



## **PART Public Transportation System-wide Revisions**

Including a summary of the system analysis, network proposals, adoption revisions and a Service Equity Analysis

Prepared by PART Planning Department  
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## Introduction

### Background

PART Express routes serve several medical and educational institutions as well as a variety of employment hot spots across the region. PART's original service goal was to provide commuters express bus services from rural/suburban areas into and between High-Point, Winston-Salem and Greensboro.

PART Express service began operating in 2002. The first three transit routes were designed to provide commuter express service between Winston-Salem, Greensboro and High Point connecting at a central hub near the Piedmont Triad International Airport.

PART Express added ten routes over the next seven years. Some routes were added in a bid to transfer already existing and successful vanpool traffic over to fixed route bus service while encouraging new transit users. Other routes were added to encourage transit use in corridors which had not had transit service for more than 30 years or had never had transit service. Some of these new routes were runaway successes and others grew steadily, but not quickly.

The high point of PART Express service in terms of ridership was in 2011 when monthly ridership averaged to 48,326 passenger trips with an annual total of 579,916.

Despite growing achievements in terms of ridership, local dedicated revenue in many places has been inadequate to continue the level of service established, and year by year funding patches have been too inconsistent to rely upon. And, although many routes needed more frequent runs in order to capitalize on early successes; at the beginning of FY13, PART had to cut frequency on more than half the routes. As expected, ridership plummeted. Many hard won new transit riders abandoned the service because of work/transit schedule difficulties imposed by the cutbacks. In calendar year 2013, ridership fell to 477,026 annual passenger trips network wide—a drop of 102,890 from the 2011 high.

### Service Area Demographics

The Piedmont Authority for Regional Transportation does not supersede, but compliments local transit services in the Piedmont Triad Region of North Carolina. The PART territory includes four metropolitan areas as defined by US Census metropolitan planning statistical areas, and ten counties. The following information is based on 2010 Census.

The PART territorial jurisdiction had a population (2011-15 American Community Survey) of 1,621,491 individuals. The race and ethnic breakout is as follows:

Race	Total Persons	Percentage of Population
White/Caucasian	1,158,115	71.4%
African American	341,048	21.0%
American Indian/Alaskan Native	6,664	0.4%
Asian	36,920	2.3%
Hawaiian/Pacific Islander	976	0.1%
Other	46,831	2.9%
Two or more races	30,937	1.9%
<b>Ethnicity</b>		
Hispanic/Latino	148,475	9.2%

Ninety-two percent of the region's population is White and African American. The remaining eight percent represents all other racial groups. People of Hispanic/Latino ethnicity make up nine percent of the population of the ten counties.

In 2000<sup>1</sup>, 5.5% of the population in the PART territory is foreign born, with 66.8% of these residents entering the USA between 1990 and 2000. According to the 2011-15 American Community Survey, 11.4% of the population 5 years of age or older in the PART territory speaks a language other than English and of that group 45.7% speak English less than "very well." The following information is based on the 2015 American Community Survey 5-year data sets for the PART territory.

PART Service Area Population who are:	Percentage of region's total Population
Spanish speakers	7.9
Spanish speakers who speak English less than "very well"	3.9
Indo-European language speakers (other than English only speakers)	1.5
Indo-European speakers who speak English less than "very well"	0.4
Asian & Pacific Island (PI) languages speakers	1.5
Asian & PI language speakers who speak English less than "very well"	0.7
Speakers of languages not mentioned above	0.5
Other languages speakers who speak English less than "very well"	0.2

Household Language by Linguistic Isolation:

Linguistic isolation occurs in households where all adults speak a language other than English and none speaks English "very well." Adult is defined as age 14 or older, which identifies household members of high school age and older. In simplistic terms, all members of the household 14 years and over have at least some difficulty with English. The data below is from 2005-2009 American Community Survey 5-Year Estimates.

- All households 2.8%
- Spanish 2.2%
- Other Indo-European languages 0.18%
- Asian and Pacific Island languages 0.3%
- Other languages 0.13%

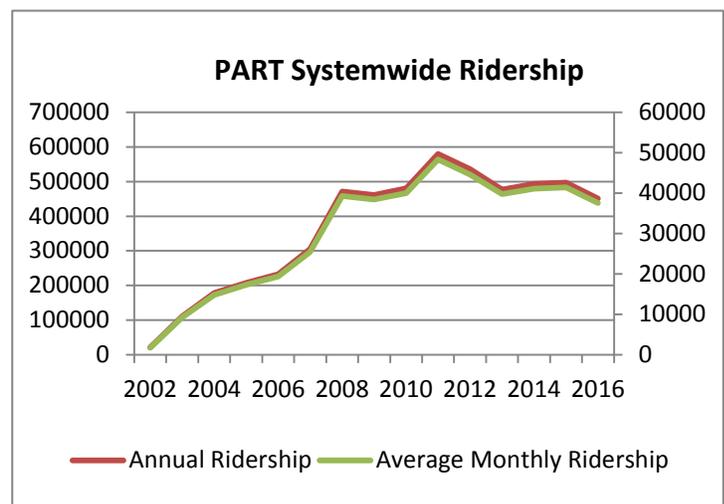
**Description of Current Transit Service**

Service Characteristics:

- Takes 26 buses to operate at peak service
- 380.76 miles of bus routes
- 41,208.2 system wide revenue hours/annually

Ridership History:

The PART Express service has grown steadily since it began in late 2002. More routes were added as the system expanded into nine counties. In 2012 PART enacted major service cuts due to revenue shortfalls.



<sup>1</sup> 2000 is the most recent year for this data for all 10 counties in the region.

Ridership decreased and has never returned to pre-service cut levels.

Headways:

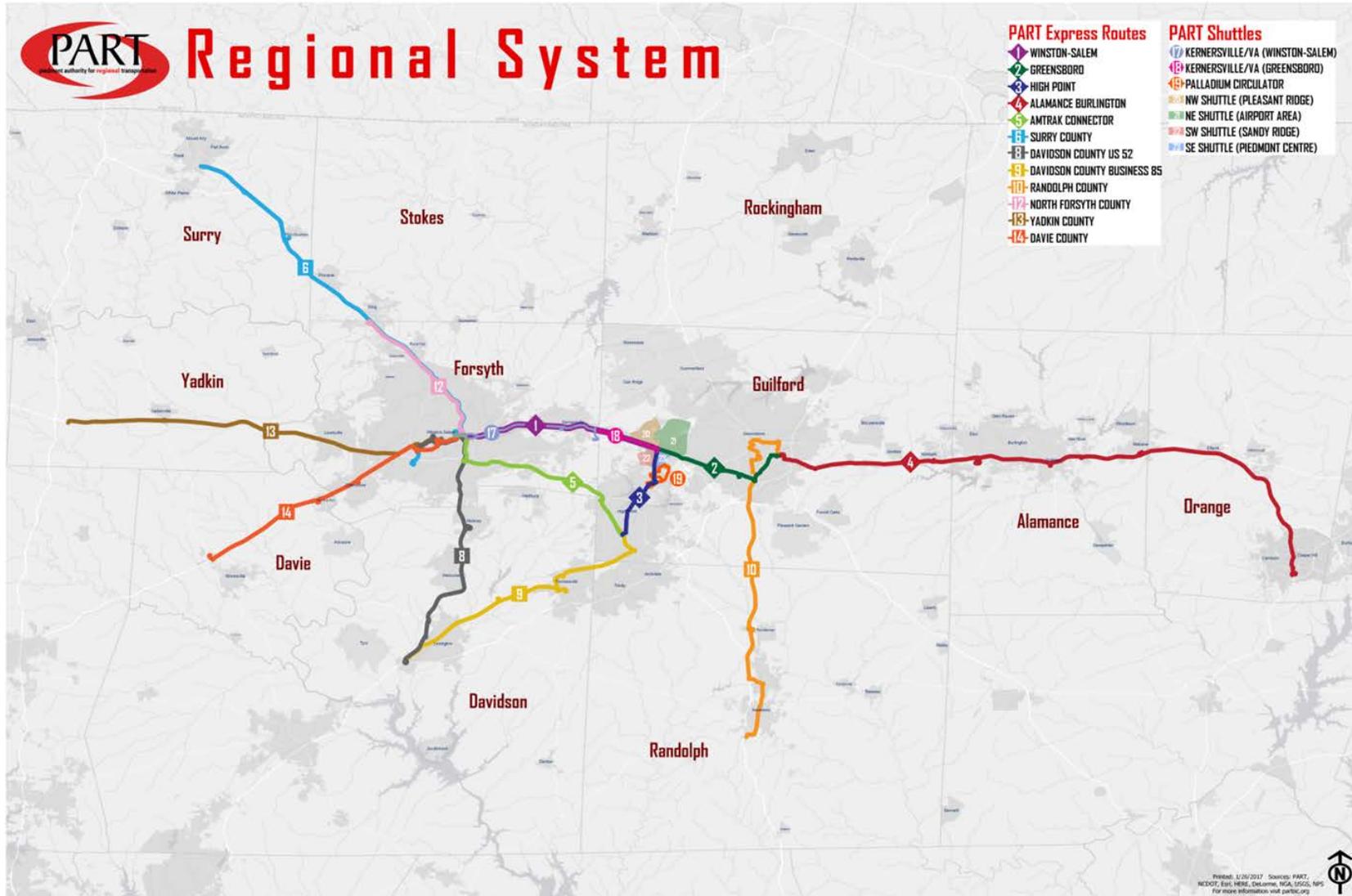
Weekday PART service operates to and from four primary transportation centers. They include the Winston-Salem Transportation Center, the Greensboro Depot, the High Point Broad Avenue Terminal and the PART Hub near the PTI Airport. On the primary urban routes during peak hours the most frequent service is provided on 30 minute headways.

For urban routes during off-peak times, frequency is provided every 60 minutes. For the rural areas during peak hours, the most frequent service is provided on 36 minute headways. During off-peak time for rural area routes service is provided at various times ranging from 180 minutes to no service during off-peak times. During weekday service PART also provides shuttle service from the PART Hub to businesses in and around the PTI Airport area on 30 minute headways. This service is provided during peak, off-peak and evening hours of operation.

Weekend PART service is limited to one route traveling between Winston-Salem and High Point providing service to the Amtrak train station. Three round trips are provided each Saturday and Sunday with frequency every 5 hours.

Headways and Periods of Operation				
	Weekdays			Weekends
Type of Route	Morning (6am – 9am)	Mid- day (9am to 3pm)	Evening (3pm to 7pm)	N/A
Urban Express (1, 2, 3, 4)	30 minutes	60 minutes	30 minutes	
Rural Express (6)	Erratic Headways—no pattern as such			
Rural Express (8, 12, 13, 14)	1 inbound per/day	N/A	1 outbound per/day	
Rural Express (9)	2 inbound & 2 outbound per/day	1 inbound & 1 outbound per/day	2 inbound & 2 outbound per/day	
Rural Express (10)	2 inbound per/day	N/A	2 outbound per/day	
Shuttles (Airport Area)	30 minutes	60 minutes	30 minutes	
Circulators (Palladium, Kernersville)	30	60	30	
Amtrak Connector	Match Train Schedule			

Existing Service Map



## Service Definitions

**Public Transportation** – As defined in the Federal Transit Act, "transportation by a conveyance that provides regular and continuing general or special transportation to the public, but does not include school bus, charter, or intercity bus transportation or intercity passenger rail transportation provided by the entity described in chapter 243 (or a successor to such entity)."

**Route Directness** – Measures the amount of transit route deviation from a direct path, presented as a ratio of route length to the shortest-path length in terms of travel time. For example a route directness of 0% is the shortest travel time between points A and B by a motor vehicle. A route directness of 50% means that the transit deviates from the shortest travel time by 50% more time. For example, imagine a bus route that takes 30 minutes from beginning to end and has a Route Directness score of 50%. This means a traveler in a personal motorized vehicle would take 20 minutes to travel from the same origin to the same destination as the bus route. The lower to route directness ratio the better.

**Commuter Bus (CB)** – Fixed-route bus systems that are primarily connecting outlying areas with a central city through bus service that operates with at least five miles of continuous closed-door service. This service may operate motorcoaches (aka over-the-road buses), and usually features peak scheduling multiple-trip tickets and limited stops.

**Point Deviation** – A method of providing transit service to all origins and destinations within a corridor, defined by a prescribed distance from a street (e.g.,  $\frac{3}{4}$  mile), making scheduled stops at mandatory time points along the corridor on a predetermined schedule. This type of service does not follow a fixed route because the path is determined based on the origins and destinations of the passengers. Passengers can use the service in three ways:

- By traveling between mandatory time points on the schedule
- By advising the bus operator if they want to be taken to a destination that is not a scheduled time point when boarding, or
- If they want to be picked up at a location that is not a scheduled time point by calling the transit system and requesting a pickup.

**Deviated Fixed Route Service** – Transit service that operates along a fixed alignment or path at generally fixed times, but may deviate from the route alignment to collect or drop off passengers who have requested the deviation.

**Route Deviation** – A type of transit service that operates as conventional fixed route bus service along a fixed alignment or path with scheduled time points at each terminal point and key intermediate locations. Route deviation service is different than conventional fixed route bus service in that the bus may deviate from the route alignment to serve destinations within a prescribed distance (e.g.  $\frac{3}{4}$  mile) of the route. Following an off route deviation, the bus must return to the point on the route it left. Passengers may use the service in two ways:

- If they want to be taken off route as part of a service deviation, they must tell the bus operator when boarding, or
- If they want to be picked up at an off route location, they must call the transit system and request a pickup, and the dispatcher notifies the bus operator.

**Point to Point Corridor** – A straight line path adjusted to major highways from the beginning to the end of a route.

**Express Route** – A fixed route point to point service connecting communities with employment centers, major medical centers and educational institutions. Collection points or trip origins will primarily be park & ride lots,

transit centers and transfer points. Destinations shall include transit centers, transfer points and employment centers, major medical centers and educational institutions. Stops within the service area of urban fixed route system shall be limited with a minimum ½ mile separation.

**Urban Express Route** – An express route with point-to-point service located within an urbanized area.

**Rural Express Route** – An express route with its origin or destination located outside an urbanized area.

**Shuttles** – A service designed to provide the first and last mile from a transit center or special location. This service begins and ends at the same point, covers a specific geographic area and provides the first or last mile of a trip. Pickups are typically pre-scheduled. Origins and destinations include those for express routes and points of interest within the service area or community. The principle route is typically the shortest distance connecting points and can be fixed, deviated or demand response.

**Amtrak Connector** – A fixed route service whose primary purpose to provide a through-way trip connecting Winston-Salem and the Amtrak Station in High Point. While the operational characteristics are similar to Express Routes, the service schedule and performance criteria are tied to the Amtrak Train schedule.

**Circulators** – A fixed route or limited deviated service designed to 1) provide the first and last mile to a connecting express or urban fixed route, or 2) to provide coverage to an area or small community without transit service.

## Service Standards

**Vehicle Load Standard** – PART operates regional express bus transportation services throughout a 10 county region. Due to work shifts that vary the Vehicle Load Standard is applied equally between peak and off-peak times. Also, with limited service for Saturday and Sunday, PART applies the same standard for weekend service as well. The average of all loads during the peak and off-peak operating periods should not exceed a load factor of 1.4. With the 24' mini-bus this represents 18 seated, 7 standing for a total of 25 passengers. For the 35' low floor bus this represents 31 seated, 12 standing for a total of 43 passengers. For the 40' low floor bus this represents 39 seated, 15 standing for a total of 54 passengers.

Vehicle Type	Average Passenger Capacities			
	Seated	Standing	Total	Load Factor
24' mini-bus	18	7	25	1.4
35' low floor bus	31	12	43	1.4
40' low floor bus	39	15	54	1.4

**On-Time Performance Standard** – PART Express routes are to be considered on time if they are no more than “1” minute early and no more than “5” minutes late. The on-time performance goal is set at 95% or greater. PART will continuously monitor all routes throughout the system to maintain this standard.

**Service Availability Standard** – PART Express routes are designed to provide access to bus routes throughout a 10 county region. Access is made available through the use of Park & Ride Lots and direct stops along a route. Due to the nature of “express” service and the fact that PART buses are routed on expressways as much as they can be, stops are limited throughout the entire system. The region's strategic corridors are used to enhance the efficiency of the service to the region. Major employment centers, central business districts, schools, universities and hospitals are target areas for the routes.

Headways and Periods of Operation								
Type of Route	Weekdays				Weekends			
	Morning (6am – 9am)	Mid-day (9am to 3pm)	Evening (3pm to 7pm)	Night (7pm - 11pm)	Morning (6am – 9am)	Mid-day (9am to 3pm)	Evening (3pm to 7pm)	Night (7pm - 11pm)
Urban Express (1, 2, 3, 4, 5)	30	60	30	60	30	60	30	60
Rural Express (6, 8, 9, 10, 13, 14)	36	180	36	N/A	N/A	N/A	N/A	N/A
Shuttles (Airport Area)	30	60	30	60	30	60	30	60
Circulators (Palladium, Kernersville)	30	60	30	60	30	60	30	60
Amtrak Connector	Match Train Schedule							

### Service Points and Target Areas

- Park and Ride Lots: 10 minute drive distance and ¼ walk distance
- Transfer points
- Hospitals and major medical centers
- Transit Centers
- Employment Centers
- Universities and Colleges
- Central Downtown Location
- Transit Supportive Densities (Pop. And Jobs per Acre 12 or greater)

### Express Route Stops within Urbanized Areas

Stops within the service area of another transit system:

- Shall be limited.
- Should be within ¼ mile of an existing transit stop.
- Stops must be within ¾ mile of the point to point corridor.
- Stops at hospitals, colleges and major employers can be identified outside the point to point corridor if transferring to another system makes the length of the trip inconvenient.

Bus Stop Spacing Guidelines			
Land Use Type	Spacing	Target Average	Notes
Urban Core	1,000–1,760 ft (1/3 mi)	1,320 ft (1/4 mi)	Stops should be located at major transfer nodes such as rail stations and urban fixed routes bus terminals.
Urban Areas	1,760–2,640 ft (1/3-1/2 mi)	2,000 ft	Stops should be located at high ridership locations and major destinations. Closer stop spacing is appropriate at locations with 200+ boarding's per day or high frequency connecting bus service.
Suburban Areas	1,760–5,280 ft (1/3–1 mi)	2,640 ft (1/2 mi)	
Suburban Activity Centers	1,760–5,280 ft (1/3–1 mi)	2,640ft (1/2 mi)	

## System Analysis Methodology

### General goals and challenges

The PART Express Transit Network has experienced a combination of challenges over its recent history: exceptional ridership on a few routes coupled with poor ridership on a few others; inability to reach full ridership potential in corridors which performed well before 2012 funding shortages forces major service reductions; continuing funding complications restricted by geographies; and customer needs for service improvements are primary drivers for analyzing the entire commuter transit network.

### Workshops

In the fall of 2016, the PART planning staff engaged all agency staff in several workshops. The goals of the workshops were to gather input on PART's entire transit system. Staff was encouraged to "wipe the slate clean," factor in best practices, rider suggestions, and their own ideas. The discussions were aided by valuable data and tools not previously used in the design of PART's transit network.

During the workshops staff discussed each route, examining its ridership, cost recovery and function within the system. The discussions resulted in a series of potential route modifications, changes in frequency and service hours, and a few route eliminations.

Staff persons were given several statements and a question to respond to. These are listed below along with the responses. The exercise was designed to help workshop participants expound on the variety of driving factors of good transit service and frame the planning department analysis of the PART system.

1. What are some barriers to creating an efficient transit system?
  - Change
  - Politics
  - Lack of frequency
  - Unknowns concerning other transit providers
  - Equitable distribution of service
  - Getting the right players around the table
  - Geography
  - Identify our audience
2. What do we want our transit partners to consider?
  - Free transfers
  - True regional value pass
  - GTA Rt. 9 service to the Hub
  - 2 slips at Galyon Depot
  - Sell regional value pass at all transit hubs
  - Incorporate circulator or distribution route in the urban core as a local service
3. When we are done re-envisioning the network, how would you want it to be described?
  - Revenue generating
  - Understandable and accessible
  - Greater frequency
  - Coordinated and integrated
  - Innovative!
  - Efficient, free and full

4. Goals for "Airport" Shuttle Service?
  - 3 mile radius service area
  - Service employers with >500 employees on a standard shift
  - Dedicated service to the Airport
  - Timely connection to the Hub
  - Seamless trip / Communications
  - Fixed Route
  - Circulation within an hour
  
5. "Airport" Shuttle Options?
  - Do nothing
  - Do nothing to service but improve communication and scheduling with technology
  - Add Shuttle Dedicated to Airport (Marriott, Fed Ex)
  - Deviated (3/4 mile) Fixed Route with 4 quadrants or two looped quadrants
  - Fixed Route (ADA ?) with 4 quadrants or two looped quadrants
  - No nothing but add shuttle/dedicated vehicle for overflow or missed trips
  - Add more shuttles and more quadrants

#### Workshop Resources

Tool/Data	Use
<b>Remix</b>	Route Design Densities by TAZ Demographic breakdown
<b>TBEST</b> ( <i>Transit Boardings Estimation and Simulation Tool</i> )	Ridership Projections
<b>PART Route Brochures</b>	Quick reference: route schedules and maps in one document
<b>Google Earth</b>	On-the-fly mapping
<b>LEHD</b> ( <i>Longitudinal Employer-Household Dynamics</i> )	Home to Work data Work to home data County to County (or sub area) commute data
<b>Maps of employment and population data</b>	Reference for current and potential transit service
<b>Maps of urban fixed route transit systems</b>	Reference for current and potential cross system connection points
<b>Comparison Chart</b>	Quick reference: revenue miles, route directness, temporal distances, ridership data, headways, stops
<b>PART Express Costs by Route data</b>	Set constraints on service levels Identify most costly routes per customer/low performing routes

Following the workshops, planning staff evaluated all the comments, suggestions, and discussion then developed a list of potential revisions or actions for each route. The considerations used to narrow down the potential revisions were:

1. Focusing on high ridership routes.
2. Past and current route performance.
3. Focus on core service connecting communities with employment centers, major medical centers and educational institutions.
4. Address rider request

5. Route Directness
6. Reducing deadhead miles to put back into revenue miles
7. Operating expenses/route cost effectiveness

## Proposed Route Revisions from Planning Analysis

### Service Characteristics:

- Takes 24 buses to operate at peak service
- 257.65 miles of bus routes
- 49,622.1 system wide revenue hours/annually
- **Route 1**
  - Discontinue W-S Federal Building stop; Add Innovation Quarter stops
    - Improve route reliability and directness
  - Expand service hours to 9:30PM.
    - Rider request and anticipated demand
- **Route 2**
  - Expand service hours to 9:30PM
    - Rider request and anticipated demand
  - Revise route so that the morning inbound/evening outbound trips access downtown along Gate City Boulevard, and the morning outbound/evening inbound trips access downtown along Freeman Mill.
    - To allow direct access to UNCG for students and employees in-commuting from the west
- **Route 3**
  - Expand service hours to 9:30 PM;
    - Rider request and anticipated demand
  - Reduce the number of stops along Hwy 68 and Centennial Street;
    - Reliability, efficiency (Route 19, Shuttles)
- **Route 4**
  - Add additional trip Eastbound in the AM, and Westbound in the PM
    - Meet demand
- **Route 5**
  - Add three additional round trips. Must coordinate any changes to this route with NC by Rail. Proposal is for buses to run continuously and be timed for train arrival but not wait if a train is late. In turn, rail passengers may have to wait a short period for the next bus. Also, current Route 8 riders would be directed to use a combination of Routes 9 and 5 in order to travel to and from Winston-Salem.
    - Would be a step in bringing Route 5 more in line with the other 3 urban to urban routes in terms of a more frequent service
    - Would end the practice of making non-rail passengers wait for up to 60 minutes on trains
- **Route 6**
  - Add King Park & Ride stop
    - To replace service by Route 12 and increase frequency King Park & Ride
  - Discontinue two stops south of I-40 in Winston-Salem
    - Low ridership to Kimel Park (VA Clinic moved to Kernersville see Routes 17 and 18)

- **Route 8**
  - Discontinue route
    - Low ridership and insufficient local funding
    - Current Route 8 riders will be directed to use a combination of Routes 9 and 5 or Routes 9, 3 and 1 in order to travel to and from Winston-Salem
- **Route 9**
  - No change.
- **Route 10**
  - Add three additional Northbound trips and three additional Southbound trips
    - Past performance indicated the need for more service and serving the reverse commute
- **Route 12**
  - Merged with Route 6
- **Route 13**
  - Discontinue Route
    - Low ridership and insufficient local funding
- **Route 14**
  - Discontinue route.
    - Low ridership and insufficient local funding
- **Routes 17 & 18**
  - Add two additional round trips to each route
    - Rider requests and improved service to VA
- **Route 19**
  - No change
- **Shuttles**
  - For future consideration: Deviated fixed route to improve efficiency and predictability

## **Operational Analysis and Board of Trustee's Action**

After the Planning Department evaluated all the comments, suggestions, and discussion from the workshops and completed the list of revisions and proposed schedules and path for each route, the list was reviewed by the Operations Department staff.

This review and analysis consisted of:

- Driving the proposed routings in the buses appropriate to the service in order to test the timing and practicability of schedules and roadways recommended
- Making adjustments to the proposed schedules and routings according to findings during test runs
- Making adjustments to the proposed changes due to staffing and fuel constraints

The PART Board of Trustees also initiated a change to staff recommendations due to public comment. The adjustment they requested affected Route 10. The few operational and board adjustments needed are reflected in the following maps and charts as well as the summary charts in Appendix A. These adjustments were made on recommendations for Routes 2, 5 and 10. Route 2 adjustment took out Gate City Blvd, Route 5 adjustment was to make no changes and Route 10 is a short extension of the route from the Galyon Depot to Moses Cone Hospital.



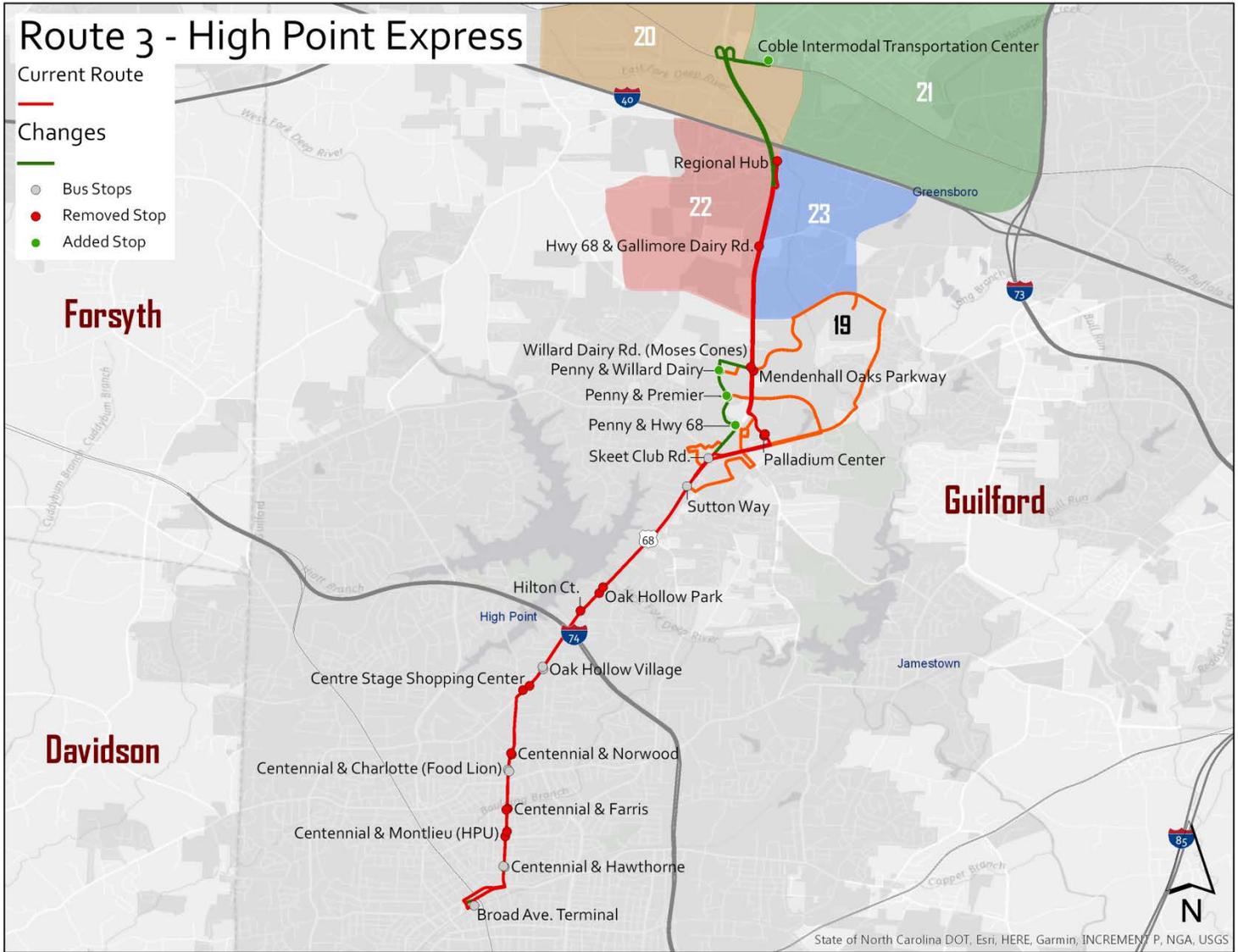
Name	Geographic Service			Changes
	Timed Stops	County(ies)	MPO(s)/RPO	
Route 1	WS Transportation Center Innovation Quarter CTC	Forsyth	W-S MPO	1. Remove stops: Federal Building (3rd & Main, WS)
		Guilford	GSO MPO	2. Add stops: Innovation Quarter
				3. Extend service to 9:30pm

# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
			AM	Mid	PM Peak	PM				
2	6:00 AM	9:30 PM	30	60	30	60	8%	504	0	14%



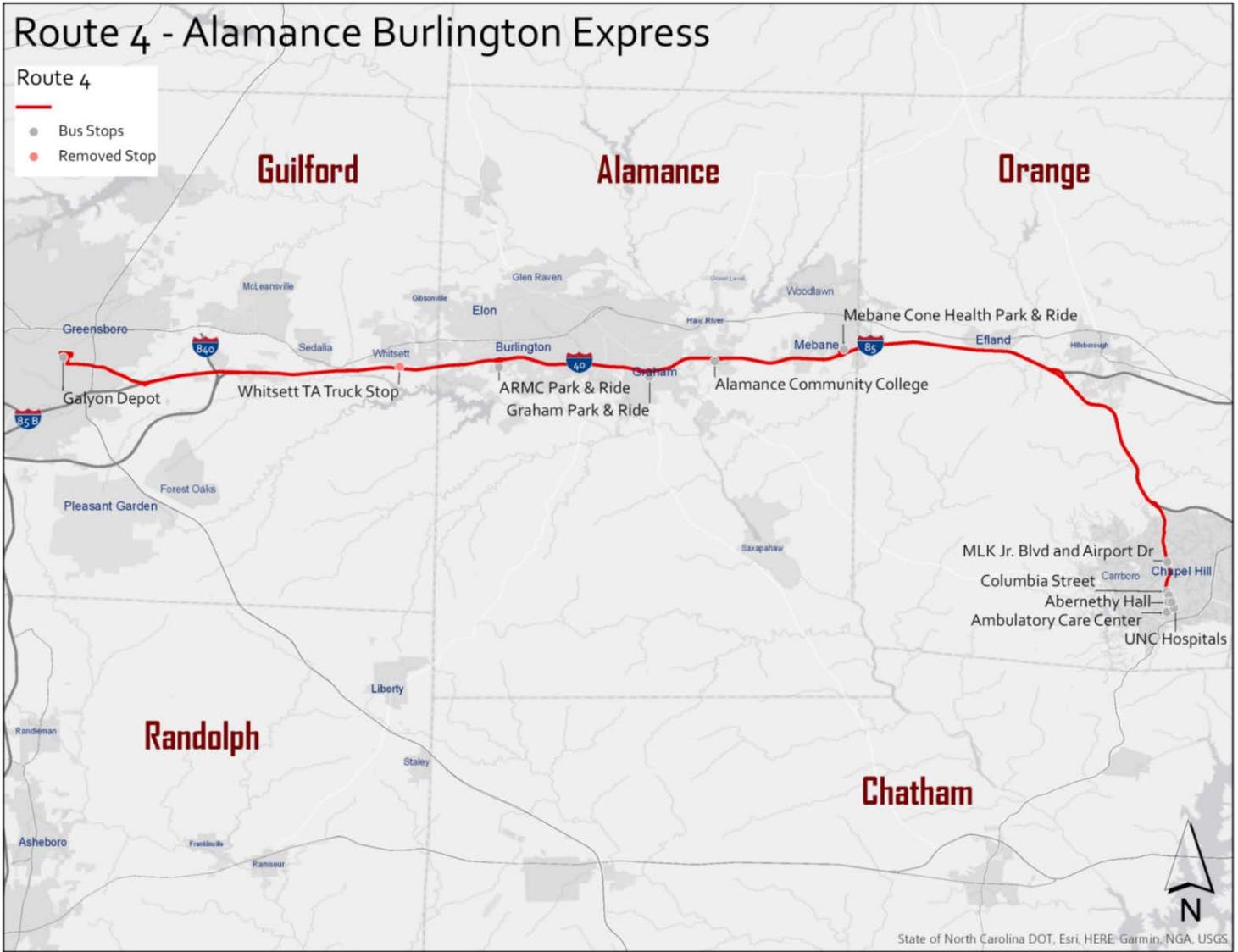
Name	Geographic Service			Changes
	Timed Stops	County(ies)	MPO(s)/RPO	
Route 2	Galyon Depot Four Seasons CTC	Guilford	GSO	1. Extend service to 9:30pm

# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
			AM	Mid	PM Peak	PM				
2	6:00 AM	9:30 PM	30	60	30	60	-32%	758	0	4%



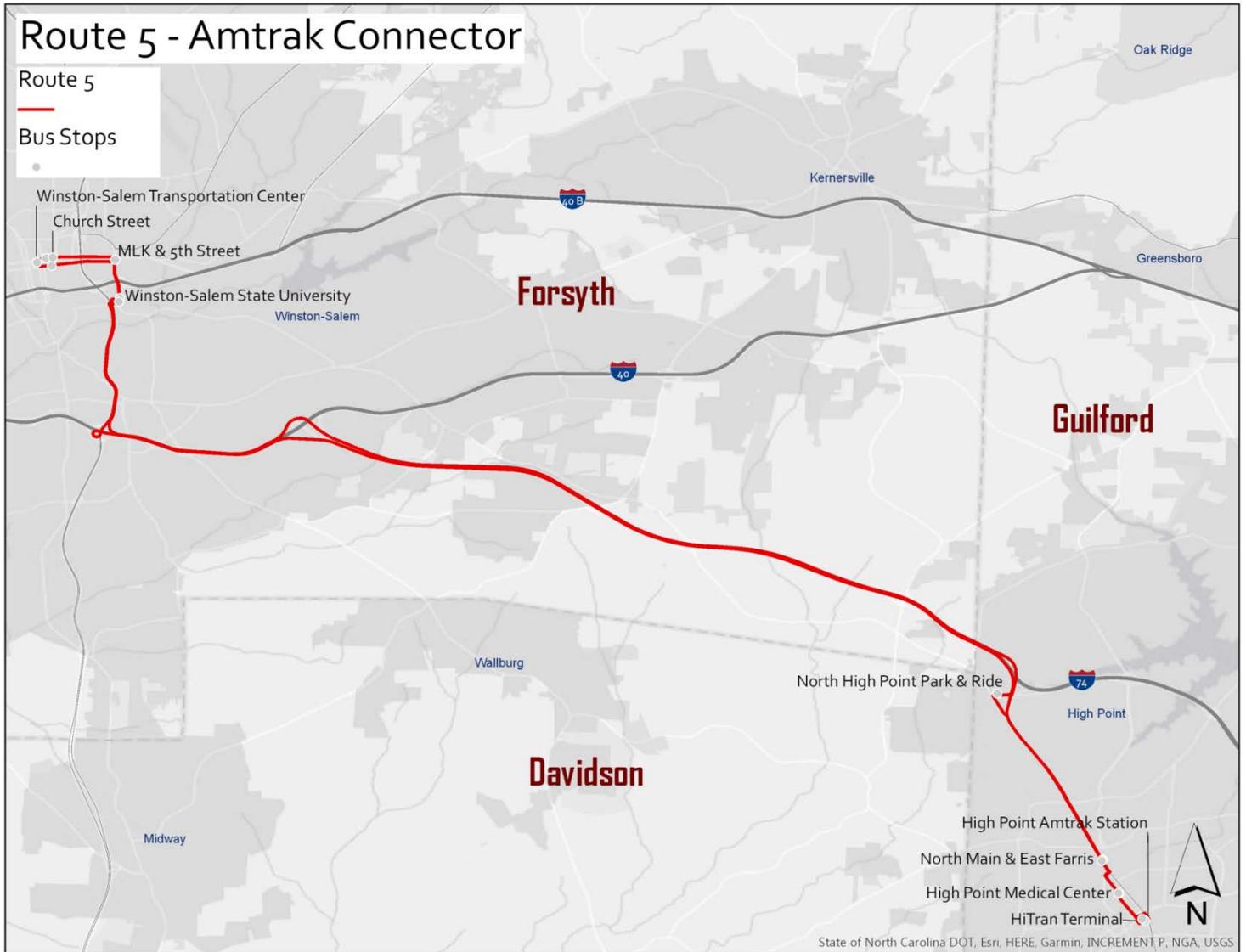
Name	Geographic Service			Changes
	Timed Stops	County(ies)	MPO(s)/RPO	
Route 3	HiTran Hub Penny Road PART Hub	Guilford	HP GSO	1. Extend service to 9:30pm
				2. Reduce number of stops

# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
			AM	Mid	PM Peak	PM				
2	6:00 AM	9:30 PM	30	60	30	60	53%	504	0	2%



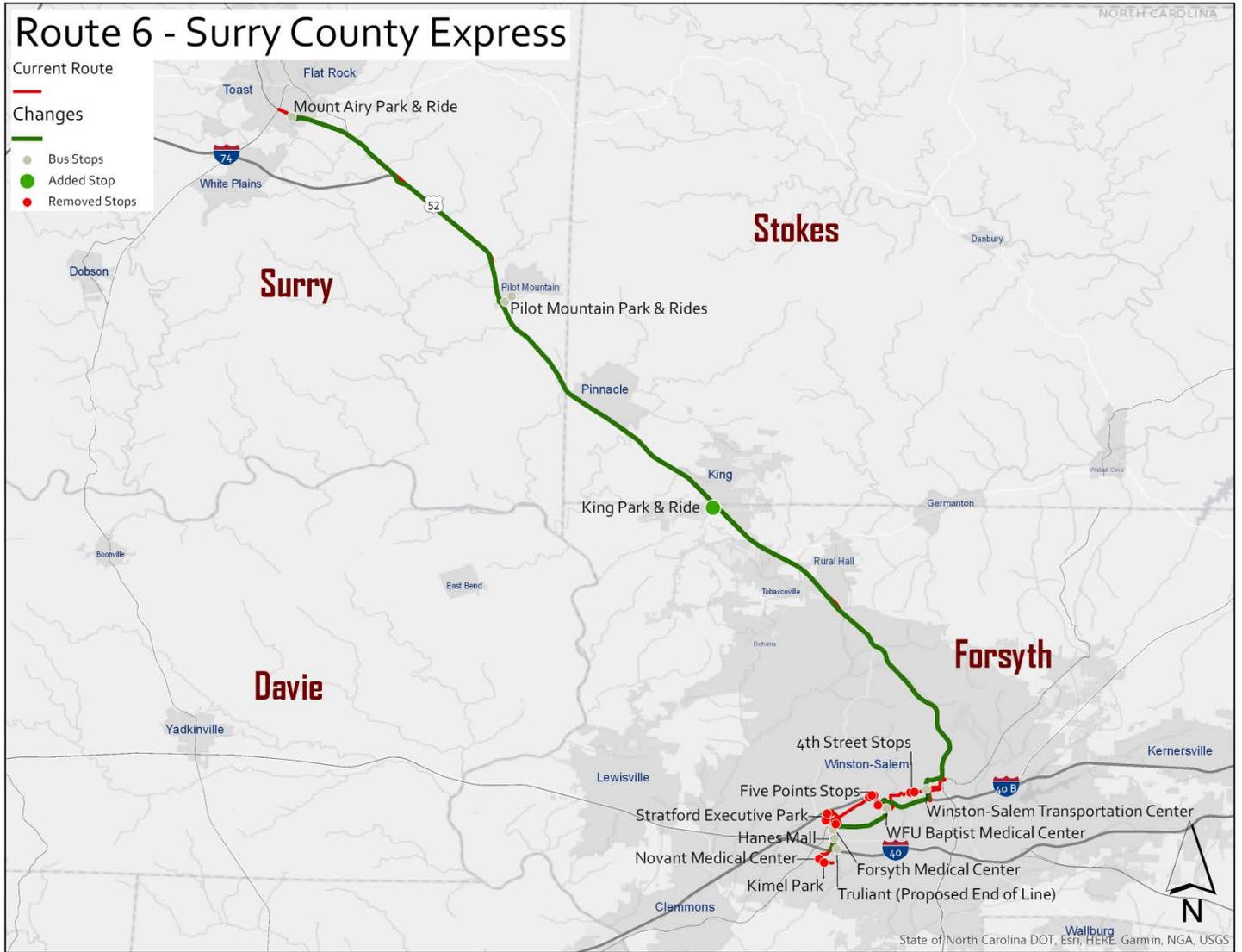
Name	Geographic Service			Changes
	Timed Stops	County(ies)	MPO(s)/RPO	
Route 4	Galyon Depot Alamance Regional Med Center Graham P&R Alamance Community College	Guilford	GSO	1. One Additional AM roundtrip  2. Discontinue Whitsett stop
	Cone Health Mebane Columbia Street Abernethy Hall UNC Hospital Ambulatory Care Center	Burlington  Orange	BG  DCHC	

# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
			AM	Mid	PM Peak	PM				
3	6:00 AM	8:00 PM	30	60	60		12%	811	126	18%

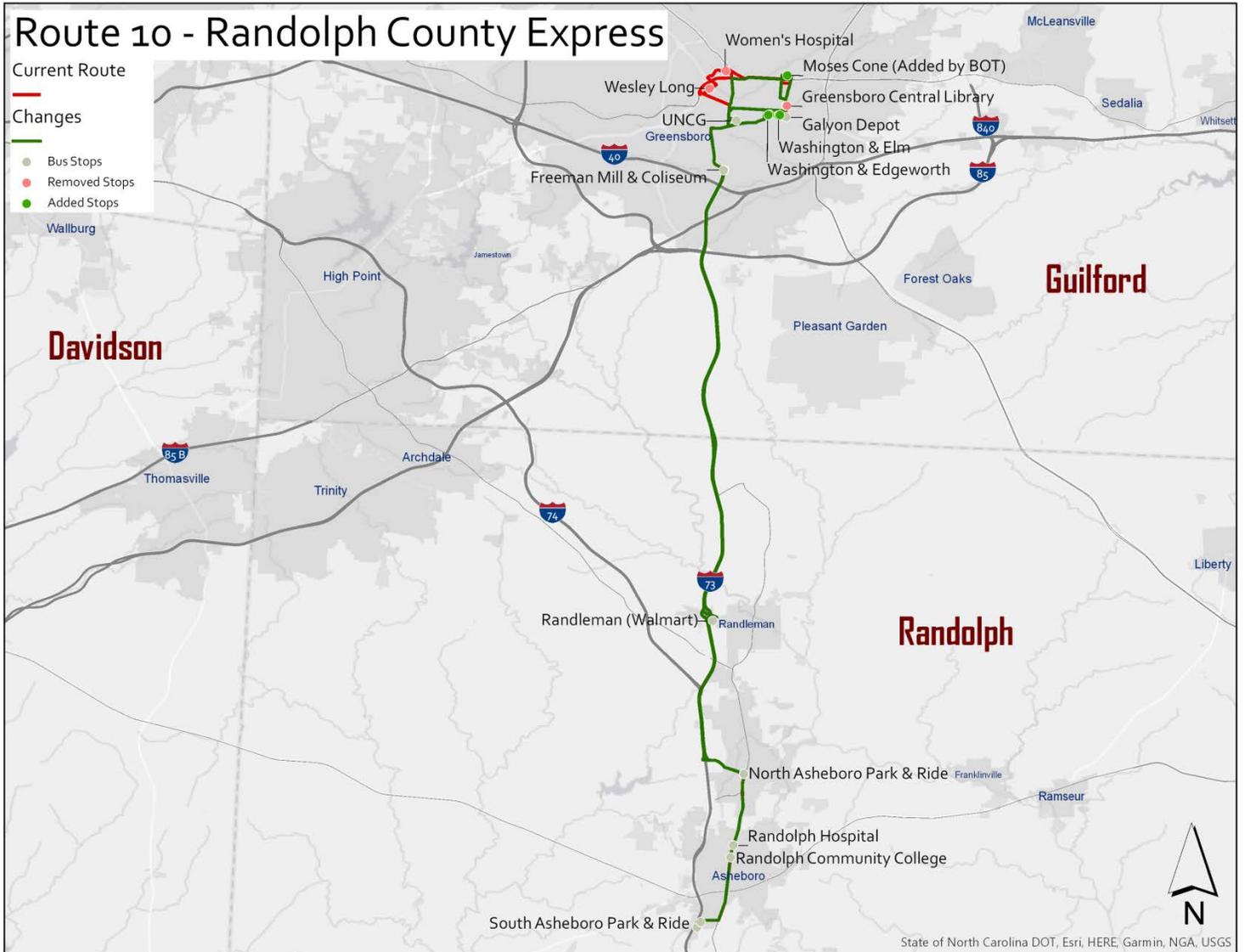


Name	Geographic Service			Changes
	Timed Stops	County(ies)	MPO(s)/RPO	
Route 5	WSTA Hub WSSU North HP P&R HP Regional Hospital HiTran Hub Amtrak Station	Guilford  Forsyth	HP MPO  WS MPO	1. Additional three runs on weekdays (to replace Route 8 and increase efficiency of Route 5)

# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
			AM	Mid	PM Peak	PM				
1	7:00 AM	8:00 PM	60	60	60		No change	756	0	15%

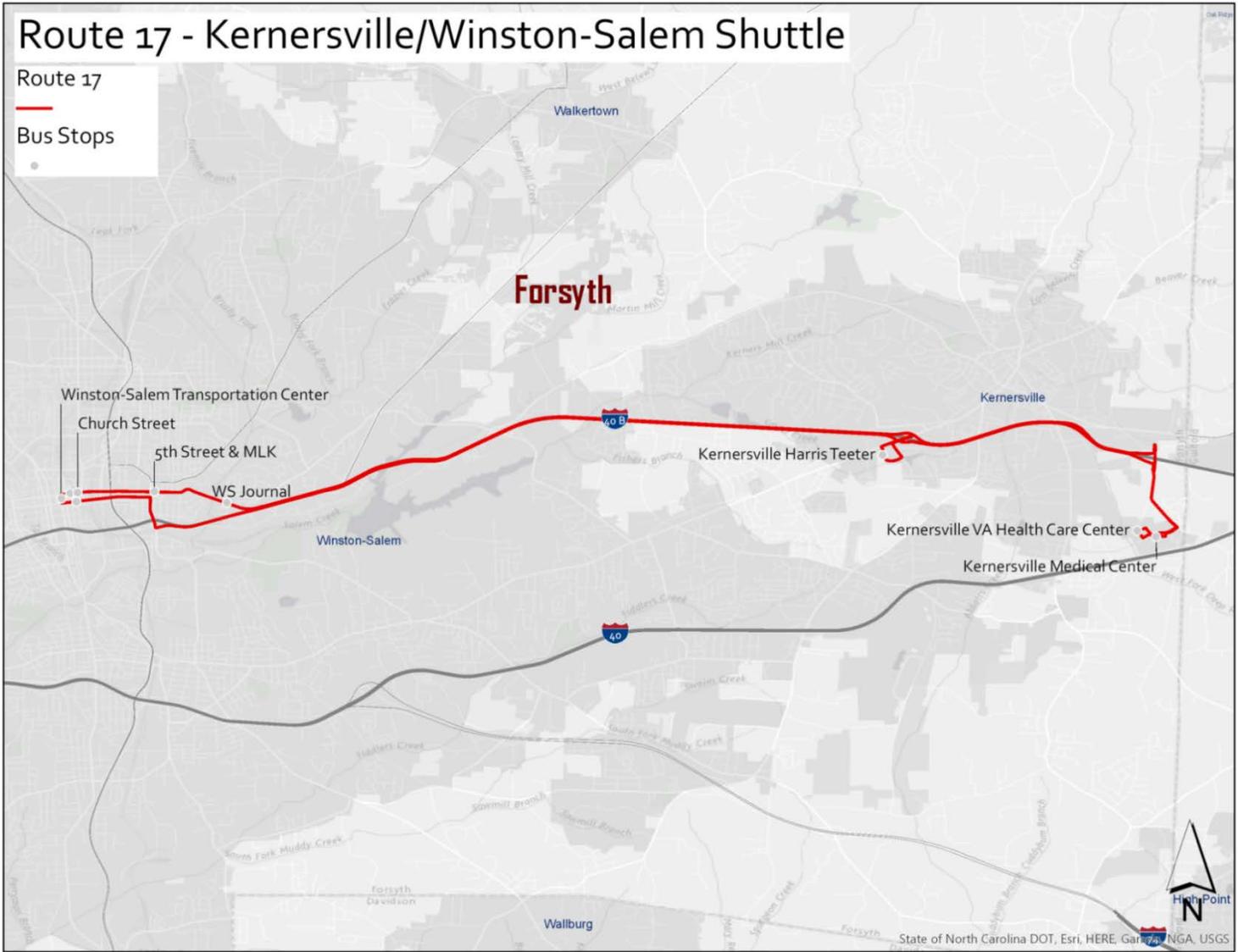


Name	Geographic Service				Changes					
	Timed Stops	County(ies)	MPO(s)/RPO							
Route 6	Mt. Airy P&R Pilot Mountain P&R Lots King P&R WSTA Transit Center WFB Hospital Novant Health Hospital Truliant Credit Union	Surry  Stokes  Forsyth	Northwest Piedmont RPO  W-S MPO	1. Add stop at King						
				2. Discontinue route 12						
				3. Discontinue Kimel Park and Novant Medical stops						
# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
3	5:30 AM	6:30 PM	AM	Mid	PM Peak	PM	17%	0	0	2%



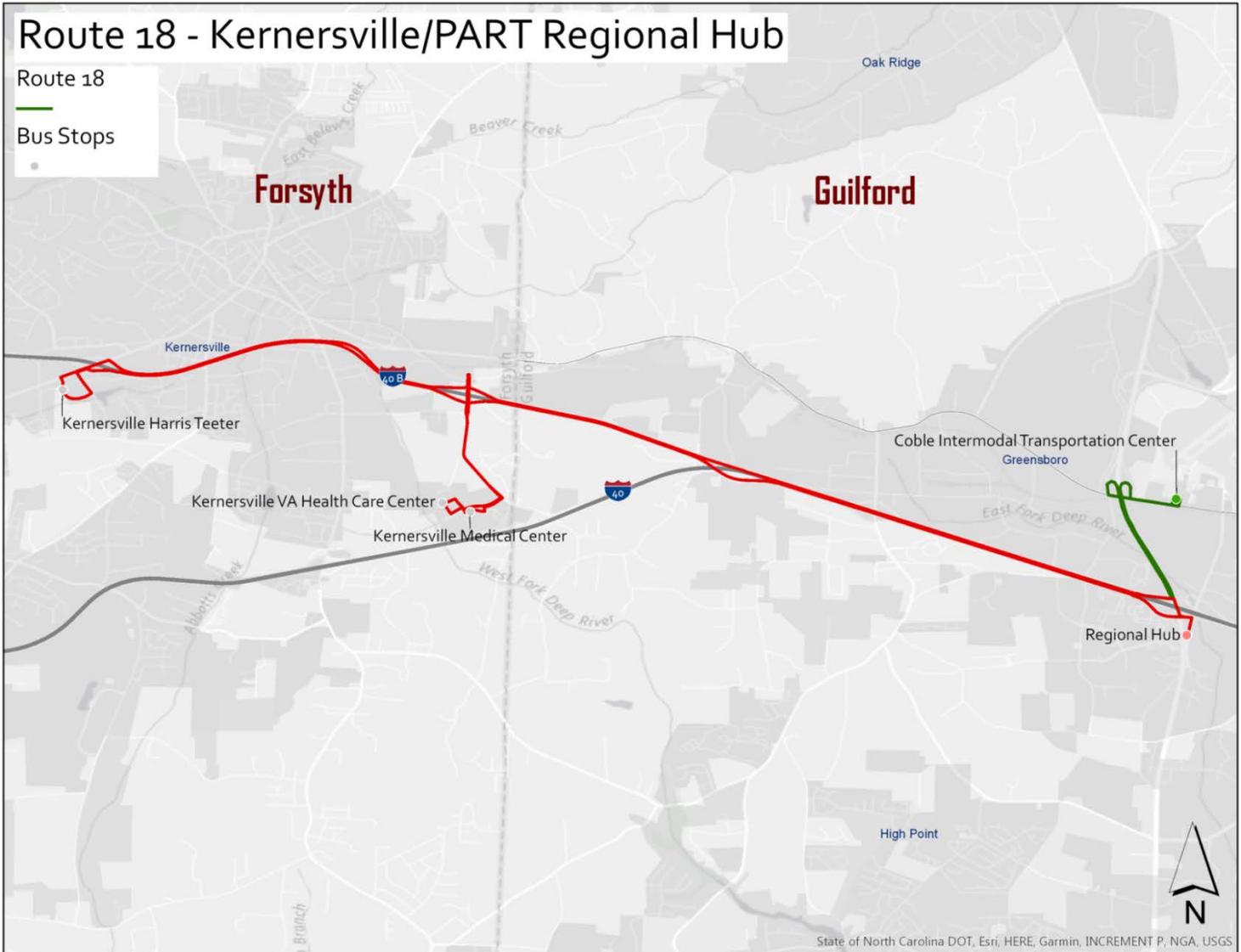
Name	Geographic Service			Changes
	Timed Stops	County(ies)	MPO(s)/RPO	
Route 10	S. Asheboro P&R Randolph Community College Randolph Hospital N. Asheboro P&R Randleman Walmart Freeman Mill Rd UNCG (Elliott Center) Galyon Depot	Guilford  Randolph	GSO MPO  Piedmont Triad RPO	1. Expanded to 9 runs (3 each in AM, mid-day, PM)
				2. Reduce route miles in Greensboro (direct to Depot)

# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
			AM	Mid	PM Peak	PM				
2	5:30 AM	7:30 PM	60	60	60		84%	1,134	-276	80%



Name	Geographic Service			Changes
	Timed Stops	County(ies)	MPO(s)/RPO	
Route 17	VA Health Care Center Kernersville Medical K-ville Stop on S. Main WSTA Transit Center	Forsyth	WS MPO	1. Add midday run  2. Add afternoon run

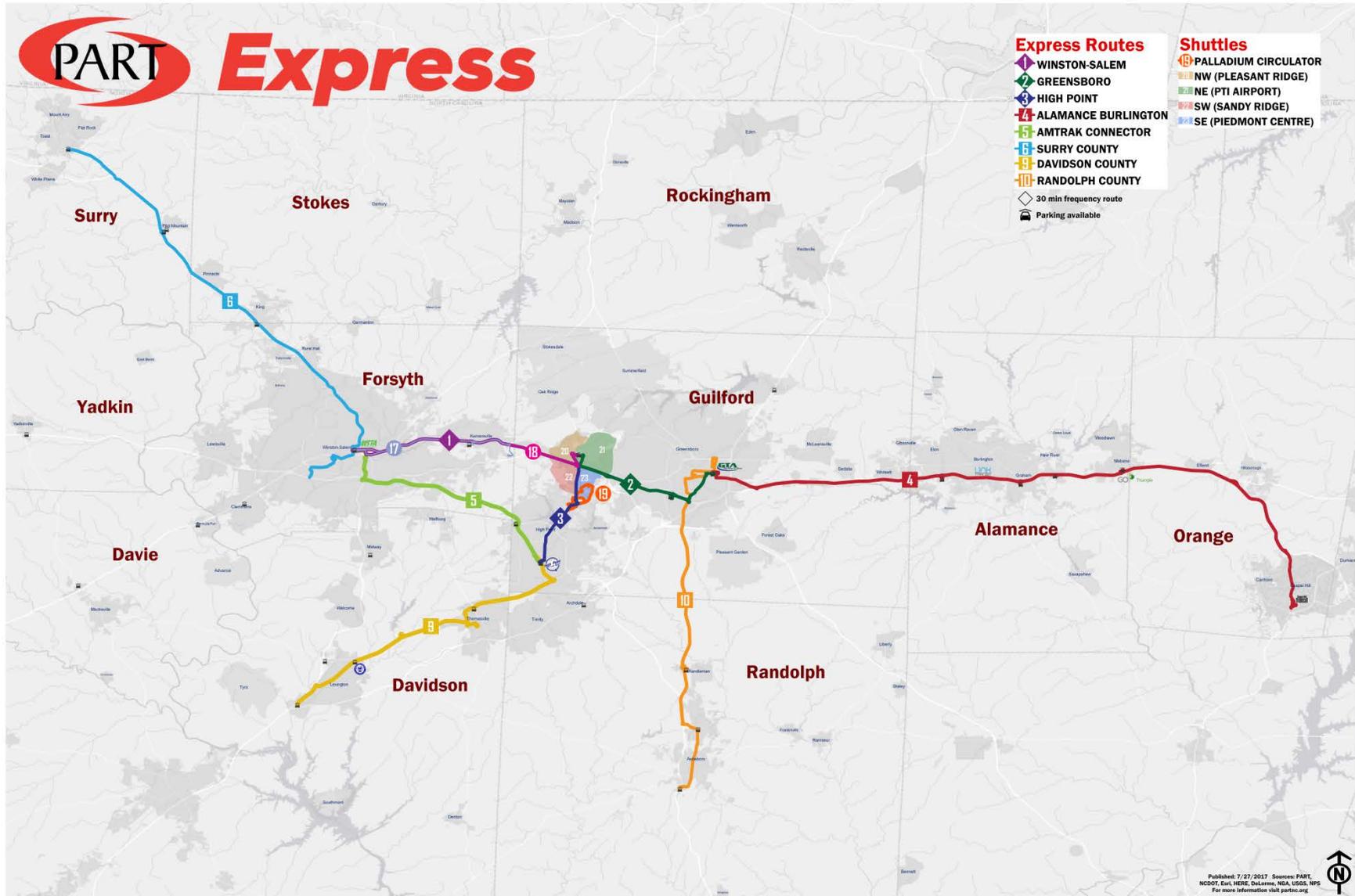
# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
			AM	Mid	PM Peak	PM				
1	6:00 AM	6:30 PM	60		60		No change	505	0	33%



Name	Geographic Service			Changes
	Timed Stops	County(ies)	MPO(s)/RPO	
Route 18	VA Health Care Center Kernersville Medical K-ville Stop on S. Main PART Hub	Forsyth	WS MPO	1. Add midday run
		Guilford	GSO MPO	2. Add afternoon run

# Buses	Start	End	Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Ridership
			AM	Mid	PM Peak	PM				
1	6:00 AM	6:30 PM	60		60		No change	505	0	42%

**Proposed System**



## Ridership Projection

TBEST is intended to serve as a comprehensive transit ridership forecasting model. Transit ridership at individual stops depends on numerous factors and it is critical that all possible factors are considered if one desires to obtain accurate predictions of transit ridership. The methodology underlying TBEST ensures that the model is sensitive to a wide range of socio-economic and supply attributes with available data. In particular, the following features of TBEST are noteworthy:

### Forecasting Stop-Level Boardings

TBEST provides forecasts or predictions of stop-level boardings. Thus, ridership in the context of TBEST is defined as the number of boardings at each transit stop.

1. **Direct and Transfer Boardings:** TBEST incorporates separate equations for estimating and distinguishing between direct boardings and transfer boardings at each stop location. At any given transit stop, one may have customers who begin their trip at the designated stop and other customers who are transferring to the subject route at the designated stop in the course of their overall trip/journey. By distinguishing between direct and transfer boardings, TBEST is able to:
  - a. Account for both stop characteristics that contribute to transit linked trip making and transit network characteristics that influence transfer activity levels and locations;
  - b. Account for stop buffer characteristics that contribute to attracting and generating walk access ridership at a stop;
  - c. Provide a quantitative perspective on the extent of trip linking that is occurring and;
  - d. Provide a framework for analyzing the impacts of transfer points and transfer opportunities on ridership.
2. **Time of Day Based Analysis:** TBEST includes separate ridership estimation equations for each time of day and day of week. There are separate peak period coefficients developed in TBEST to account for the very different trip generation characteristics of residential and employment areas compared to off-peak periods. The times of day that have been incorporated into TBEST include:
  - a. Weekday a.m. (morning) peak period
  - b. Weekday p.m. (afternoon) peak period
  - c. Weekday off peak period
  - d. Weekday night period
  - e. Saturday (all day)
  - f. Sunday (all day)
3. **Spatial Accessibility (Socio-economic Characteristics):** TBEST accounts for spatial accessibility in computing boardings at individual stops. Ridership is partially dependent on the number of people of various characteristics (defined by age, working status, race/ethnicity, income, car ownership, etc.) who can access the transit system. TBEST considers circular buffer areas around individual stops to identify the market that has access to the transit system.

4. **Time-Space Network Connectivity:** In addition to considering spatial accessibility at the origin stop, one needs to consider the overall connectivity and time-space accessibility that a system provides to compute accurate ridership at any stop. People are more likely to use a transit system (stop) that is well connected and from which many destinations offering a range of activity opportunities can be reached. However, it is likely that riders will not be willing to tolerate trip lengths or durations and number of transfers beyond a certain threshold level. Thus, one needs to consider the activity opportunities (measured in terms of population and employment) that can be reached within a certain time frame and number of transfers when modeling the number of boardings at any stop. In addition, this network accessibility has to be computed and accounted for along the temporal dimension. The network connectivity and range of reachable destinations may be different at different times of the day due to service supply differences (frequency and travel speed) by time of day.
5. **Competing and Complementary System Effects:** Within a transit system, there are bound to be competing and complementary system effects that affect ridership. For example, any stop is likely to have a series of neighboring stops that are competing for the same market/riders. If indeed, neighboring stops have overlapping market area buffers, then it is important to consider such competing effects in computing stop-level ridership. Similarly, there may also be complementary effects that affect and enhance ridership at a stop. For example, if a stop acts as a transfer point where two or more routes meet, then the number of boardings at the stop may be enhanced by virtue of the transfer opportunities present there. TBEST explicitly accounts for both of these effects in computing stop-level ridership.
6. **Automatic Validation to Local System Total Ridership:** As ridership is known to vary by urban area scale independent of other factors such as density, TBEST is designed to automatically scale system total ridership to match counted ridership for the base validation year. This automatic scaling accounts for conditions not directly captured in the model variables including roadway congestion, parking availability and cost as well as other local context conditions.

**Preparing Near and Mid-Term Forecasts:** TBEST was designed to provide near and mid-term forecasts of transit ridership. While the model can be applied to any future year socio-demographic and transit service specifications the user chooses to apply, because the model is not interactive with the roadway network, long range forecasts will not show a sensitivity to changes in the competitive situations between transit and roadways over time.

The table below shows the ridership projections of the initial service change recommendations. No changes were implemented on Route 5 Amtrak Connector. Other differences in implementation that may impact these projections include Route 2, no changes to the route occurred-only extended service hours to 9:30pm, and Route 10, service was not discontinued to Moses Cone Hospital.

While the 6% increase in daily average boardings is meaningful, we are measured by unlinked passenger trips (UPT) in the National Transit Database. In 2016 we carried 450,631 UPT, with a 6% increase we expect 26,800 additional trips as a result of service changes. When adjusted for the current trend of declining ridership (-2% in North Carolina), we expect 17,800 additional trips, or 468,400 in 2017.

Alternative	Weekday Ridership	Forecasted Weekday Ridership	Change	Notes
1 Winston-Salem A	388	444	14%	Expanded service span, discontinue Fed Building, add Innovation Quarter stops
2 Greensboro A + B	598	622	4%	Expanded service span, inbound on Gate City with stops at Seasons Way, Coliseum, and UNCG
3 High Point	356	362	2%	Expanded service span to 9:30pm
4 Alamance Burlington	158	186	18%	Additional run in the AM and PM
5 Amtrak Connector	53	61	15%	Additional runs to replace Route 8 and discontinue long layover when train is running late
6 Surry County	123	125	2%	Add King Park & Ride as a Stop
8 Davidson County US 52	12	0		Route discontinued
9 Davidson County Bus. 85	20	20		No change
10 Randolph County	20	39	95%	Additional runs, keep UNCG stop, discontinue hospital stops in Greensboro
12 North Forsyth County	12	0		Route discontinued
13 Yadkin County	10	0		Route discontinued
14 Davie County	10	0		Route discontinued
17 Winston-Salem to Kernersville	18	24	33%	Added a mid-day run
18 Greensboro to Kernersville	12	17	42%	Added a mid-day run
19 Palladium Circulator	10	10		No change
20-23 Shuttles	50	50		No change
	<b>1850</b>	<b>1960</b>	<b>6%</b>	

## PART Express Fare Equalization Plan

### Background

In July 2011 PART increased fares and create a split fare system for urban and rural routes. Over time it became apparent that this system was confusing to the public and difficult for drivers to administer. Passengers were frequently riding both urban and rural routes, there was not clear distinction which route was rural and which was urban, and there was unequal enforcement of issuing transfers vs. a new ticket. PART staff believed that by reducing the confusion may lead to increased ridership and a more equitable fare structure.

### Fare Equalization Plan

The proposed new fare structure is depicted below. The goal is to 1) standardize fares across the urban, rural and circulator routes and 2) provide fares/passes that serve as an incentive to ride. Under the new structure all routes will carry the same fare, it will provide for a discounted 10 ride pass, and a new all-day pass. The change in the fare structure does not require a Title VI evaluation because any fare increase experience by the public was under the 25% threshold triggering a Title VI evaluation. However the fare changes were included in public notices and part of the public hearings related to the route changes. The proposed implementation date was July 3, 2017.

<b>PART Express Fare Equalization Plan</b>						
Fare Type	FY 16 Usage	Current Fare	Fare Revenue	New Fare	Potential Fare Revenue	Comment
<b>URBAN</b>						
Single Ride	102,853	\$ 2.40	\$ 246,847.20	\$ 2.50	\$ 257,132.50	\$ 0.10 increase
Reduced Single Ride	43,582	\$ 1.20	\$ 52,298.40	\$ 1.25	\$ 54,477.50	\$ 0.05 increase
10 Ride Pass	468	\$ 24.00	\$ 11,232.00	\$ 20.00	\$ 9,360.00	\$ 4.00 decrease & provides 10 rides for the price of 8
Reduced 10 Ride Pass	729	\$ 12.00	\$ 8,748.00	\$ 10.00	\$ 7,290.00	\$ 2.00 decrease & provides 10 rides for the price of 8
31 Day Pass	243	\$ 74.50	\$ 18,103.50	\$ 80.00	\$ 19,440.00	\$ 5.50 increase
Reduced 31 Day Pass	340	\$ 37.25	\$ 12,665.00	\$ 40.00	\$ 13,600.00	\$ 2.75 increase
All-day Pass	n/a	n/a		\$ 6.00		New pass
Reduced All-day Pass	n/a	n/a		\$ 3.00		New pass
<b>Urban Totals</b>	<b>148,215</b>		<b>\$ 349,894.10</b>		<b>\$ 361,300.00</b>	
<b>RURAL</b>						
Single Ride	8,869	\$ 3.00	\$ 26,607.00	\$ 2.50	\$ 22,172.50	\$ 0.50 decrease
Reduced Single Ride	12,493	\$ 1.50	\$ 18,739.50	\$ 1.25	\$ 15,616.25	\$0.25 decrease
10 Ride Pass	97	\$ 30.00	\$ 2,910.00	\$ 20.00	\$ 1,940.00	\$10.00 decrease & provides 10 rides for the price of 8
Reduced 10 Ride Pass	228	\$ 15.00	\$ 3,420.00	\$ 10.00	\$ 2,280.00	\$ 5.00 decrease & provides 10 rides for the price of 8
31 Day Pass	73	\$ 90.00	\$ 6,570.00	\$ 80.00	\$ 5,840.00	\$10.50 decrease
Reduced 31 Day Pass	139	\$ 45.00	\$ 6,255.00	\$ 40.00	\$ 5,560.00	\$ 5.25 decrease
All-day Pass	n/a	n/a		\$ 6.00		New pass
Reduced All-day Pass	n/a	n/a		\$ 3.00		New pass
<b>Rural Totals</b>	<b>21,899</b>		<b>\$ 64,501.50</b>		<b>\$ 53,408.75</b>	
<b>Totals for Urban and Rural</b>	<b>170,114</b>		<b>\$ 414,395.60</b>		<b>\$ 414,708.75</b>	
			<b>Difference</b>		<b>\$ 313.15</b>	Current Fare vs. New Fare

An analysis was conducted to estimate the impact on revenue. FY 16 pass and tickets sales and the associated revenue were used. The new fare structure was applied to the FY 16 sales. It is projected that the adjustment will not reduce the fare box revenue.

## Public Engagement

### Background

Public input was gathered and taken into account during the evaluation process for all the route and fare changes. There were three periods where input was considered: continuous, immediately prior to evaluate of the routes and during the public notification / public hearing period.

### Continuous Input

Input was constantly gathered through a PART Info email and by the regional call center that is documented and directed to the appropriate department, i.e. planning or operations.

### Immediately Prior

An On Board Origin - Destination Survey and a Customer Satisfaction Survey was completed in October 2016. The results from 595 surveys were tallied and responses factored into the evaluation process. PART also utilized APC data during the evaluation process. While PART has had APC's since 2015, it did not have enough data to be considered accurate until fall 2016.

### During the Public Hearing Process

Once the proposed route changes were finalized they were communicated to the public and current riders. Fliers were available on buses and proposed changes highlighted on the web site. On routes that were proposed to be discontinued, PART staff rode the bus and spoke directly with passengers. During the public hearing process, comments were received via email. The comments were compiled, categorized and reported to PART Board at the public hearing. Public comments were also received at the public hearing.

### Public Input Details

In early March 2017, PART's Marketing and Communications Team developed a communications plan. The goal was to communicate the proposed changes, ask for comments, notify the public of the public hearing and then communicate the changes that were approved by the Board. Below is a list of the communication activities that were implemented:

#### April

- Develop Announcements, Flyers, Messaging, Survey, Fare Chart
- Begin Public Awareness by riding Routes being discontinued
- Send Notice to all PART/NETS Staff
- Post high level announcement to website

#### May

- Training Sessions for Call Center & National Express Employees
- Training Sessions for Other Transit Agencies/MPOs/Etc.

- o Develop New Schedules with Route Adjustments
- o Announce Route/Fare Adjustments to Public with Schedules/Maps on 5/5 to allow for 30 day comment period
- o Driver to hand out one-pager to passengers
- o Post to Social Media – Include in What's Happening Email
- o Use Call Center to Announce "Did you know PART is undergoing Route Adjustments?"
- o Post Survey to collect feedback
- o Present to PART Board at meeting 5/17
- o Announce Public Hearing to be held on 6/14 during Board Meeting for final approval of Route Adjustments

### June

- o Close survey, collect and analyze feedback
- o Present to Planning and Operations Committee, then to PART Board final schedules on 6/14
- o Board Meeting and Public Hearing held on 6/14
- o Begin PART Express (re)Fresh promotions announcing new routes, schedules and fares. Announce Extended Hours and moving to Coble Transportation Center
- o Roll out (re)Fresh branding and announcements
- o Updated Commercial Produced to announce adjustments, additional service, and new facility
- o WFMY Commercial to run weeks of 6/12-6/24
- o Facebook & Instagram targeted Advertisements to run June 1-30
- o Begin incorporating Saturday service announcement for 9/30
- o Signage posted for route adjustments/hub moving
- o Prep for first day of service 7/3

### July

- o New Service to begin 7/3
- o Grand Opening of CTC planned for 1st week of service
- o Send Press Release

## Title VI Compliance

### Requirements

The Federal Transit Administration (FTA) Circular 4702.1A under Title VI of the Civil Rights Acts of 1964, requires that PART evaluate significant system-wide service changes and proposed improvements at the planning and programming stages to determine whether those changes have a discriminatory impact on minority and low income populations.

A major service change is any change or series of changes that directly affect:

- 25 percent or more reduction of transit route revenue hours of PART Express system-wide service.
- 50 percent or more reduction of transit route revenue hours of a single PART Express corridor service computed on an annual basis.
- The implementation of a new transit corridor route.
- 25 percent or more on the implementation of a passenger fare adjustment on an annual basis.

The service changes recommended and approved by the PART Board fall into four categories:

1. Increase of service hours
2. Increase in frequency
3. Discontinuance of a route
4. Minor modification and elimination of bus stops

### Conclusions

The system wide changes did not include service in a new corridor or the reduction of revenue hours system-wide. System wide revenue hours increased 20%. Four routes were discontinued all due to a lack of local funding and very low ridership making the routes economically unviable. These routes were not included in the Title VI Disparate Analysis. The methodology for the Disparate Analysis is explained in Appendix B. More detailed tables regarding the impacts of proposed changes are shown in Appendix D.

**TBEST Disparate Analysis Results**

Weekday	Total	Minority	Non-Minority
Impacted Population	114,787	42,785	72,002
Average Percent Change (Service Benefit)	22.7%	53.4%	4.5%
(20% Threshold) 80% of Non-Minority Rate of Service Change			3.6%
Impacted Households	42,266	12,815	29,451
Average Percent Change (Service Benefit)	24.7%	73.2%	3.6%
(20% Threshold) 80% of Non-Minority Rate of Service Change			2.9%

The fare changes varied from an increase between of 4% to 8% for some riders and decrease for others. Since the increase was less than a 25% a Title VI Analysis related to fares was not conducted.

## Appendix A : Route Revision Analysis Charts

### Proposed Route Revisions

Route	Geographic Service			Changes
	Stops	Has stops within:		
		County	MPO/ RPO	
1 Winston-Salem Express	Winston-Salem CBD stops	Forsyth	W-S	1. Remove stop: Federal Building (3rd & Main, WS) 2. Add stop: Innovation Quarter
	PART Hub	Guilford	GSO	3. Extend service to 9:30pm
2 G-boro Express	Galyon Depot; Four Seasons; UNCG; PART Hub	Guilford	GSO	1. Extend service to 9:30pm
3 High Point Express	Hitran Hub; Open Door; Lexington Ave; Palladium	Guilford	HP	1. Extend service to 9:30pm
	PART Hub		GSO	2. Reduce number of stops
4 Alamance County Express	Galyon Depot	Guilford	GSO	1. One additional AM trip and PM trip 2. Discontinue Whitsett stop
	ARMC; Graham; ACC; Cone Mebane	Alamance	BG	
	Multiple stops in Chapel Hill; UNC Hospital	Orange	DCHC	
6 Surry County & North Forsyth Express	Mt. Airy; Pilot Mountain	Surry	NWP	1. Add stop at King
	King	Stokes	W-S	2. Discontinue Kimel Park and Novant Medical stops
	Winston-Salem: CBD, Hospitals, Mall, 5 Points, etc.	Forsyth		3. Discontinue route 12
10 Randolph County Express	Galyon Depot, UNCG, Cone Hospital	Guilford	GSO	1. Expanded to 4 roundtrips (1.5 each in AM and PM, and 1 mid-day)
	S. Asheboro; N. Asheboro; Randleman	Randolph	PT	2. Reduce route miles in Greensboro (UNCG, Moses Cone, and Galyon Depot)
17 K-ville Shuttle West	VA Med Center; Novant K-ville; K-ville Stop; WSTA Hub	Forsyth	WS	1. Add midday run 2. Add afternoon run
18 K-ville Shuttle East	VA Med Center; Novant in K-ville; K-ville	Forsyth	WS	1. Add midday run
	PART Hub	Guilford	GSO	2. Add afternoon run

**Proposed Route Revisions**

Route	# Buses	Daily		Frequency (minutes)				Δ Route Directness	Δ Annual Rev. Hrs.	Δ Annual Deadhead Hours	Δ in Weekday Ridership
		Start	Finish	AM	Mid	PM Peak	PM				
1 Winston-Salem Express	2	6:00 AM	9:30 PM	30	60	30	60	8%	504	0	56
2 G-boro Express	2	6:00 AM	9:30 PM	30	60	30	60	-32%	758	0	24
3 High Point Express	2	6:00 AM	9:30 PM	30	60	30	60	53%	504	0	6
4 Alamance County Express	3	6:00 AM	8:00 PM	30	60	60		12%	811	126	28
5 Amtrak Connector	1	7:00 AM	8:00 PM	60	60	60		No change	756	0	8
6 Surry County & North Forsyth Express	3	5:30 AM	6:30 PM	30		60		17%	0	0	2
10 Randolph County Express	2	5:30 AM	7:30 PM	60	60	60		84%	1,134	-276	16
17 K-ville Shuttle West	1	6:00 AM	6:30 PM	60		60		No change	505.2	0	6
18 K-ville Shuttle East	1	6:00 AM	6:30 PM	60		60		No change	505.2	0	5
<b>System wide</b>								125%	5478	-150	151

**Operational Hours/Miles**

Route	Revenue Hours/Month		Revenue Miles/Month		Deadhead Miles/Month		Deadhead Hours/Month		New Total Monthly Miles
	Current	New	Current	New	Current	New	Current	New	
Route 1	421.7	463.7	14,732.0	17,187.3	1,408.0	1,408.0	47.7	47.7	18,595.3
Route 1 Sat.	-	51.6	-	2,992.8	-	152.0	-	7.0	3,144.8
Route 2	400.5	463.7	10,183.5	11,834.9	1,113.0	1,911.0	39.6	39.6	13,745.9
Route 2 Sat.	-	51.6	-	1,352.6	-	120.0	-	3.0	1,472.6
Route 3	421.7	463.7	8,820.8	9,725.4	1,302.0	1,554.0	39.6	39.6	11,279.4
Route 3 Sat.	-	51.6	-	1,111.5	-	96.0	-	3.0	1,207.5
Route 4	270.5	338.1	9,077.0	11,346.3	1,848.0	2,310.0	42.0	52.5	13,656.3
Route 5	169.7	232.7	3,260.0	5,433.3	882.0	882.0	11.0	11.0	6,315.3
Route 5 Sat.	35.0	35.0	614.8	614.8	168.0	168.0	2.0	2.0	782.8
Route 5 Sun.	35.0	35.0	571.3	571.3	168.0	168.0	2.0	2.0	739.3
Route 6	189.8	189.8	5,438.7	5,569.2	5,658.0	5,658.0	62.3	62.3	11,227.2
Route 8	51.0	-	5,073.0	-	1,359.0	-	33.0	-	-
Route 9	168.0	168.0	5,168.5	5,168.5	1,864.0	1,864.0	44.0	44.0	7,032.5
Route 10	115.5	210.0	3,454.6	5,712.0	3,435.0	2,478.0	88.0	65.0	8,190.0

PART Express Transit Network Service Equity Analysis

Route	Revenue Hours/Month		Revenue Miles/Month		Deadhead Miles/Month		Deadhead Hours/Month		New Total Monthly Miles
	Current	New	Current	New	Current	New	Current	New	
Route 12	42.2	-	1,004.0	-	1,125.0	-	36.5	-	-
Route 13	42.2	-	1,521.0	-	1,648.0	-	44.0	-	-
Route 14	38.8	-	1,192.0	-	1,278.3	-	36.5	-	-
Route 17	63.3	105.4	1,903.0	3,171.7	741.0	1,155.0	-	-	4,326.7
Route 18	63.3	105.4	1,595.5	2,659.2	361.0	504.0	-	-	3,163.2
Route 19	168.0	168.0	2,082.0	2,082.0	555.0	555.0	33.6	33.6	2,637.0
Route 20	184.5	226.5	4,284.0	5,376.0	126.0	126.0	-	-	5,502.0
Route 21	184.5	226.5	2,352.0	2,352.0	168.0	168.0	-	-	2,520.0
Route 20/21 Sat.	-	48.0	-	1,248.0	-	20.0	-	-	1,268.0
Route 22	184.5	226.5	2,877.0	3,969.0	84.0	84.0	-	-	4,053.0
Route 23	184.5	226.5	1,575.0	1,575.0	63.0	63.0	-	-	1,638.0
Route 23/24 Sat.	-	48.0	-	1,248.0	-	20.0	-	-	1,268.0
<b>System Totals/Month</b>	<b>3,434.0</b>	<b>4,135.2</b>	<b>86,779.5</b>	<b>102,300.6</b>	<b>25,354.3</b>	<b>21,464.0</b>	<b>561.8</b>	<b>412.3</b>	<b>123,764.6</b>
<b>Annual Totals</b>	<b>41,208.2</b>	<b>49,622.1</b>	<b>1,041,353.9</b>	<b>1,227,607.4</b>	<b>304,252.0</b>	<b>257,568.0</b>	<b>6,741.6</b>	<b>4,948.1</b>	<b>1,485,175.4</b>
<b>Annual Change</b>		<b>8,413.9</b>		<b>186,253.6</b>		<b>(46,684.0)</b>		<b>(1,793.5)</b>	<b>139,569.6</b>

## Appendix B: TBEST Title VI Disparate Analysis Methodology

The TBEST Title VI Disparate Analysis tool evaluates transit service equity between two input TBEST scenario networks originating from the same TBEST Transit System. In general, this would be a base condition scenario network and a service change network. The TBEST Title VI Disparate Analysis Tool simultaneously processes the input scenario networks and service levels to evaluate service change relative to Title VI by assigning service levels, represented by total bus arrivals at each stop, to the Census block groups which contain stop locations. The base condition and service change scenario arrival counts within the block groups are evaluated to determine a percent service change. The minority and low income populations within each block group are summarized to determine an overall service benefit relative to non-minority and non-low income populations. The total service benefit is calculated for each population group using the weighted average service change calculation below:

$$\text{Input Area Service Benefit} = (\sum \text{Block Group Population} \times \text{Percent Block Group Service Change}) / \sum \text{Service Area Population}$$

The above calculation yields a service benefit for Non-Minority, Minority, Non-Low Income and Low Income populations within the user specified input area. The input area can be the entire transit system service area or a smaller geography such as a project area or a municipal boundary. If the difference between the service benefit to Non-Minority population and Non-Low Income populations versus Minority and Low Income populations is greater than the user defined disparate impact threshold, then TBEST will provide notification that a disparate impact exists.

Note: disparate analysis implications will be sensitive to the geography chosen for the study area. While the analyst may choose to evaluate components of a package of service changes individually, the overall Title VI disparate analysis should encompass the total of planned service TBEST changes. Disparate analysis of non-homogenous geographies at the route level are more likely to reveal disparities at the individual route level but not necessarily at the corridor or systems level.

In evaluating the results of this summarization, the Title VI Disparate Analysis dashboard provides high level and detailed summaries of service change impacts to Minority and Low Income populations as well as interactive map summaries illustrating the distribution of service changes for Weekday, Saturday and Sunday. If input disparate impact percent thresholds are exceeded, the dashboard will display the results with a caution icon to inform the agency that additional analysis and potential mitigation is warranted.



## RIDER ALERT

### PART Express Route & Fare Adjustment Notice

PART has reviewed our entire commuter express service, and is proposing service changes to correlate the local financial support, and commuting patterns of our customers. The new route system is a result of on-board surveys, customer satisfaction surveys, and comprehensive transit planning. [Click here for more information](#)

The new [Coble Transportation Center](#) will be open on July 3, the PART Regional Hub will no longer be served after that date.

PART is proposing the following adjustments effective July 3, 2017:

- Route 1: Remove Federal Bldg. stop, Add Innovation Quarter stop, Extend Service to 9:30pm - [View Proposed Schedule Here](#)
- Route 2: Extend Service to 9:30pm - [View Proposed Schedule Here](#)
- Route 3: Designate fixed/timed bus stops along Hwy 68, Extend Service to 9:30pm - [View Proposed Schedule Here](#)
- Route 4: Remove Whitsett stop, Expand service with additional AM trip and PM trip - [View Proposed Schedule Here](#)
- Route 5: No change
- Route 6: Remove Kimel Park and Novant Frontis Plaza stops, Add King P&R stop (Replaces Route 12) - [View Proposed Schedule Here](#)
- Route 8: Discontinue Route (Connectivity available via Route 5/Vanpool Offered)
- Route 9: No change
- Route 10: Expand service. Add Additional Service to AM, Mid-Day, PM. Route direct to UNCG and Greensboro Galyon Depot, other stops removed - [View Proposed Schedule Here](#)
- Route 12: Discontinue Route (Existing King stop and Service frequency added to Route 6)
- Route 13: Discontinue Route (Vanpool Offered)
- Route 14: Discontinue Route (Vanpool Offered)
- Shuttle 17: Add Mid-Day roundtrip and Afternoon roundtrip service - [View Proposed Schedule Here](#)
- Shuttle 18: Add Mid-Day roundtrip and Afternoon roundtrip service - [View Proposed Schedule Here](#)
- Shuttle 19: No change
- Airport Area Shuttles 20-23: Extend Service to 9:30pm - [View Proposed Schedule Here](#)
- Fares: A simplified fare structure is proposed to include one fare for all routes and passes - [View Proposed Fares Here](#)



**THIS CUSTOMER FEEDBACK SURVEY IS AVAILABLE TO SEEK CITIZEN COMMENTS, AND YOUR COMMENTS ARE IMPORTANT TO US. PLEASE REVIEW THE SCHEDULES ABOVE AND CLICK THE SURVEY BELOW TO GIVE INPUT. (Deadline 5/31)**

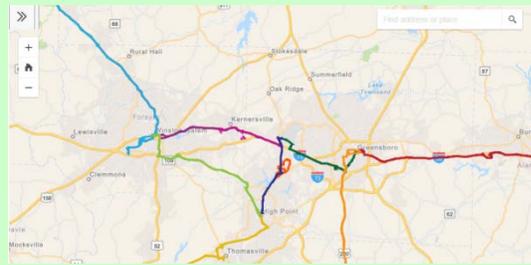
[Click here to take the survey](#)

**PUBLIC HEARING:** PART hereby announces that the PART Board of Trustees will hold a Public Hearing on Wednesday, June 14, 2017 at 8:30am for the proposed PART Express Route Adjustments scheduled for July. The hearing will be held at PART Office located at 107 Arrow Road, Greensboro, NC 27409.



For a limited time only, PART is offering an exclusive discount to Yadkin, Davidson & Davie county PART Express riders traveling from the PART Yadkin, Davidson & Davie County Park & Ride Lots. Email us if you are interested - [contactus@partnc.org](mailto:contactus@partnc.org)

[Click here](#) to view an interactive map of proposed changes.



VISIT OUR WEBSITE

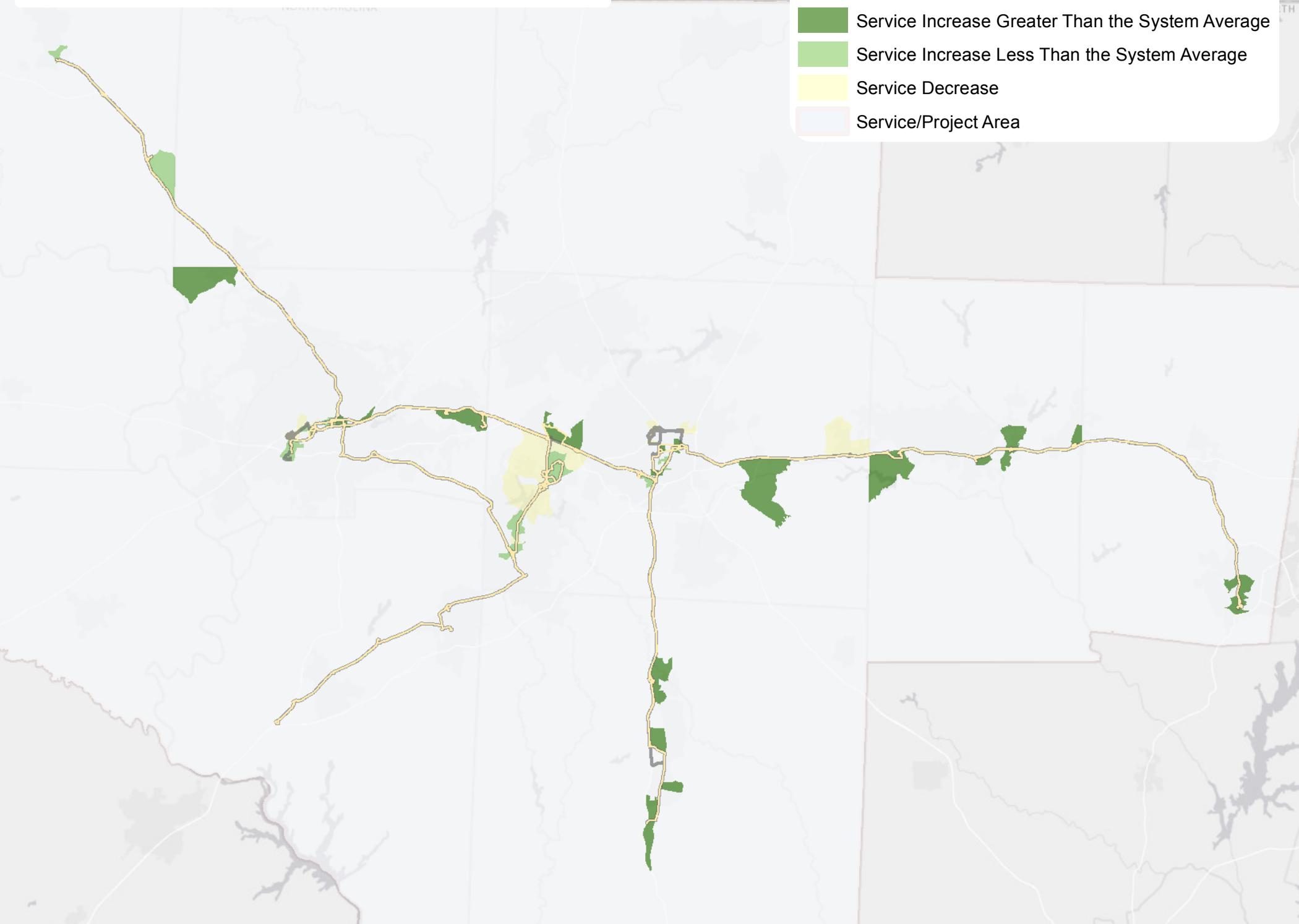
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## Appendix D: Title VI Analysis Details

# PART Service Changes (Effective July 3, 2017)

## Title VI Disparate Analysis

- Service Increase Greater Than the System Average
- Service Increase Less Than the System Average
- Service Decrease
- Service/Project Area



TBEST Title VI Analysis - All Reports  
 PART Express Implemented Changes (July 3rd, 2017)

System - Minority and Low Income Summary  
 Implemented Changes



System Area	Total Population Affected	Total Minority Population Affected	Percent Minority	Total Households Affected	Total Low Income Households Affected	Percent Low Income Households
Service Area Total	1,748,201	490,373	28.1%	688,651	192,383	27.9%
Within 0.25 mile Walk Distance	16,105	7,187	44.6%	6,025	2,337	38.8%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

## Route - Minority and Low Income Summary by Mode



### Implemented Changes

Route	Total Population Affected	Total Minority Population Affected	Percent Minority	Total Households Affected	Total Low Income Households Affected	Percent Low Income Households	Data Type Used
<b>BUS</b>							
1	1,329	972	73.1%	651	372	57.1%	Stops
2	2,288	1,679	73.4%	1,022	536	52.4%	Stops
3	6,343	2,629	41.4%	2,671	667	25%	Stops
4	4,306	1,230	28.6%	1,004	410	40.8%	Stops
5	2,135	1,386	64.9%	905	434	48%	Stops
6	3,865	1,308	33.8%	2,020	844	41.8%	Stops
9	10,239	2,001	19.5%	4,279	1,443	33.7%	Stops
10	6,173	4,820	78.1%	2,407	1,425	59.2%	Stops
17	3,768	2,362	62.7%	1,634	553	33.8%	Stops
18	558	105	18.8%	265	77	29.1%	Stops
19	2,178	874	40.1%	1,039	99	9.5%	Stops

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# System - Limited English Proficiency (LEP) Summary



## Implemented Changes

System Area	Total Population Affected	Speaks English Less Than Very Well	% Total LEP	% Spanish LEP	% Chinese LEP	% Creole LEP	% Korean LEP	% French LEP	% Without High School Diploma Over 25 Years Old
Service Area Total	1,748,201	87,264	5%	3.7%	0.1%	0%	0.1%	0.1%	10.2%
Within 0.25 mile Walk Distance	16,105	843	5.2%	3.1%	0.2%	0%	0.4%	0.3%	10.4%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# Route - Limited English Proficiency (LEP) Summary



## Implemented Changes

Route	Total Population Affected	Speaks English Less Than Very Well	% Total LEP	% Spanish LEP	% Chinese LEP	% Creole LEP	% Korean LEP	% French LEP	% Without High School Diploma Over 25 Years Old
1	1,329	45	3.4%	2.9%	0.5%	0%	0%	0%	17.8%
2	2,288	55	2.4%	0.8%	0%	0%	0%	0.7%	15.5%
3	6,343	224	3.5%	1.8%	0%	0%	0.1%	0.2%	6.9%
4	4,306	68	1.6%	0.6%	0.4%	0%	0.3%	0.1%	4.3%
5	2,135	74	3.5%	2.8%	0.4%	0%	0%	0%	14.6%
6	3,865	171	4.4%	2.6%	0.2%	0%	0%	0.5%	9.3%
9	10,239	554	5.4%	4.8%	0%	0%	0%	0.1%	17.2%
10	6,173	202	3.3%	1.9%	0%	0%	0%	0.3%	13.7%
17	3,768	177	4.7%	4.3%	0.2%	0%	0%	0%	12.2%
18	558	20	3.6%	2.2%	0%	0%	0%	0%	7%
19	2,178	112	5.1%	0.1%	0.2%	0%	1.9%	1.6%	3.2%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# System - Minority and Low Income Revenue Miles



## Implemented Changes

Weekday			Saturday			Sunday		
Revenue Miles	% Minority	% Low Income	Revenue Miles	% Minority	% Low Income	Revenue Miles	% Minority	% Low Income
3,979	53.2%	40.9%	43	58.1%	76.7%	43	58.1%	76.7%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# Route - Minority and Low Income Revenue Miles

## Implemented Changes



Route	Weekday			Saturday			Sunday		
	Revenue Miles	% Minority	% Low Income	Revenue Miles	% Minority	% Low Income	Revenue Miles	% Minority	% Low Income
1	829	27.4%	36.7%	0	0%	0%	0	0%	0%
2	647	92.9%	37.7%	0	0%	0%	0	0%	0%
3	514	86.8%	22.8%	0	0%	0%	0	0%	0%
4	555	42.3%	30.5%	0	0%	0%	0	0%	0%
5	174	59.2%	75.9%	43	58.1%	76.7%	43	58.1%	76.7%
6	259	25.9%	51%	0	0%	0%	0	0%	0%
9	249	58.6%	79.1%	0	0%	0%	0	0%	0%
10	368	37.5%	57.1%	0	0%	0%	0	0%	0%
17	145	28.3%	57.2%	0	0%	0%	0	0%	0%
18	132	9.8%	30.3%	0	0%	0%	0	0%	0%
19	107	94.4%	0%	0	0%	0%	0	0%	0%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# System - Minority and Low Income Stop Arrivals



## Implemented Changes

Weekday			Saturday			Sunday		
Stop Arrivals	% Minority	% Low Income	Stop Arrivals	% Minority	% Low Income	Stop Arrivals	% Minority	% Low Income
1,783	85.6%	54.2%	15	100%	86.7%	15	100%	86.7%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# Route - Minority and Low Income Stop Arrivals

## Implemented Changes



Route	Weekday			Saturday			Sunday		
	Stop Arrivals	% Minority	% Low Income	Stop Arrivals	% Minority	% Low Income	Stop Arrivals	% Minority	% Low Income
1	286	100%	84.6%	0	0%	0%	0	0%	0%
2	286	92.3%	69.2%	0	0%	0%	0	0%	0%
3	396	100%	38.9%	0	0%	0%	0	0%	0%
4	115	26.1%	43.5%	0	0%	0%	0	0%	0%
5	60	100%	86.7%	15	100%	86.7%	15	100%	86.7%
6	72	54.2%	56.9%	0	0%	0%	0	0%	0%
9	69	81.2%	84.1%	0	0%	0%	0	0%	0%
10	86	60.5%	88.4%	0	0%	0%	0	0%	0%
17	85	64.7%	88.2%	0	0%	0%	0	0%	0%
18	40	25%	50%	0	0%	0%	0	0%	0%
19	288	96.9%	0%	0	0%	0%	0	0%	0%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# Low Income Route Designations



## Implemented Changes

Route	Low Income Route	% of Revenue Service Miles in Low Income Area
1	True	36.7%
2	True	37.8%
3	False	22.9%
4	False	30.4%
5	True	76.1%
6	True	51.1%
9	True	78.9%
10	True	57.1%
17	True	57.5%
18	False	30.4%
19	False	0%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

## Minority Route Designations



### Implemented Changes

Route	Minority Route	% of Revenue Service Miles in Minority Area
1	False	27.4%
2	True	92.8%
3	True	86.8%
4	True	42.4%
5	True	59.5%
6	False	26.2%
9	True	58.6%
10	True	37.7%
17	False	28.4%
18	False	10%
19	True	93.7%

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# Minority Routes - Service Summary



## Implemented Changes

Route Designation	AM Peak Headway	Off Peak Headway	PM Peak Headway	Night Headway	Saturday Headway	Sunday Headway	Average Stop Spacing (ft.)
Minority Routes	40	66	43	60	60	60	14,781
Non Minority Routes	40	60	40	60	0	0	15,061

*\*AM Peak: 6-9am; Off Peak: 9am-3pm; PM Peak: 3-6pm; Night: 6pm-6am; Saturday: All Day; Sunday: All Day*

# System - Minority and Low Income Density Summary



## Implemented Changes

System Area	Square Miles	Population Per Square Mile	Households Per Square Mile	Low Income Households Per Square Mile	Minority Population Per Square Mile	LEP Population Per Square Mile
Service Area Total	5,431.6	321.9	126.8	35.4	90.3	16.1
Within 0.25 mile Walk Distance	9.0	1,781.0	666.3	258.4	794.8	93.2

Source: Census 2010 and American Community Survey 5-Year Estimates projected to 2014

# Route - Service Availability Summary by Mode



## Implemented Changes

Route	AM Peak Headway	Off Peak Headway	PM Peak Headway	Night Headway	Saturday Headway	Sunday Headway	Average Stop Spacing (ft.)
<b>BUS</b>							
5	0	60	0	0	60	60	15,339
9	30	105	30	0	0	0	18,875
4	30	60	50	0	0	0	25,522
2	30	60	30	60	0	0	11,959
6	0	0	0	0	0	0	18,416
17	30	60	30	0	0	0	9,062
10	60	60	60	0	0	0	22,933
1	30	60	30	60	0	0	15,311
18	60	60	60	0	0	0	17,453
3	30	60	30	60	0	0	6,858
19	60	60	60	0	0	0	1,978
<b>System Average</b>	<b>40</b>	<b>65</b>	<b>42</b>	<b>60</b>	<b>60</b>	<b>60</b>	<b>14,882</b>

\*AM Peak: 6-9am; Off Peak: 9am-3pm; PM Peak: 3-6pm; Night: 6pm-6am; Saturday: All Day; Sunday: All Day

# System - Revenue Miles by County



## Implemented Changes

Route	Weekday Revenue		Saturday Revenue		Sunday Revenue	
	Service Miles	% Weekday	Service Miles	% Saturday	Service Miles	% Sunday
<b>County: Alamance</b>						
4	190	100.00%	0	0.00%	0	0.00%
<b>Subtotal:</b>	<b>190</b>	<b>4.82%</b>	<b>0</b>	<b>0.00%</b>	<b>0</b>	<b>0.00%</b>

Route	Weekday Revenue Service Miles	% Weekday	Saturday Revenue Service Miles	% Saturday	Sunday Revenue Service Miles	% Sunday
<b>County: Davidson</b>						
9	175	100.00%	0	0.00%	0	0.00%
<b>Subtotal:</b>	<b>175</b>	<b>4.44%</b>	<b>0</b>	<b>0.00%</b>	<b>0</b>	<b>0.00%</b>

Route	Weekday Revenue Service Miles	% Weekday	Saturday Revenue Service Miles	% Saturday	Sunday Revenue Service Miles	% Sunday
<b>County: Forsyth</b>						
1	537	53.92%	0	0.00%	0	0.00%
5	129	12.95%	32	100.00%	32	100.00%
6	125	12.55%	0	0.00%	0	0.00%
17	145	14.56%	0	0.00%	0	0.00%
18	60	6.02%	0	0.00%	0	0.00%
<b>Subtotal:</b>	<b>996</b>	<b>25.27%</b>	<b>32</b>	<b>74.42%</b>	<b>32</b>	<b>74.42%</b>

Route	Weekday Revenue Service Miles	% Weekday	Saturday Revenue Service Miles	% Saturday	Sunday Revenue Service Miles	% Sunday
<b>County: Guilford</b>						
1	292	14.36%	0	0.00%	0	0.00%
2	647	31.82%	0	0.00%	0	0.00%
3	514	25.28%	0	0.00%	0	0.00%
4	149	7.33%	0	0.00%	0	0.00%
5	45	2.21%	11	100.00%	11	100.00%
9	46	2.26%	0	0.00%	0	0.00%
10	172	8.46%	0	0.00%	0	0.00%
18	66	3.25%	0	0.00%	0	0.00%
19	102	5.02%	0	0.00%	0	0.00%
<b>Subtotal:</b>	<b>2,033</b>	<b>51.59%</b>	<b>11</b>	<b>25.58%</b>	<b>11</b>	<b>25.58%</b>

Route	Weekday Revenue Service Miles	% Weekday	Saturday Revenue Service Miles	% Saturday	Sunday Revenue Service Miles	% Sunday
<b>County: Orange</b>						
4	209	100.00%	0	0.00%	0	0.00%
<b>Subtotal:</b>	<b>209</b>	<b>5.30%</b>	<b>0</b>	<b>0.00%</b>	<b>0</b>	<b>0.00%</b>

Route	Weekday Revenue Service Miles	% Weekday	Saturday Revenue Service Miles	% Saturday	Sunday Revenue Service Miles	% Sunday
<b>County: Randolph</b>						
9	16	7.66%	0	0.00%	0	0.00%
10	193	92.34%	0	0.00%	0	0.00%
<b>Subtotal:</b>	<b>209</b>	<b>5.30%</b>	<b>0</b>	<b>0.00%</b>	<b>0</b>	<b>0.00%</b>

Route	Weekday Revenue Service Miles	% Weekday	Saturday Revenue Service Miles	% Saturday	Sunday Revenue Service Miles	% Sunday
<b>County: Stokes</b>						
6	39	100.00%	0	0.00%	0	0.00%
<b>Subtotal:</b>	<b>39</b>	<b>0.99%</b>	<b>0</b>	<b>0.00%</b>	<b>0</b>	<b>0.00%</b>

Route	Weekday Revenue Service Miles	% Weekday	Saturday Revenue Service Miles	% Saturday	Sunday Revenue Service Miles	% Sunday
<b>County: Surry</b>						
6	90	100.00%	0	0.00%	0	0.00%
<b>Subtotal:</b>	<b>90</b>	<b>2.28%</b>	<b>0</b>	<b>0.00%</b>	<b>0</b>	<b>0.00%</b>
<b>System Total:</b>	<b>3,941</b>		<b>43</b>		<b>43</b>	