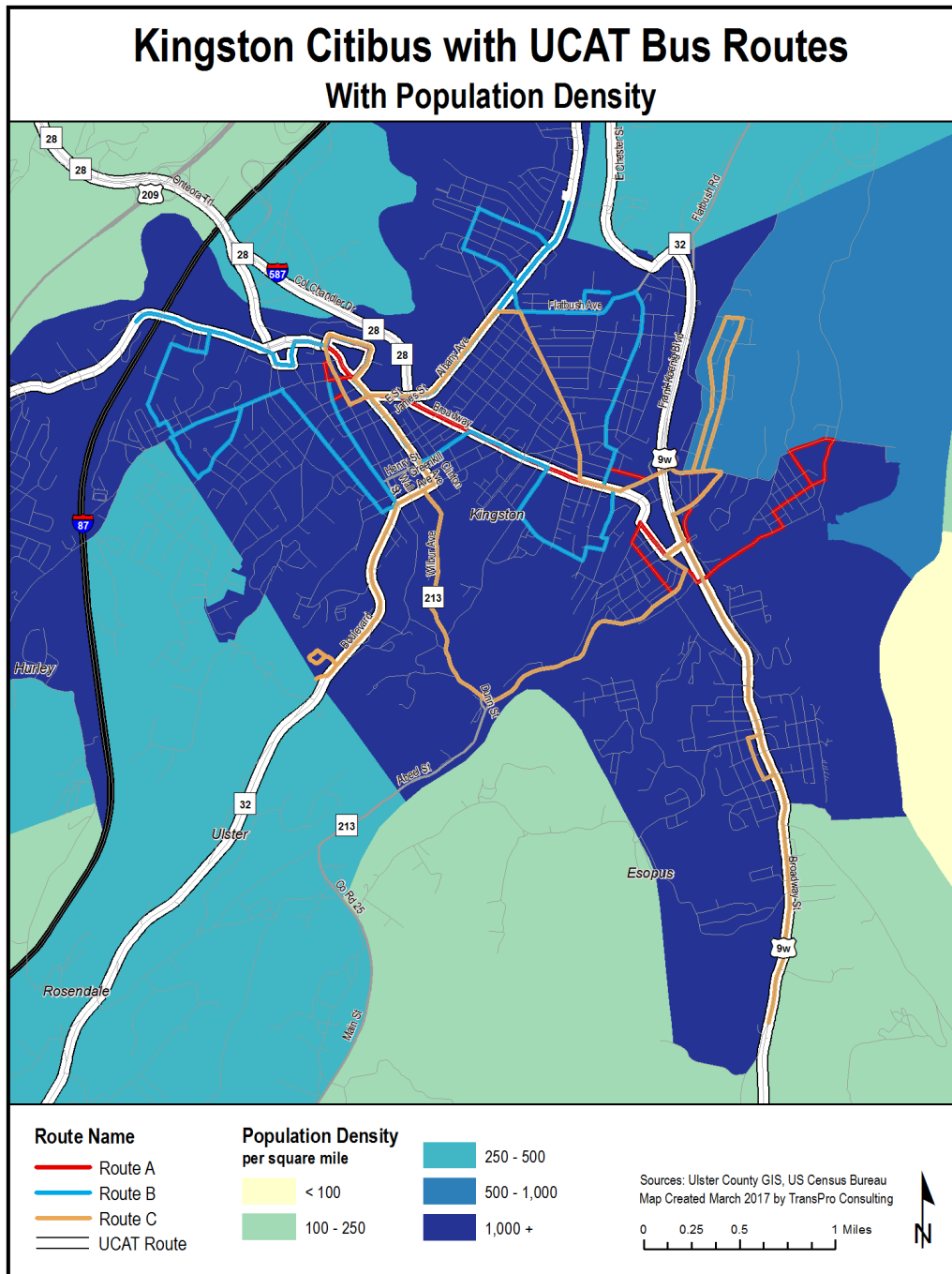


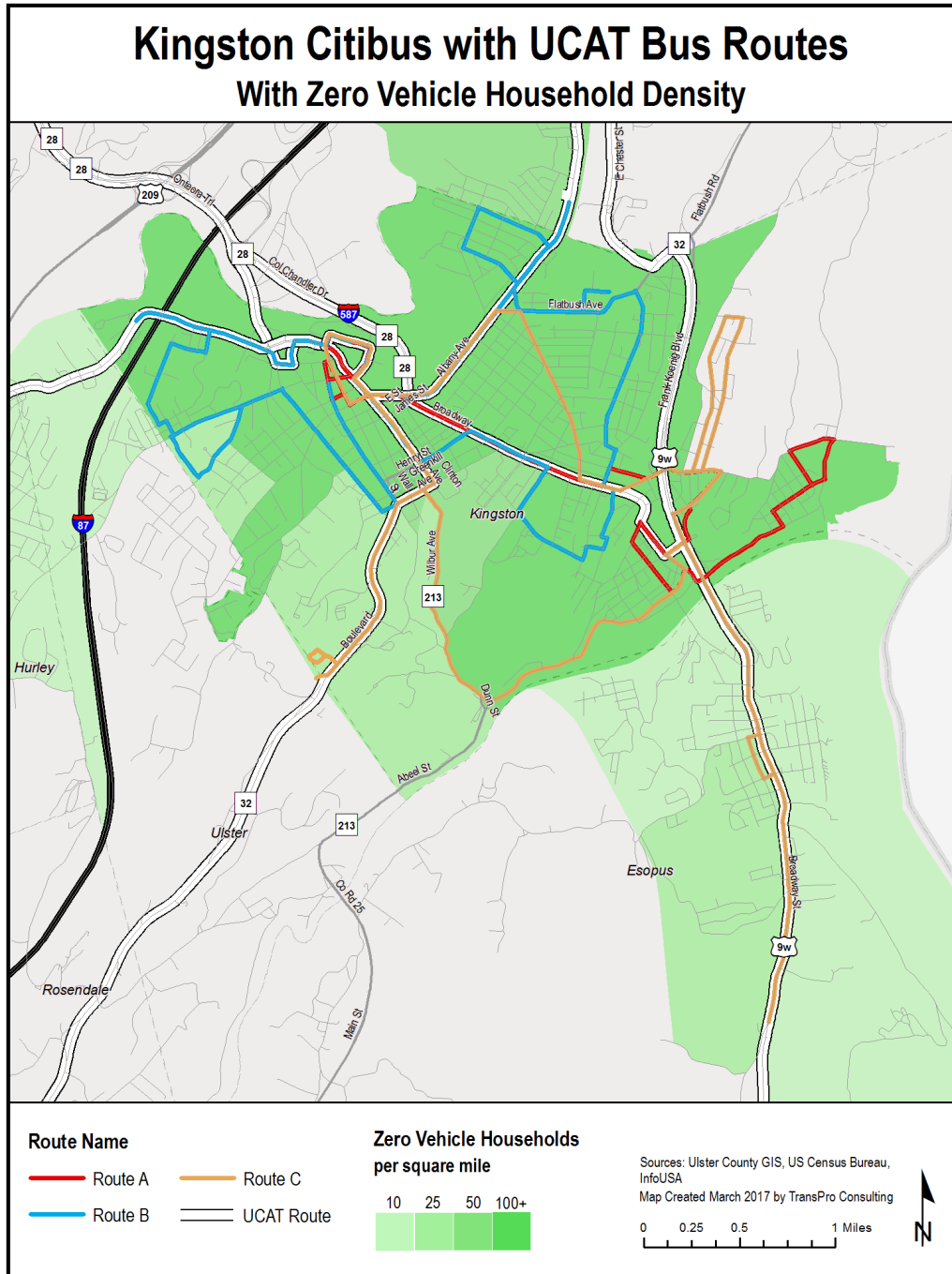


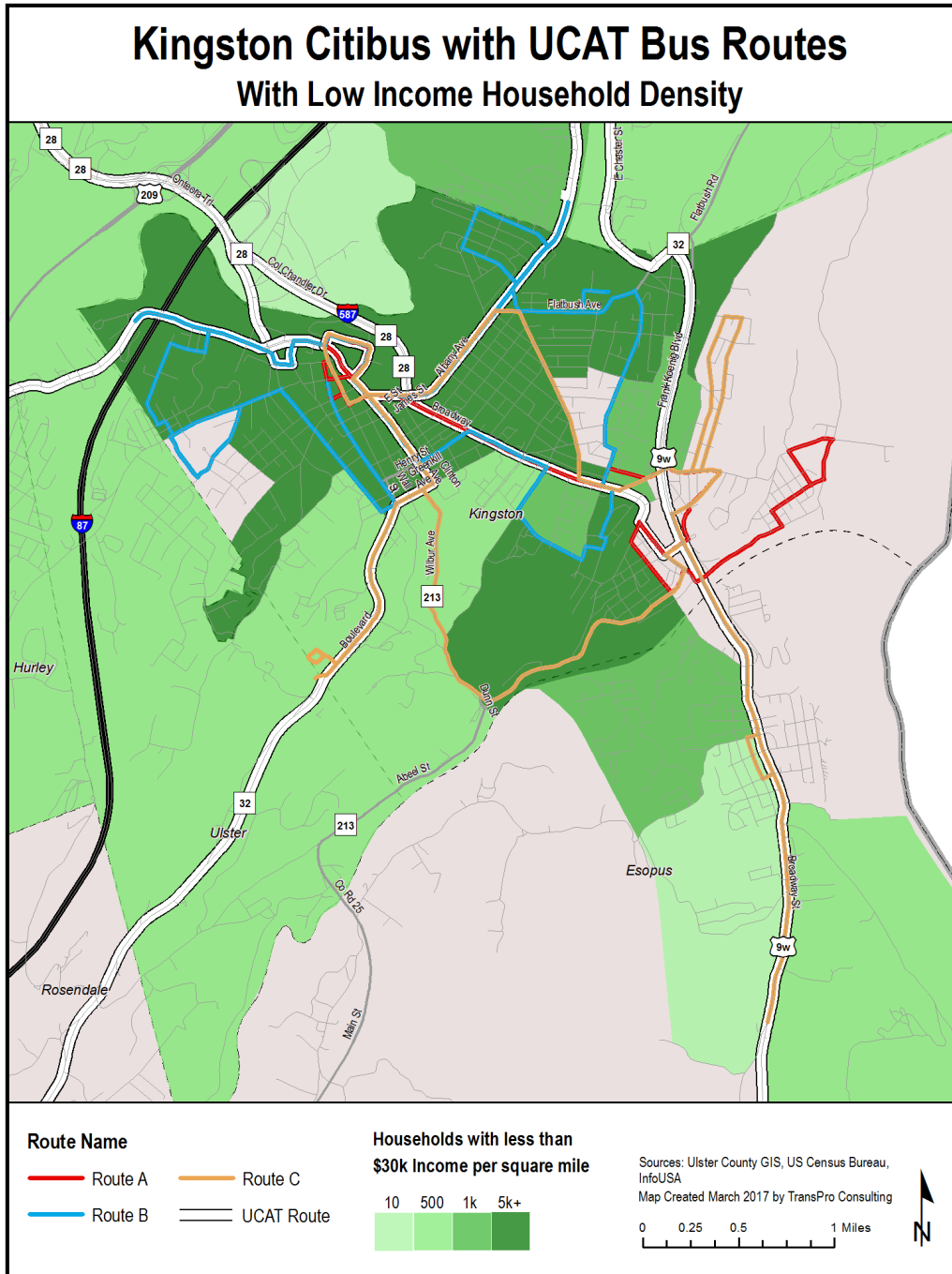


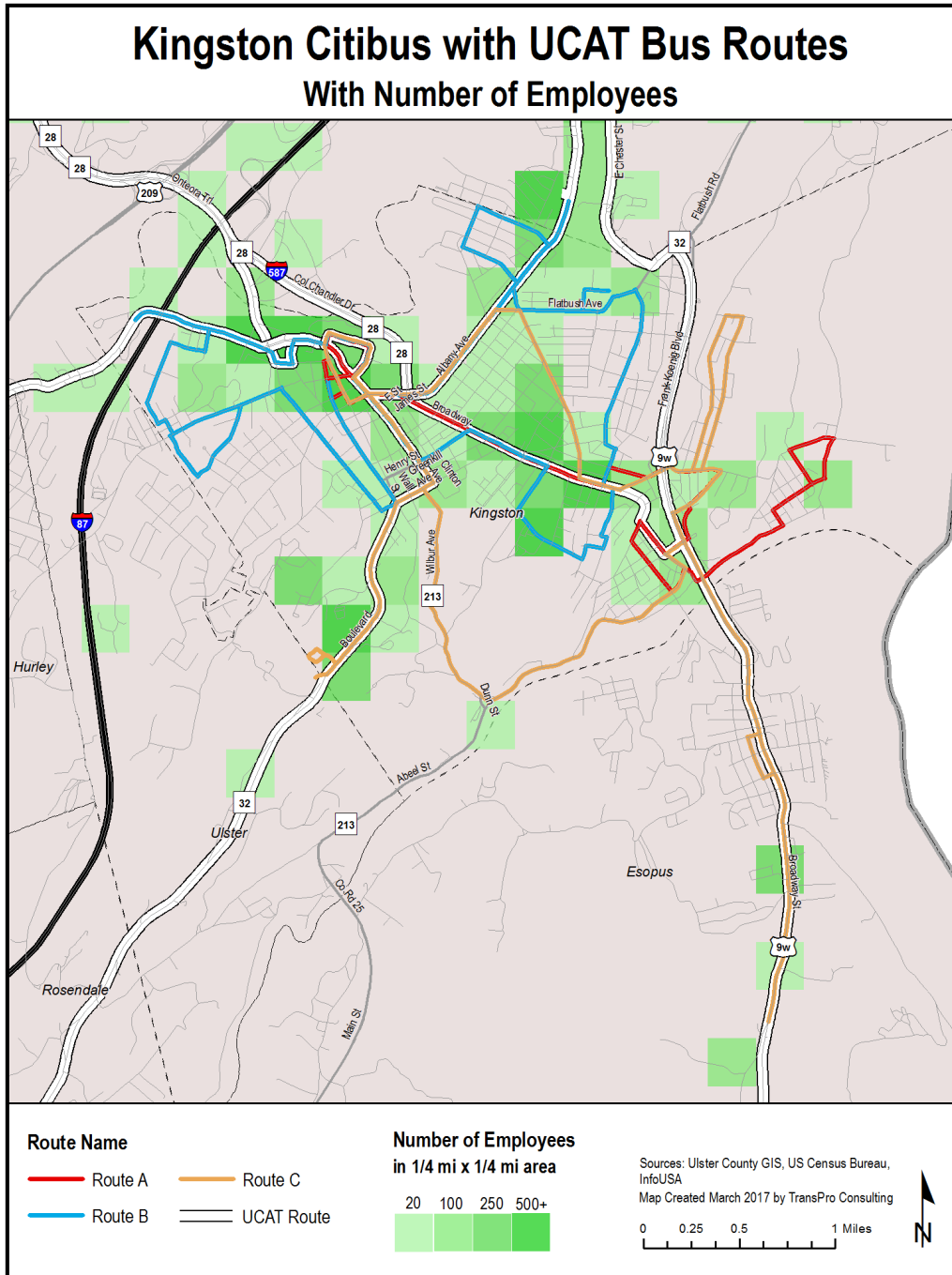


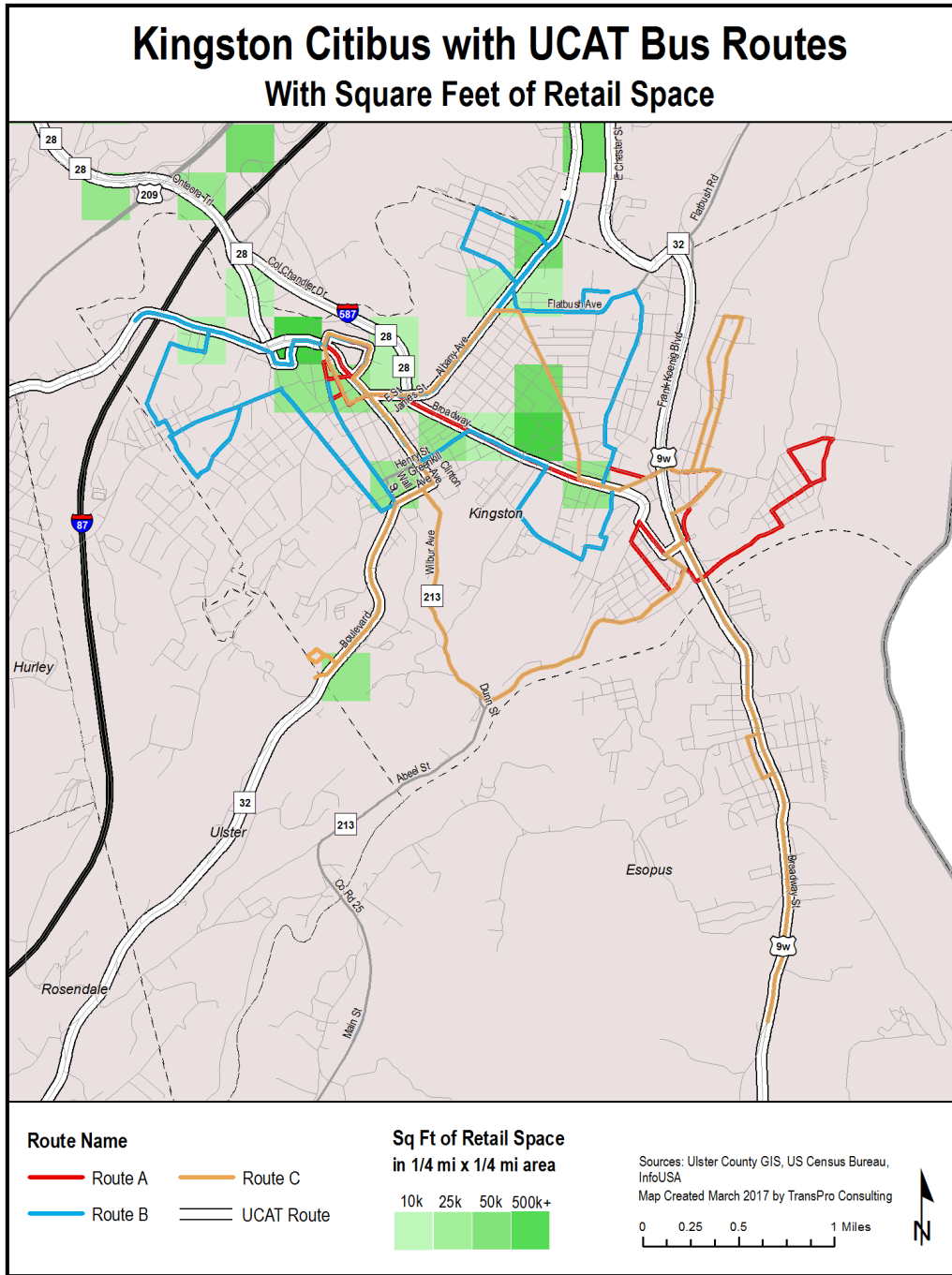
CitiBus Geographic Coverage

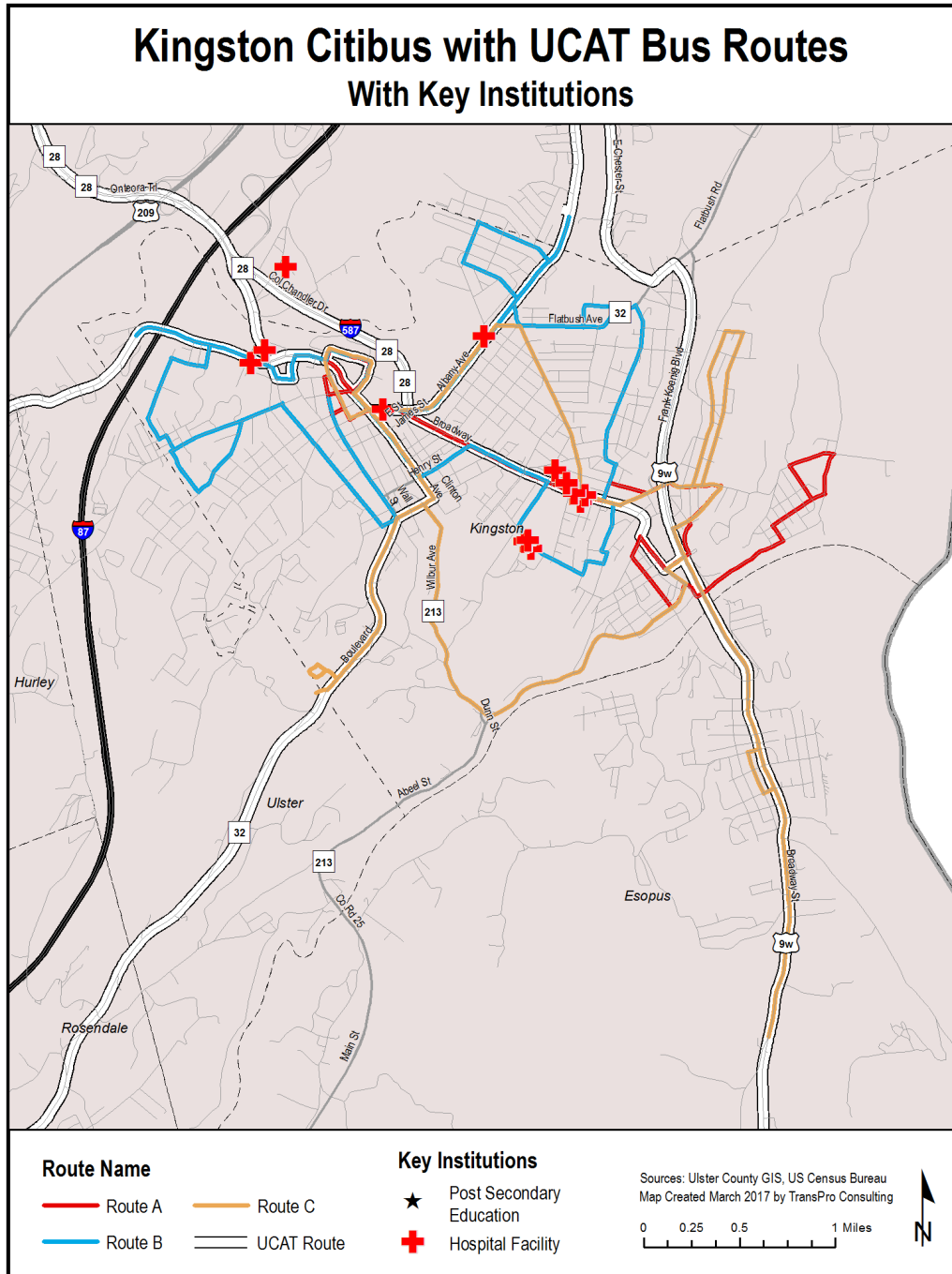












As illustrated in the preceding maps, UCAT and CitiBus generally serve community locations that traditionally drive transit demand.



### Key Question 3:

#### What route scenarios can be considered for an integrated transit system?

The City of Kingston has a small geographic footprint relative to Ulster County. Because of this, and because of the comprehensiveness of the existing UCAT route network, the focus of service integration is on the integration of City service with existing County service. The three scenarios explored in this analysis are designed to preserve service options within the City of Kingston while providing effective links between the City and the County.

Integrated Transit System Service Scenarios	
Scenario	Description
<b>Scenario 1</b>	Continue to operate UCAT and CitiBus routes in their current form
<b>Scenario 2</b>	Continue to operate UCAT routes in their current form and operate CitiBus routes as per the recommendations of the 2012 TSCD report
<b>Scenario 3</b>	Absorb TSCD CitiBus recommendations into UCAT routes and enhance City coverage

#### **Scenario 1: Continue to operate existing fixed routes in their current form**

##### Description

Under Scenario 1 all UCAT and CitiBus routes would continue to operate in their current form. This scenario presents a simple option for integrating existing service under the umbrella of a single agency with no disruption to the current customer experience.

##### Connectivity

Both UCAT and CitiBus currently use Kingston Plaza as a transfer point between routes. This would be preserved under Scenario 1, with Kingston Plaza continuing to provide a connection point between city-based and countywide routes.

##### Service Impact

Since all fixed routes would continue to operate in their current form, there would be no impact to City or County fixed route service.

##### Customer Impact

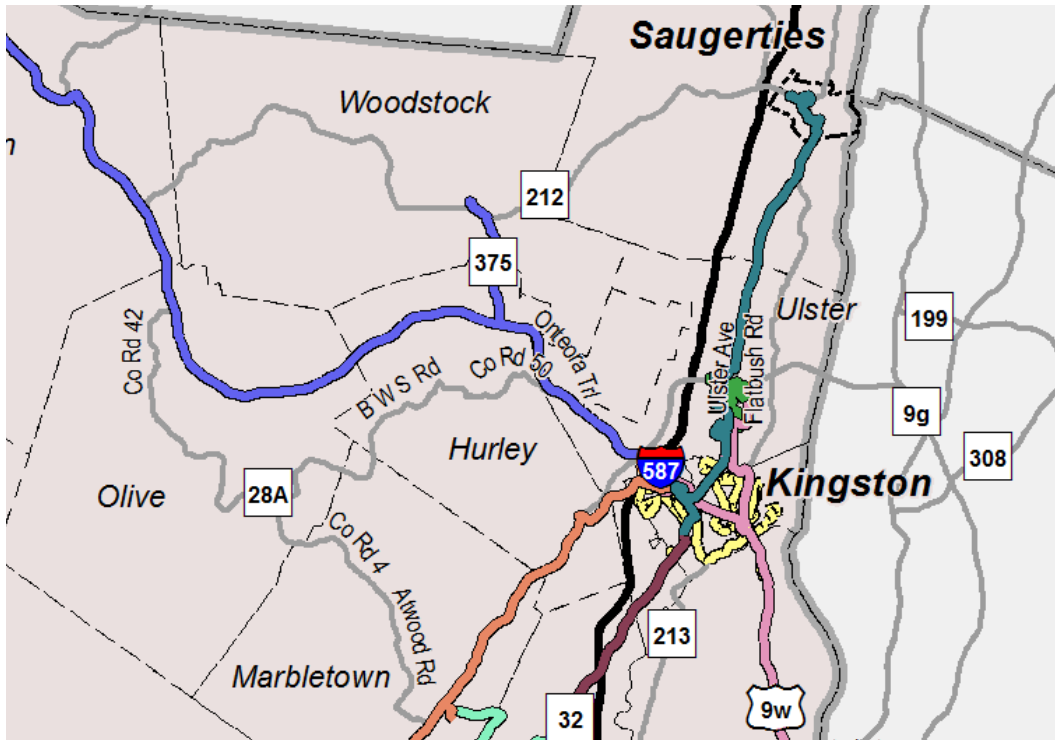
Since all fixed routes would continue to operate in their current form, there would be no impact to current CitiBus or UCAT fixed route customers.

Paratransit Impact

Since all fixed routes would continue to operate in their current form, the ADA-required paratransit service area would not change.

Geographic Layout

The geographic layout of Scenario 1 routes is illustrated in the following map.



## Scenario 2: Continue to operate existing UCAT routes in their current form and adopt the 2012 TSCD CitiBus route change recommendations

### Description

Under Scenario 2 all UCAT routes would continue to operate in their current form. Current CitiBus routes would be changed to reflect the recommendations of the 2012 TSCD report.

UCAT adopted route change recommendations outlined in the 2012 TSCD report and has since seen an increase in route productivity. By continuing to operate UCAT routes in their current form, Scenario 2 preserves the benefits to County service generated by adopting the TSCD recommendations.

CitiBus did not adopt the recommendations of the TSCD report. By changing current City routes to reflect those recommendations, Scenario 2 would allow the integrated transit system to realize the benefits the TSCD recommendations were designed to achieve.

### Connectivity

Both UCAT and CitiBus currently use Kingston Plaza as a transfer point between routes. This would be preserved under Scenario 2, with Kingston Plaza continuing to provide a connection point between city-based and countywide routes.

### Service Impact

Since existing UCAT fixed routes would continue to operate in their current form, there would be no impact to countywide fixed route service.

The impact of altering the structure of existing CitiBus routes are described as follows on Page 5-36 of the TSCD report:

*“Under Citibus' current service structure, three vehicles are each assigned to one route, resulting in hourly service on each route. Under the proposed service design, three vehicles would be assigned to two routes to maximize service frequency. The two routes would be interlined at Kingston Plaza, and each of the three vehicles would alternately serve the A Route corridor and the B Route corridor.*

*By assigning three vehicles to this two-route circuit, service frequencies could be improved to 40 minutes for most of the service day. 18 trips per day in each direction could be provided on each of the two routes, compared to the 11 mostly one-way trips that are currently provided on each Citibus route.”*

*“Service between Kingston and the Ulster mall area would be even more frequent than every 40 minutes, as the Ulster/Albany corridor would be served by UCAT's S/K Route as well. The UCAT service could function more as an express service in the corridor, with stops placed at greater intervals, while the Citibus A Route would provide more frequent local stops along the corridor and also serve the Chambers Senior Housing complex west of Ulster Avenue.”*

While increasing the frequency of service along the more heavily used transit corridors, the TSCD recommendations reduce the footprint of the city-based routes. Areas that generate little ridership are eliminated. This includes Wilbur Avenue, Abeel Street, 2<sup>nd</sup> Avenue, and 3<sup>rd</sup> Avenue on the Current C route.

Several areas that generate ridership would be eliminated from city-based routes under this scenario but would be served by existing UCAT routes or simple deviations of existing UCAT routes. These areas include Golden Hill, Stony Run Apartments, Route 32, and Clinton Avenue.

Several areas that generate ridership are eliminated from city-based routes with no corresponding access by existing CitiBus routes under this scenario. Affected areas include Wall Street, Washington Avenue, Lucas Avenue Extension, Millers Lane, and Colonial Gardens Apartments. Service to these areas could be maintained if desired by making alterations to existing UCAT routes.

#### Customer Impact

Since existing UCAT fixed routes would continue to operate in their current form, there would be no impact to countywide fixed route customers.

Existing CitiBus customers with origins and destinations in the more heavily utilized areas would enjoy greater service frequency and reduced travel time as a result of the streamlined bidirectional routes recommended in the TSCD report. Increased service frequency and reduced travel time traditionally result in increased ridership. Thus, these redesigned routes may generate an increase in city-based ridership.

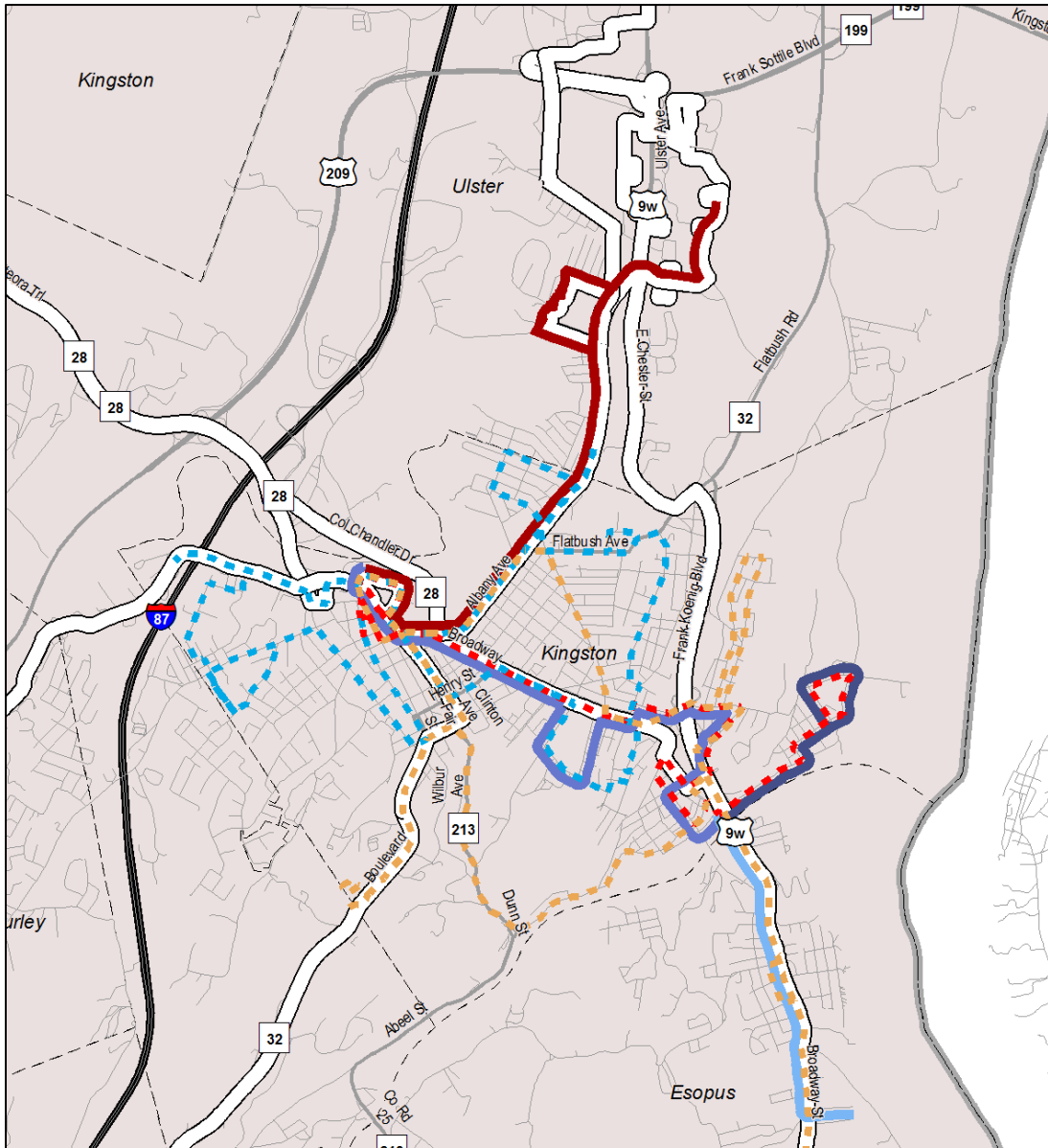
Some current CitiBus customers would access their destinations via current UCAT routes instead of city-based routes as a result of the CitiBus route reconfiguration. Some City locations would no longer have direct bus access under this route reconfiguration unless alterations were made, which would impact customers who currently travel to those locations. The locations affected are listed in the "Service Impact" section above.

#### Paratransit Impact

The ADA-required paratransit service area would be slightly reduced within the City of Kingston. Since this reduction would be marginal, there would likely be little financial gain in reducing the current Kingston paratransit service area to match the new ADA-required service area that would exist under Scenario 2.

### Geographic Layout

The geographic layout of Scenario 2 routes is illustrated in the following map. The dotted lines indicate current CitiBus routes.



### **Scenario 3: Absorb TSCD CitiBus recommendations into UCAT routes and enhance City coverage**

#### Description

Under Scenario 3, UCAT routes would continue to operate as currently scheduled. The CitiBus structural route recommendations from the TSCD report would be adopted. Instead of operating as distinct routes, however, the updated CitiBus routes would operate as part of existing UCAT routes with shared geographies.

For example, the TSCD proposed CitiBus Route A operates along a portion of the corridor of UCAT's KS Route (Kingston-Saugerties), providing extra frequency along that corridor. Instead of operating separately as Route A and Route KS, the buses would operate jointly as Route KS. The vehicle dedicated to the former Route A would operate between Kingston Plaza and the Ulster mall area only, providing extra frequency along the busiest part of that corridor.

A similar absorption into existing UCAT routes would occur for the TSCD proposed CitiBus Route B, with the bus providing extra frequency to high demand areas in the City.

A key change from the TSCD recommendation would be to only use two buses for the TSCD-recommended City service instead of three. The third bus would be used to provide service to areas of demand that were eliminated under the TSCD City service recommendation, such as Wall Street, Washington Avenue, Lucas Avenue Extension, Millers Lane, and Colonial Gardens Apartments.

This scenario would maintain the increased productivity attained from implementing the TSCD UCAT recommendations, generate the increased frequency and reduced travel time envisioned by the TSCD CitiBus recommendations, and close the gaps of the TSCD CitiBus recommendation.

#### Connectivity

Both UCAT and CitiBus currently use Kingston Plaza as a transfer point between routes. This would be preserved under Scenario 3, with Kingston Plaza continuing to provide a connection point between city-based and countywide routes.

#### Service Impact

Since existing UCAT fixed routes would continue to operate in their current form, there would be no impact to countywide fixed route service.

Service within the City of Kingston would have increased frequency and reduced travel time in key corridors, and coverage to key destinations would be maintained.

#### Customer Impact

Since existing UCAT fixed routes would continue to operate in their current form, there would be no impact to countywide fixed route customers.

Existing CitiBus customers with origins and destinations in the more heavily utilized areas would enjoy greater service frequency and reduced travel time as a result of the streamlined bidirectional routes recommended in the TSCD report. Increased service frequency and reduced travel time traditionally result in increased ridership. Thus, these redesigned routes may generate an increase in city-based ridership.

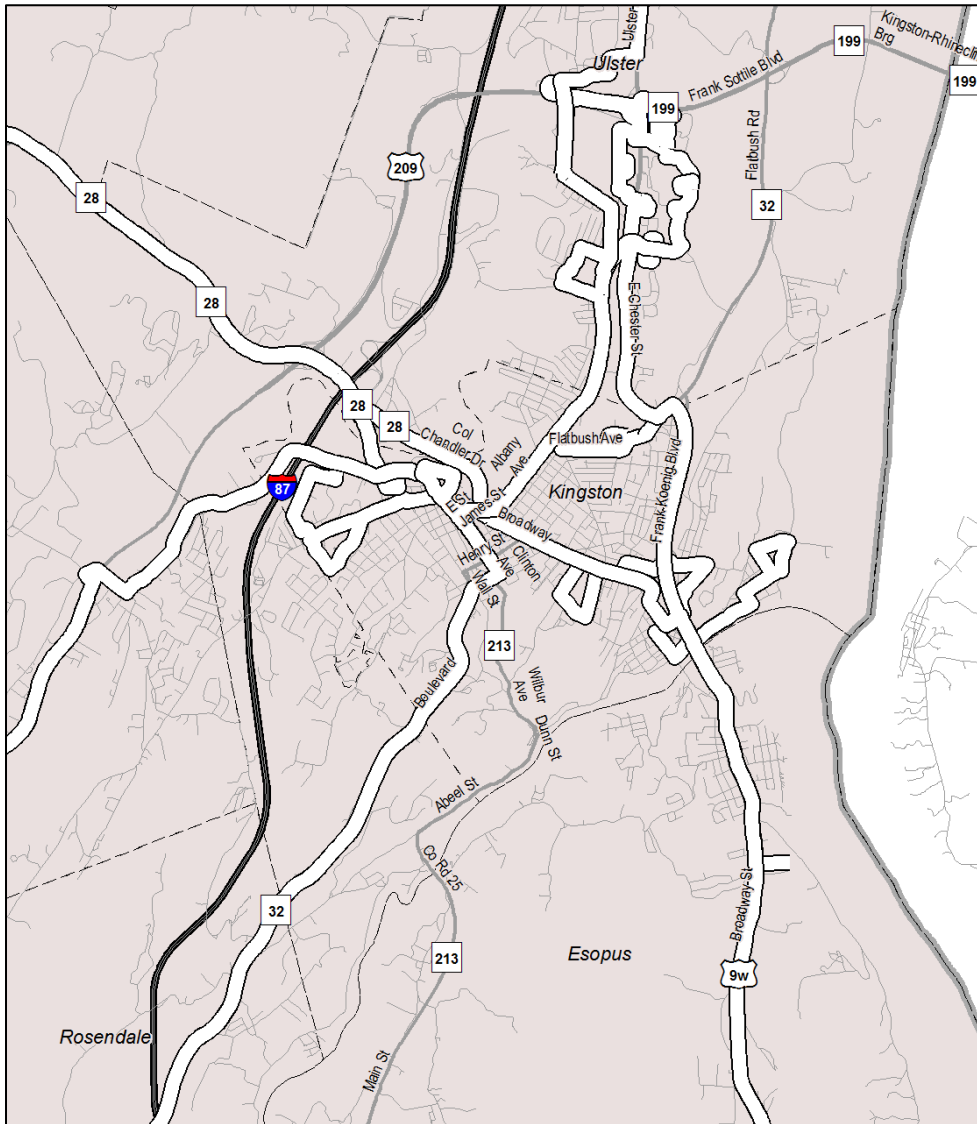
Some current CitiBus customers would access their destinations via current UCAT routes instead of city-based routes as a result of the CitiBus route reconfiguration.

Paratransit Impact

The ADA-required paratransit service area would not change under Scenario 3.

Geographic Layout

The geographic layout of Scenario 3 routes is illustrated in the following map.



## Task 1.3

# Cost of service model to compare current cost of service with the cost of the proposed integrated system

### Key Questions to be answered

1. How can the financial impact of service integration be evaluated?
2. What is the financial impact of service integration on various integration scenarios?

#### Key Question 1:

#### How can the financial impact of service integration be evaluated?

A cost change model was developed to assess the financial impact of the various service integration scenarios. The model assumes that the integrated service would be operated by UCAT and the model reflects operating costs only.

The model utilizes a before and after comparison approach. This allows for direct calculation of cost changes, which is what we are trying to learn in this costing exercise. This approach also allows the model to better reflect specific UCAT and CitiBus cost element changes rather than depending completely upon cost center averages.

The cost change model divides UCAT and CitiBus cost elements into three categories:

- Fixed Costs
  - Fixed costs reflect overhead and administrative costs
- Hourly Costs
  - Hourly costs reflect costs that vary based on the number of service hours deployed. Hourly costs consist mainly of bus driver pay and benefits.
- Per Mile Costs
  - Per mile costs reflect costs that vary based on the number of service miles deployed. Per mile costs consist of elements such as fuel, tires, and vehicle maintenance, including mechanic salaries.

The following table indicates the cost elements from the UCAT and CitiBus operating budgets that were included in each cost category.



<b>Cost Element Categories</b>		
<b>Fixed Costs</b>	<b>Hourly Costs</b>	<b>Per Mile Costs</b>
Administration Pay & Benefits	Driver Pay & Benefits	Mechanic Pay & Benefits
Operations Staff Pay & Benefits	Driver Exams & Drug Testing	Fuel
Office Equipment		Parts
Materials & Supplies		Tools
Building Maintenance & Repair		Tires & Batteries
Professional Services		Auto Repair
Insurance		Maintenance Supplies
Leases/Rentals		Maintenance Equipment
Conference & Travel		Vehicle Maintenance
Licenses/Memberships/Subscriptions		
Equipment Rental		
Contracted Services		
Uniform Allowance		
Utilities		

The cost change model calculates the change associated with service integration via the following logic:

$$\text{Cost Change} = (\text{Original Fixed Costs} + \text{Original Hourly Costs} + \text{Original Per Mile Costs}) + (\text{Fixed Cost Change} + \text{Hourly Cost Change} + \text{Per Mile Cost Change})$$

The model uses three tables to calculate cost changes based on the above formula

<b>Annual Structural Costs</b>				
<b>Cost Centers</b>	<b>Original Annual Structural Costs</b>	<b>Annual Structural Decrease</b>	<b>Annual Structural Increase</b>	<b>New Annual Structural Costs</b>
<b>Total Fixed Costs</b>				\$0
<b>Total Variable Hour Costs</b>				\$0
<b>Total Variable Mile Costs</b>				\$0
<b>Annual Totals</b>	\$0	\$0	\$0	\$0

<b>Annual Change in Cost of Service Hours and Service Miles</b>						
<b>Service Factors</b>	<b>Original Annual Totals</b>	<b>Annual Decrease</b>	<b>Annual Increase</b>	<b>Annual Change</b>	<b>Variable Rate</b>	<b>Annual Cost Change</b>
<b>Total Hours</b>				0		\$0.00
<b>Total Miles</b>				0		\$0.00
<b>Total Variable Cost Change</b>						\$0.00

<b>New Service Annual Cost Change</b>	
<b>Structural Cost Change</b>	\$0
<b>Variable Cost Change</b>	\$0
<b>Annual Operating Cost Change</b>	\$0

Applying the cost change model to Scenario 1 yields the following result:

<b>Annual Structural Costs</b>				
<b>Cost Centers</b>	<b>Original Annual Structural Costs</b>	<b>Annual Structural Decrease</b>	<b>Annual Structural Increase</b>	<b>New Annual Structural Costs</b>
<b>Total Fixed Costs</b>	\$1,161,668	\$168,947	\$0	\$992,721
<b>Total Variable Hour Costs</b>	\$3,420,369	\$0	\$0	\$3,420,369
<b>Total Variable Mile Costs</b>	\$855,999	\$91,695	\$0	\$764,304
<b>Annual Totals</b>	\$5,438,036	\$260,642	\$0	\$5,177,394

<b>Annual Change in Cost of Service Hours and Service Miles</b>						
<b>Service Factors</b>	<b>Original Annual Totals</b>	<b>Annual Decrease</b>	<b>Annual Increase</b>	<b>Annual Change</b>	<b>Variable Rate</b>	<b>Annual Cost Change</b>
<b>Total Hours</b>	70,484	0	0	0	\$48.53	\$0.00
<b>Total Miles</b>	1,072,150	0	0	0	\$0.84	\$0.00
<b>Total Variable Cost Change</b>						<b>\$0.00</b>

<b>New Service Annual Cost Change</b>	
<b>Structural Cost Change</b>	<b>\$260,642</b>
<b>Variable Cost Change</b>	<b>\$0.00</b>
<b>New Annual Operating Cost</b>	<b>\$260,642</b>

Scenario 1 cost change model notes:

- The decrease in Total Fixed Costs reflects reduced Administration/Operations staff compared to the current combined UCAT/CitiBus Administration/Operations staff total.
- The decrease in Total Variable Mile Costs reflects the fact that two Kingston Department of Public Works mechanics will no longer be dedicated to bus maintenance.

## Key Question 2:

### What is the financial impact of service integration on various integration scenarios?

The following table indicates the operating parameters of integration Scenarios 1, 2, and 3 along with the results of the cost change model for each scenario.

Cost Center	Current Combined	Scenario 1	Scenario 2	Scenario 3
<b>Vehicles (Based on 20% spare factor)</b>	42	34	34	34
<b>Admin/Ops Staff</b>	19.6 FTE	17 FTE	17 FTE	17 FTE
<b>Drivers</b>	45 FTE	45 FTE	45 FTE	45 FTE
<b>Mechanics</b>	10 (8 UCAT, 2 DPW)	8	8	8
<b>Operating Budget</b>	\$5.44 Million	\$5.18 Million	\$5.18 Million	\$5.18 Million

Operating parameter notes:

- Vehicle needs are based on the number of vehicles operating during peak service, which is based on the number of driver runs during each hour of the day, plus a 20% vehicle spare factor.
- The Administration/Operations Staff figures are based on the projected needs for staffing the integrated service.
- The Driver totals are based on the number of runs and a 20% driver absentee rate.
- The Mechanic totals reflect that the two Kingston Department of Public Works mechanics will no longer be needed to maintain buses.

A note on the costing of Scenario 3: Scenario 3 was designed to enhance service coverage in the City and reduce coverage gaps using the currently available vehicle resources. If less frequency were acceptable, savings opportunities exist under this scenario.

## Task 1.4

# Develop Funding Sources

### Key Questions to be answered

1. What funding sources are available to support the operation of the integrated transit system?
2. What is the impact of service integration on existing funding streams?

### Key Question 1:

### What funding sources are available to support the operation of the integrated transit system?

The following lists outline a variety of federal and state funding streams available to public transportation agencies.

#### **Federal Funding Sources**

A description of federal funding programs from the FTA website is provided below. Information about each of these programs can be found on the FTA website at <https://www.transit.dot.gov/grants>.

#### ***Buses and Bus Facilities Grants Program - 5339 (Competitive)***

*Provides funding through a competitive allocation process to states and transit agencies to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities. The competitive allocation provides funding for major improvements to bus transit systems that would not be achievable through formula allocations.*

#### ***Capital Investment Grants - 5309 (Competitive)***

*FTA's primary grant program for funding major transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit, this discretionary grant program is unlike most others in government. Instead of an annual call for applications and selection of awardees, the law requires that projects seeking CIG funding complete a series of steps over several years to be eligible for funding.*

#### ***Enhanced Mobility of Seniors & Individuals with Disabilities - Section 5310***

*Formula funding to states for the purpose of assisting private nonprofit groups in meeting transportation needs of the elderly and persons with disabilities.*

#### ***Expedited Project Delivery for Capital Investment Grants Pilot - 5309(\*\*) (Competitive)***

*Allows up to eight projects over the life of the pilot program to be selected for expedited grant awards. Projects must be supported through a public-private*

*partnership and demonstrate local financial commitment, technical capacity, and a certification that the existing transit system is in a state of good repair.*

***Flexible Funding Programs - Congestion Mitigation and Air Quality Program - 23 USC 149 (Formula)***

*CMAQ provides funding to areas in nonattainment or maintenance for ozone, carbon monoxide, and/or particulate matter. States that have no nonattainment or maintenance areas still receive a minimum apportionment of CMAQ funding for either air quality projects or other elements of flexible spending. Funds may be used for any transit capital expenditures otherwise eligible for FTA funding as long as they have an air quality benefit.*

***Flexible Funding Programs - Surface Transportation Block Grant Program - 23 USC 133 (Formula)***

*Provides funding that may be used by states and localities for a wide range of projects to preserve and improve the conditions and performance of surface transportation, including highway, transit, intercity bus, bicycle and pedestrian projects.*

***Formula Grants for Rural Areas - 5311 (Formula)***

*Provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations less than 50,000, where many residents often rely on public transit to reach their destinations.*

***Grants for Buses and Bus Facilities Formula Program - 5339(a) (Formula)***

*Provides funding to states and transit agencies through a statutory formula to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities. In addition to the formula allocation, this program includes two discretionary components: The Bus and Bus Facilities Discretionary Program and the Low or No Emissions Bus Discretionary Program.*

***Human Resources & Training - 5314 (b) (Formula)***

*Provides for grants or contracts for human resource and workforce development programs as they apply to public transportation activities.*

***Low or No Emission Vehicle Program - 5339(c) (Competitive)***

*Provides funding through a competitive process to states and transit agencies to purchase or lease low or no emission transit buses and related equipment, or to lease, construct, or rehabilitate facilities to support low or no emission transit buses. The program provides funding to support the wider deployment of advanced propulsion technologies within the nation's transit fleet.*

***Mobility on Demand (MOD) Sandbox Demonstration Program - 5312 (Competitive)***

*Funds projects that promote innovative business models to deliver high quality, seamless and equitable mobility options for all travelers.*

***Pilot Program for Transit-Oriented Development Planning - 5309 (Competitive)***

*Provides funding to local communities to integrate land use and transportation planning with a transit capital investment that will seek funding through the Capital Investment Grant (CIG) Program.*

***Public Transportation Emergency Relief Program - 5324 (Formula)***

*Helps states and public transportation systems pay for protecting, repairing, and/or replacing equipment and facilities that may suffer or have suffered serious damage as a result of an emergency, including natural disasters such as floods, hurricanes, and tornadoes. It provides authorization for Section 5307 and 5311 funds to be used for disaster relief in response to a declared disaster.*

***Public Transportation Innovation - 5312 (Competitive)***

*Provides funding to develop innovative products and services assisting transit agencies in better meeting the needs of their customers.*

***Rural Transportation Assistance Program - 5311(b)(3) (Formula)***

*Provides funding to states for developing training, technical assistance, research, and related support services in rural areas. The program also includes a national program that provides information and materials for use by local operators and state administering agencies and supports research and technical assistance projects of national interest.*

***State of Good Repair Grants - 5337 (Formula)***

*Provides capital assistance for maintenance, replacement, and rehabilitation projects of existing high-intensity fixed guideway and high-intensity motorbus systems to maintain a state of good repair. Additionally, SGR grants are eligible for developing and implementing Transit Asset Management plans.*

***Technical Assistance & Standards Development - 5314(a) (Formula)***

*Provides funding for technical assistance programs and activities that improve the management and delivery of public transportation and development of the transit industry workforce.*

***TIGER (USDOT) (Competitive)***

*The Transportation Investment Generating Economic Recovery Program (TIGER) provides funding for innovative, multi-modal and multi-jurisdictional transportation projects that promise significant economic and environmental benefits to an entire metropolitan area, a region, or the nation.*

***Transit Cooperative Research Program - 5312(i) (Competitive)***

*Research program that develops near-term, practical solutions such as best practices, transit security guidelines, testing prototypes, and new planning and management tools.*

***Urbanized Area Formula Grants - 5307 (Formula)***

*Provides funding to public transit systems in Urbanized Areas (UZA) for public transportation capital, planning, job access and reverse commute projects, as well as operating expenses in certain circumstances.*

***State Funding Sources***

A description of New York State transit funding programs from the NYSDOT website is provided below. Information about each of these programs can be found on the NYSDOT website at <https://www.dot.ny.gov/divisions/policy-and-strategy/public-transportation/funding-sources/state-funding>.

*In addition to the federal programs that NYSDOT provides matching funding for, there are also NYSDOT-funded programs for Capital Projects and Operating Assistance.*

- *[The State Dedicated Fund \(SDF\)](#) provides funds for capital projects. These are dedicated to improvements of the systems and providing funds for innovative capital projects.*
- *The [State Operating Assistance \(STOA\)](#) funding provides operating monies to transit agencies and authorities based on vehicle miles and passenger revenue service.*

*For more information on state funding, contact Tom Vaughan at (518) 457-7248 or [tvaughan@dot.ny.gov](mailto:tvaughan@dot.ny.gov)*



## **Key Question 2:**

### **What is the impact of service integration on existing funding streams?**

New York State Operating Assistance (STOA) funding is distributed to transit agencies via a formula that is based on ridership and vehicle miles. STOA is currently distributed to both CitiBus and UCAT based on the funding formula. In operating an integrated transit system, UCAT would be the sole recipient of STOA funding in Ulster County. UCAT's STOA funding would be based on the total passengers and vehicle miles of the integrated system. Whether or not this is equivalent to the current aggregate CitiBus and UCAT STOA total will depend upon the passengers and vehicle miles of the new system relative to the total of the two current systems.

## Task 1.5

# Update operational structure alternatives considered in the 2006 Plan

### Key Questions to be answered

1. What are the pros and cons of the operational structure alternatives identified in the 2006 plan (short of full consolidation)?

#### Key Question 1:

### What are the pros and cons of the operational structure alternatives identified in the 2006 plan (short of full consolidation)?

The 2006 Public Transportation Integration Analysis (PTIA) identified five operational structure alternatives for CitiBus and UCAT:

1. Do Nothing
  - Under this scenario, CitiBus and UCAT would continue to operate as separate entities.<sup>4</sup>
2. Coordination Council
  - “With this scheme, the transit agencies would continue as separate organizations responsible for public transportation in their jurisdictions. A formal structure would be established to discuss and take action on issues of common interest.”<sup>5</sup>
3. Reassign Functions
  - “This scheme would be similar to the existing situation in that each agency would continue separate operations. Only some of the current activities or functional areas would be operated by one agency.”<sup>6</sup>
4. Consolidation
  - “This alternative would have public transportation provided by a single agency. All functions necessary to operate a transit system would be provided by a single entity.”<sup>7</sup>
5. Transit Broker
  - This scenario “would create an administrative organization which would have overall responsibility for public transportation while the actual day-to-day operations continue to be provided by Kingston CitiBus and UCAT.”<sup>8</sup>

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<sup>4</sup> *Public Transportation Integration Analysis Final Report* (March 2006), <https://ulstercountyny.gov/sites/default/files/documents/ptia.pdf>, 18

<sup>5</sup> Ibid

<sup>6</sup> Ibid, 19

<sup>7</sup> Ibid, 19

<sup>8</sup> Ibid, 20

A pro-con assessment of the four non-consolidation options follows.

### Do Nothing

Pros	Cons
No structural changes required	Foregoing of savings opportunities
No investment required	Foregoing of route optimization opportunities in the greater Kingston area
	Redundant overhead expenditures
	Redundant infrastructure

### Coordination Council

Pros	Cons
No structural changes required	Foregoing of additional savings opportunities
Some savings opportunities	Foregoing of route optimization opportunities in the greater Kingston area
Elimination of some administrative redundancy	Redundant overhead expenditures

### Reassign Functions

Pros	Cons
Some savings opportunities	Foregoing of full savings opportunities
Elimination of some administrative redundancy	Foregoing of route optimization opportunities in the greater Kingston area
Allows each agency's strengths to benefit both agencies by taking sole ownership of certain functions for both agencies	Some overhead expenditures

### Transit Broker

Pros	Cons
Potential for outsourcing, which could generate savings to the municipalities	Redundancies of two agencies remain
Coordination of multiple transportation options provides one stop shopping for citizens needing transportation information and services	Foregoing of route optimization opportunities in the greater Kingston area