

Chapter 5.0

5.0 RECOMMENDED SERVICE SCENARIO

The purpose of the SRTP is to identify a series of service, facility, and technology investments to guide the High Point Transit System's growth over the coming years. This chapter describes the recommended fixed-route service scenario and capital improvements for the High Point Transit System over the next five year period. Recommendations for service modifications are made for every route in the system. These changes are based on the data collected, analyzed, and discussed in Chapters 2 through 4.

The recommendations presented are based on the best information available at the time of the SRTP's development, and are made solely as recommendations to be incorporated in the High Point Transit System operating program as funding permits. Therefore, the recommendations outlined herein should not be viewed as requirements of the City of High Point; rather, this document, and the recommendations made, should be viewed as a living document.

As circumstances change, this plan is intentionally designed to provide flexibility in its application in order to respond to changing financial conditions and service needs.

5.1 Fixed-Route Service Recommendations

The fixed-route service scenario discussed below includes recommendations for a clear service hierarchy that would create a set of core services the rest of the network could build around in the future. As stated, a goal of the SRTP was to reduce internal service competition, duplication and redundancies in the network, and provide a clear and simple strategy for addressing service in High Point that strengthens connections between local and regional destinations.

The fixed-route service scenario recommends eliminating unproductive routes, reinvesting resources into routes that warrant investment, straightening routes, and scheduling services according to consistent headways. Simplifying the service structure also creates a system that should be easier for the High Point Transit System to expand or contract as budgets require, while also focusing on core services that must be maintained for mobility across the city.

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The following pages present the types of services that could be implemented in High Point in response to unmet transit needs and the system envisioned by members of the community, discussed earlier in the plan. It is recognized that this document proposes an ambitious vision for transit in the region, and that implementation is dependent on the availability of federal, state, and local funding. Nonetheless, it is important to set forth an outline of the steps needed to achieve it.

The more practical and applied aspects of the SRTP recommendations include guidance for how the High Point Transit System should organize and structure its services. This section does not include detailed service

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plans for improved services; these will be developed by the system service planners as funds/resources become available for implementation.

The primary recommendations for the future fixed-route network include re-aligning the High Point Transit System's current radial service design into a model developed around a series of radial Key Local Bus routes that operate as "backbones" or trunk system routes. These routes would operate at higher frequencies with longer weekday spans of service as compared to other local routes, dependent on funding availability. These Key Local Bus routes connect with one another and all other system routes. The approach accomplishes several things including:

- » Provides an easier service to use for existing and future riders.
- » Most riders are currently within one-quarter mile of a transit route and will still be within one-quarter mile of a transit route under the proposed changes.
- » Straightening routes and eliminating redundancies in route patterns and services will help eliminate internal competition among routes for riders and improve operating cost efficiencies.

Evaluating Service Types

Not all routes are equal in service design and performance. A route connecting a lightly populated rural area with an urban area would be expected to carry fewer passengers and require fewer trips compared to a route that serves a densely populated urban area. The SRTP process makes sure to take that difference into account.

Exhibit 42. High Point Transit System Service Types

Service Type	Description
Local Bus	Traditional fixed-route transit bus service that generally operates on arterial roadways. Except where there is limited development, passenger stops are typically posted on frequent intervals to maximize passenger access.
Limited Stop	Characterized by limited stop, high frequency, all-day service. Generally operates on arterial roadways with a limited or infrequent number of passenger stops. The limited stop configuration provides for increased operating speeds. This service can be operated as an overlay service within a corridor or roadway that is served by one or more other service types as demonstrated by service-demand studies.
Demand Response¹	A transit mode comprised of vans or small buses operating in response to calls from passengers or their agents to the transit system, who then dispatches a vehicle to pick up the passengers and transport them to their destinations. This service type is often used to comply with Americans with Disabilities Act (ADA) requirements for complementary paratransit service to qualifying persons.

¹ It is important to note that while the High Point Transit System's demand response Dial-a-Lift service is among the suite of service offered, the characteristics of this service type do not always align with the fixed-route services offered. As a demand-responsive service, a standard for minimum operating frequency does not apply.

- » Opens service to new markets and starts to address gaps in the current service network, especially the Lexington Avenue corridor and the Palladium/Deep River region.

Service Hierarchy

Transit services are typically designed to meet specific mobility objectives or serve distinct markets (e.g. serve commuter work trips, connect neighborhoods to local destinations, or provide communities with access to urban services). There are multiple service classifications that are commonly referred to as “service types.” Service types may be applied to help meet a transit provider’s objectives or serve specific markets, and specify the appropriate level of service in effort to satisfactorily serve a market without overinvesting in service. It is essential to identify distinct service types due to a fundamental difference in the expected level of service (service standards) and performance (performance measurement) of each route. For example, a route connecting a lightly populated rural area with an urban area would be expected to carry fewer passengers and likely require fewer trips to meet community needs as compared to a route that serves a densely populated low-income and low-auto ownership urban/suburban area, where transit is the primary form of motorized mobility.

The High Point Transit System currently provides two types of local fixed-route bus service along with demand responsive service. The two types of fixed-route service include regular local routes and limited-stop service. The Route 21 - Industrial Park is the only limited stop services; all the other routes are regular fixed-route local services. Exhibit 42 describes the current service types used by the High Point Transit System.

As part of the SRTP process, routes were grouped by service type to describe similar services provided. These groups are designed to permit evaluation of a given route relative to the performance of similar routes within the system. This approach avoids the difficulty of comparing routes with fundamentally different designs, purposes, and operating characteristics.

Recognizing that not all routes are equal in service design and performance, it is recommended that two additional service types be considered for addition to the list above to acknowledge the characteristics and performance of those routes that regularly outperform other routes in the High Point Transit System network. Three bus routes, Routes 10, 11, and 16, are considered Key Local Bus routes serving High Point.

These routes have strong overall productivity on a daily and annual basis, and are deserving of additional investment in the future for enhanced service frequency and span specifically, as funding permits. These routes functionally serve as the “backbone” of transit service in High Point, upon which all other routes may be designed around to help transport people across the city.

In addition to identifying Key Local Bus routes, a Crosstown or Crosstown Connector service classification should also be considered. Several requests were received for crosstown service and additional connections. As such, a service modification is proposed for Route 17 that would have this route operate as a crosstown service through central-north High Point, establishing connections to Routes 10, Route 13, and Route 25.

The purpose of this modification is to improve crosstown travel without requiring passengers to travel to downtown High Point and transfer at the Broad Avenue Terminal. Instead, passengers could make connections to multiple system routes that may expedite their travel.

Exhibit 43. Recommended Service Classification

Route	Service Classification
10	Key Local
11	Key Local
13	Local
14	Local
16	Key Local
17	Local
18	Local
19	Local
20	Circulator
25	Local
PDC	Circulator



Fixed-Route Service Adjustment Recommendations

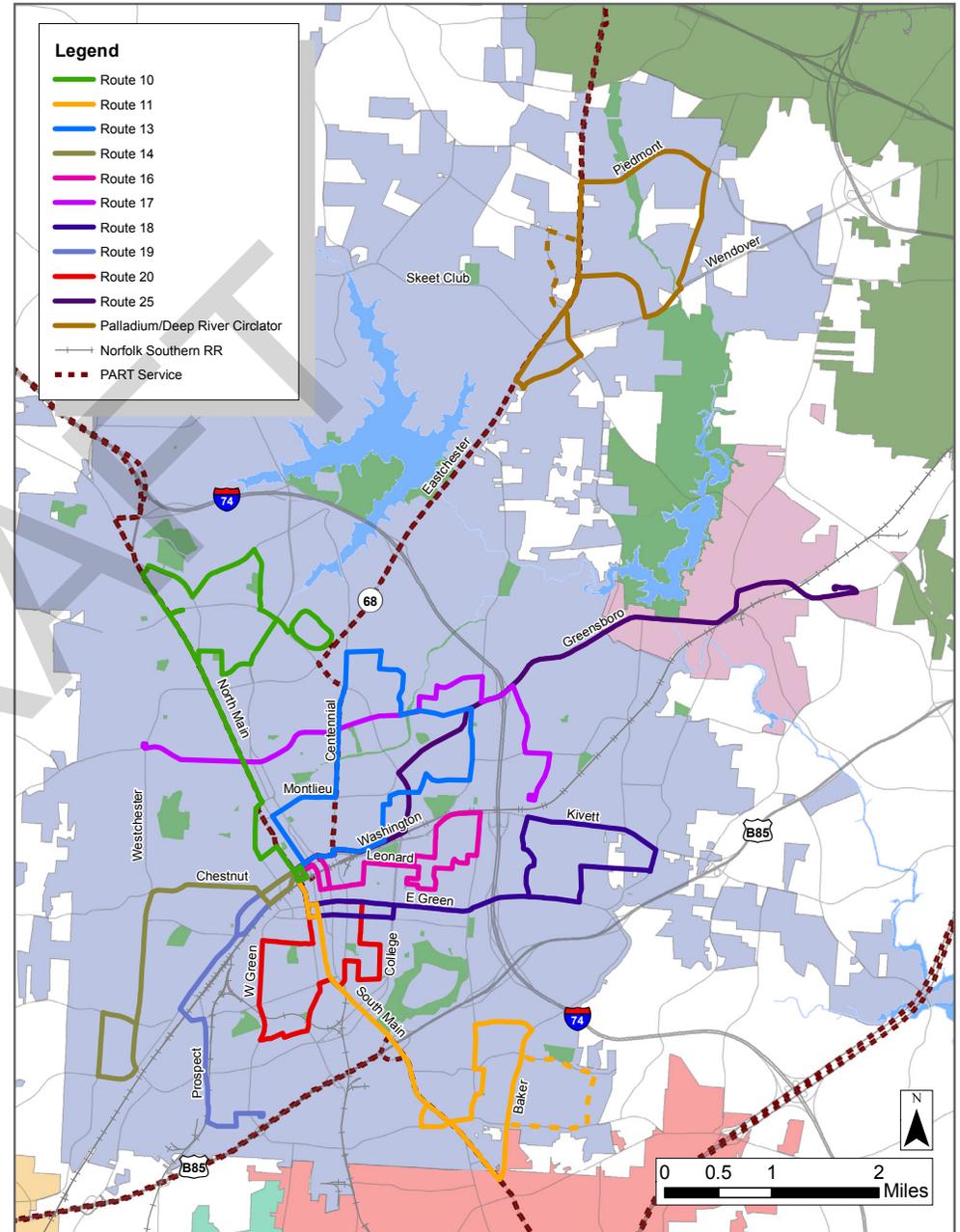
In attempt to balance the community's expressed desire for more frequent service, better geographic coverage, longer service spans, and service to new regions of High Point (specifically the Palladium/Deep River region), the following fixed-route modification recommendations were developed and considered in the context of operating assumptions and costs.

It should be noted that a blocking/operator schedule for service has not been created at this time; however, the routing pattern recommendations described herein, along with the proposed service characteristics, have been specifically designed to coordinate with the High Point Transit System current operating scheme of a pulse-based radial transit network. Illustrations of each service modification are provided.

There are several challenges associated with providing transit service in High Point, most notably the lack of sidewalks and pedestrian infrastructure on many city streets and a circuitous street network. Also, many neighborhood streets are not designed for larger vehicles to regularly travel on. In order to achieve the community's expressed desires for transit service (described above) while staying within budget, tradeoffs are required to balance desires and funding realities.

The recommendations discussed herein achieve many of the community's expressed desires for service while staying within budget, but additional concessions may be necessary.

Exhibit 44: Fixed-Route Service Recommendations



A detailed discussion of the proposed operating characteristics and assumptions is provided below. A summary of the recommendations by route is as follows:

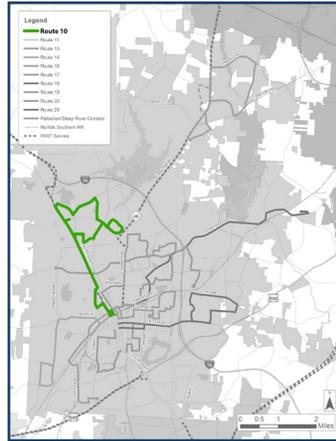
Exhibit 45. Summary of Route Modification Recommendations

Route	Service Classification	Recommendation(s)
10	Yes	Designate as trunk route; enhance service span
11	Yes	Designate as trunk route; enhance service span
12	Yes	Eliminate route
13	Yes	Replace Route 17 service south of Montlieu Avenue
14	Yes	Minor route adjustment at Juanita Hills terminus
15	Yes	Eliminate route
16	No	Designate as trunk route; enhance service span
17	Yes	Designate as crosstown route; realign service
18	Yes	New service on Russell Avenue, realign service on Kivett
19	Yes	Modify route to serve Prospect Street and south High Point
20	Yes	Modify route to serve Green Drive and south High Point
21	Yes	Eliminate route
25	Yes	Modify route to serve Washington Drive and Gordon Street
PDC	Yes	New service in Palladium/Deep River district

The following assumptions were made in the development of routing pattern recommendations for fixed-route service:

- » Funding for the High Point Transit System would stay consistent with current levels, and no new funding would be available for system operating costs.
- » The radial, “pulse”-based operating structure would remain.
- » The Broad Avenue Terminal would continue to serve as the operations center for all fixed-route services, but that no capital improvements would be made to this facility.



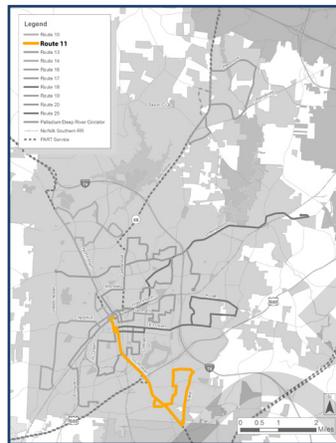


ROUTE MODIFICATIONS:

Route 10 North Main Street

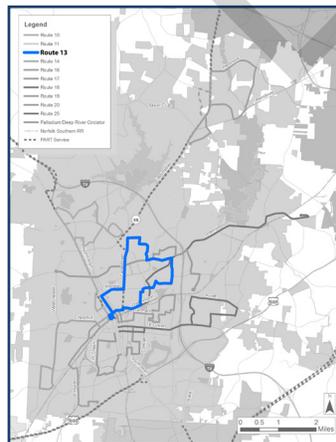
Recognizing the limited availability of resources currently, and given the expressed community desire to maintain service coverage in northwest High Point, the routing pattern of this route is not recommended for change initially. Over time however, it will likely be important to reduce the loop north of the junction of North Main Street and State Route 68. Also, service to the PART park-and-ride near the Aldi shopping complex near the junction with I-74 should be considered in the future. On inbound return trips, it is recommended that the deviation onto Hartley be eliminated, and a crosswalk be constructed or improved for persons to cross North Main Street to the Walmart shopping complex. If this deviation cannot be eliminated, consideration should be given to reducing the length of service north on Old Winston Road, focusing on service to the Walmart.

To maintain operating costs, the Saturday routing pattern may need to be retained until sufficient funds are available to operate the full alignment on Saturdays. Even then, it is recommended that any additional funds be invested in weekday operating service to extend the span of service or improve service frequencies along this route.



Route 11 South Main Street

The current routing pattern is recommended to stay mostly intact. However, it is recommended that the deviation to the Allen Jay Recreation Center be eliminated. This deviation is costly, and both available boardings data and observational analysis suggest that this deviation does not produce sufficient ridership to warrant the expense of service. For special events at the recreation center and park it may be possible to operate a select service. To maintain operating costs, the Saturday routing pattern may need to be retained until sufficient funds are available to operate the full alignment on Saturdays. Even then, it is recommended that any additional funds be invested in weekday operating service to extend the span of service or improve service frequencies along this route.



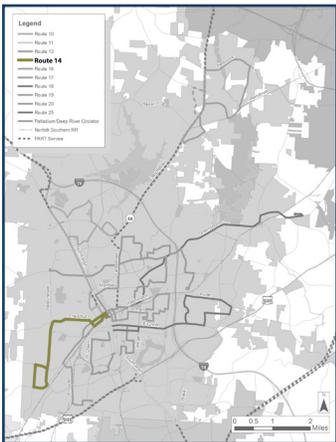
Route 13 Montlieu Avenue

Much of the current routing pattern and service operating characteristics would be retained. The route would continue to provide service on Montlieu Avenue and Centennial Street in downtown High Point. The closure of Montlieu Avenue between College Drive and Centennial Road presents several challenges to this route. On return trips to downtown High Point from the Five Points region, Route 13 would turn south onto Gordon Street to Wendell Avenue, turning east to serve the Parkview Village Elementary School and north side of Washington Terrace Park. The route would continue on Wendell Avenue to Ellwood Drive, turning south to Boundary Avenue. Crossing College Drive, the route would continue on Boundary Avenue to Underhill Street, replacing the inbound Route 17 service (discussed below), returning to the Broad Avenue Terminal via East Washington Drive.

Route 14 Westchester Drive

A modest routing pattern modification is recommended for Route 14. Currently, the route loops around Annmoore Circle and the Juanita Hills housing complex at the southern end of the route.

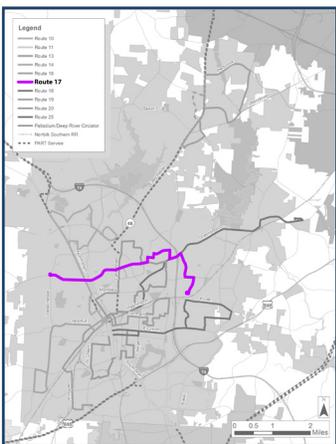
The recommended routing pattern modification would continue to serve the Juanita Hills housing complex, but continue south on South Road to English Road, turn east on English Road and then north on Westchester Drive on the route's return to the Broad Avenue terminal.



Route 17 Lexington Avenue

From west to east, the routing pattern would begin near the intersection of Lexington Avenue and Westchester Drive, and operate east along Lexington Avenue. The route would connect with the Route 10 at the intersection of North Main Street and Lexington Avenue, and with the Route 13 at Centennial Street and Lexington Avenue. At the intersection of Lexington and Carolina Street, the route would turn north, eventually turning east to provide service along Waverly Street and Suffolk Avenue, providing service to the Greater First United Baptist Church and nearby apartments along Deep River Road.

The route would then turn south along Deep River Road, connecting with Routes 13 and 25 at the Five Points region. The route would cross I-74 on Greensboro Road, turning south on Enterprise Drive with continuing service along Pendleton Street to the eastern terminus near the Polo Ralph Lauren facility.

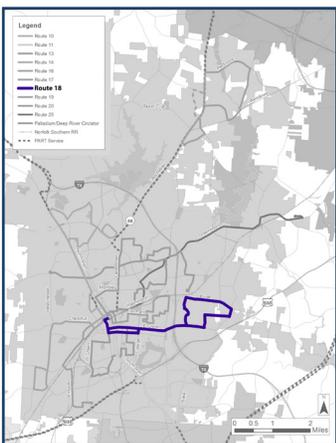


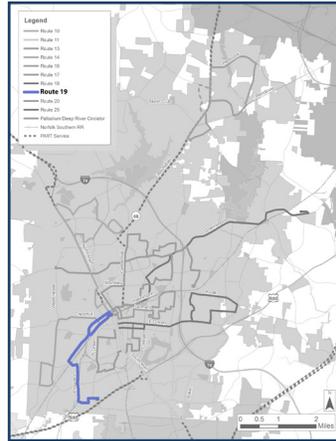
Route 18 East Green Drive

A routing pattern modification should be considered for Route 18 that would provide service along Russell Avenue on outbound trips. Currently, outbound trips on Route 18 operate on Kivett Drive. Available boardings and alightings data clearly show minimal productivity between the intersection of Kivett Drive and Centennial Street and the I-74 highway. East of the highway, route productivity improves, with return trips operating on Triangle Lake Road and East Green Drive. It is proposed that outbound service would instead operate on Russell Avenue, turning north and subsequently east on East Green Drive.

After cross I-74, the route would turn northbound on Knoll Lane, eventually operating on Pendleton Street to Kivett Drive, and turn eastbound on Kivett Drive. At the intersection of Triangle Lake Road and Kivett Drive, the route would begin the inbound return trip to downtown High Point, turning off of Triangle Lake Road and onto Central Avenue to serve area neighborhoods. The route would turn south on Paramount Street, and then westbound onto Triangle Lake Road to complete the trip into downtown and the Broad Avenue Terminal.

However, the route's length, coupled with additional stops, may require additional bus fleet in order to match the pulse at the Broad Avenue Terminal. Alternatively, Route 18 could operate off of the pulse system, which may result in passengers temporarily waiting for the next pulse when all other system routes would converge.

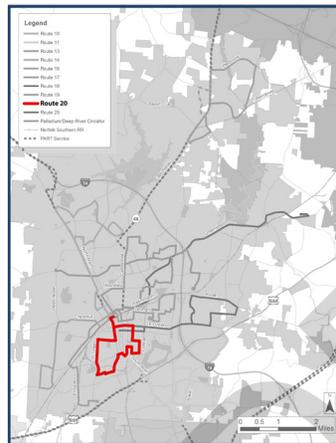




Route 19 English Road

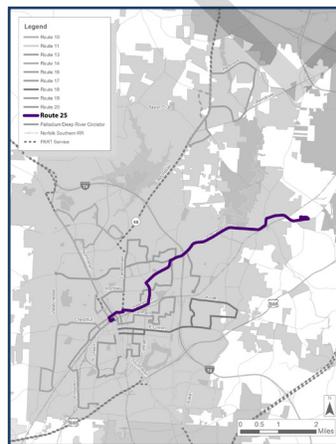
A routing pattern modification to Route 19 should be considered to eliminate the current end-of-line loop near the Juanita Hills public housing complex. The proposed routing pattern for Route 19 would continue to serve English Road southwest of the Broad Avenue Terminal. At the intersection of English Road and Ward Avenue, the route would turn east along Ward Avenue to Prospect Street, where the route would turn south on Prospect Street and replace service previously provided by Route 12 to Progress Avenue.

The modified Route 19 would turn east onto Progress Avenue, north onto Bethel Drive, and east onto Trinity Avenue. The route would continue on Trinity Avenue and use the turnaround at Carolina Trucking as the starting point for inbound service to the Broad Avenue Terminal.



Route 20 South High Point Circulator

As part of the proposed restructuring of service in southern High Point, it is recommended that Route 20 be modified to serve a portion of West Green Drive currently served by Route 12 between Taylor Avenue and Textile Place, winding through the historic mill neighborhood and serving the High Point Mental Health Associates facility at the intersection of Mill Avenue and Elm Street, and then serving Elm Street between Mill Avenue and Ward Avenue, replacing the service of the eliminated Route 21 (discussed below).

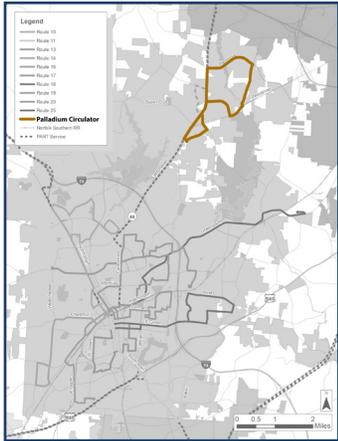


Route 25 Greensboro Road/Jamestown GTCC Campus

The closure of Montlieu Avenue between College and Centennial Street presents a significant challenge to transit service, specifically the Route 25. With this closure, and recommended modifications to the Route 17 as described above, it is recommended that Route 25 provide inbound and outbound service along Montlieu Avenue to the Five Points region, with continuing service along Greensboro Road to the GTCC-Jamestown campus.

Route 13 would provide service to the neighborhoods south of Montlieu Avenue currently provided by Route 17, while Route 25 would operate on College Drive north of East Washington Drive, helping to retain its status as a route linking educational institutions.

Also, by remaining on College Drive and Montlieu Avenue, this route could maintain some level of speed given the distance of the route. In an effort to reduce requests for ADA-paratransit trips in this corridor, additional stops are being added to the route.



Palladium Circulator

Finally, in recognition of the community’s strong desire for service to and within the Palladium/Deep River district, but in recognition of limited resources, the project team recommends the creation of a Palladium/Deep River district circulator service in northeast High Point. This route would not operate between downtown High Point and the Palladium/Deep River district; rather, it would provide all day circulation through the district, connecting several job, entertainment, and new multi-unit housing developments set to open in the immediate future.

The circulator service would operate on Eastchester Drive/State Route 68, Piedmont Parkway, Tarrant Road, Premier Drive, Penny Road, and Samet Drive. This route is intended to compliment PART service offered by Route 3 – High Point Express, with service from the PART Regional Hub along State Route 68 and Centennial Street to the Broad Avenue Terminal, PART Piedmont-Triad International Airport (PTIA) Shuttle Routes 22 (Palladium) and 23 (Piedmont Centre). The connection to downtown would be made via PART Route 3 service that operates along Eastchester Drive/State Route 68 and Centennial Street. This service operates every 30 minutes during the peak periods and hourly in the off-peak period.

The circulator service was designed to match the PART service to help facilitate transfers between the services. It will be important for the High Point Transit System to consider, and likely implement, a fare program that enables transfers between the services so that passengers do not need to pay a second fare for trips between the Palladium/Deep River district and downtown High Point. Payment of two fares will be a significant disincentive to using transit service.

During meetings with the Sounding Board and Steering Committee, a transit transfer facility was recommended to allow seamless transfers between PART and High Point Transit System services. This facility doesn’t need to be elaborate, but should include a covered waiting area and sufficient bus bays, and be located in an area that enables easy access for both PART and High Point Transit System vehicles. Funding for the facility may be available through surplus federal grant monies.

**NO MODIFICATIONS:
Route 16 Leonard Avenue**

Similar to Routes 10 and 11, Route 16 is identified in this plan as a Key Local Bus route, acting as a trunk route in east High Point with service to several key social service and community facilities. No modifications to the current routing pattern are proposed at this time.

**ROUTE ELIMINATIONS:
Route 12 West Green Drive**

It is recommended Route 12 be eliminated from service. The central-southern region of High Point is oversaturated with transit service currently. In total, five routes provide service to the south/southwest region of High Point, with a sixth route also providing service (Routes 11, 12, 14, 19, 20, and 21)¹. Specifically, the issue is the spacing between these routes that in some cases is one city block. Generally, there are significant lengths of multiple routes that are within one-quarter to one-half mile of each other; thus, there is overlapping coverage that dilutes the market potential for each route, and duplicated service results in inefficient use of resources. Additionally, several of these routes serve areas of south High Point that no longer warrant the level of service currently provided. Modifying both the Route 19 and Route 20 (discussed below) would serve several of the streets and general geographic areas covered by Route 12 that do show modest productivity, offsetting the elimination of Route 12.

Route 15 Centennial Street (Saturday Only)

It is recommended that Route 15 be eliminated from service. This route effectively duplicates service offered by the Route 13, with the exception of service to the Oak Hollow Mall. The mall is no longer a sufficient destination to which to provide exclusive transit service.

Route 21 Elm Street

It is recommended that Route 21 be eliminated from service. Route 21 is the least productive route in the High Point Transit System, and despite this route making a minimal number of daily trips (1 morning and 1 afternoon trip), the extremely low boarding and alighting activity (11 passengers on average each day) as compared to the miles of service provided results in significant operating costs that could be used more productively to fund service to new areas or upgrading service along productive routes. While the Thomasville Built Buses facility is a major employer in south High Point, trips may be better suited to this facility through a vanpool or other commute solution service that can be tailored to the travel times of workers at this or other manufacturing facilities.

Service Operating Characteristics and Cost Estimates

A set of preliminary operating characteristics were used to help establish the operating cost estimates shown above. These characteristics are subject to change. Exhibit 46 presents the weekday service operating characteristics, while Exhibit 47 presents the Saturday operating characteristics. All numbers shown should be considered approximate.

Exhibit 46. Weekday Service Operating Characteristics

Route	Round Trip Miles	Peak Frequency (Mins)	Off-Peak Frequency (Mins)	Total Hours of Service	Weekday Trips	Miles per Day	Round Trip Time (Mins)	Peak Buses Needed
10	12.1	30	30	12.5	25	302.2	50.0	2
11	10.1	30	30	12.5	25	251.3	45.5	2
12	0.0	0	0	0.0	0.0	0.0	-	-
13	7.7	30	60	11.5	17	131.4	32.0	1
14	7.6	30	60	11.5	17	129.8	31.6	1
16	6.0	30	30	12.5	25	150.6	32.6	1
17	11.5	30	60	11	16.5	189.8	51.1	2
18	8.8	30	60	11	16.5	144.4	37.5	1
19	7.6	30	60	11	16.5	125.8	30.3	1
20	5.9	30	60	11.5	17	99.5	30.5	1
21	0.0	0	0.0	0	0	0.0	-	-
25	14.8	60	60	5.5	5.5	81.4	63.2	1
PDC	7.4	30	60	11.5	17	125.8	31.7	1
Total	92.1	-	-	122.0	198.0	1732.1	-	14

Source: HDR, Inc., 2014

Route 21 Elm Street

It is recommended that Route 21 be eliminated from service. Route 21 is the least productive route in the High Point Transit System, and despite this route making a minimal number of daily trips (1 morning and 1 afternoon trip), the extremely low boarding and alighting activity (11 passengers on average each day) as compared to the miles of service provided results in significant operating costs that could be used more productively to fund service to new areas or upgrading service along productive routes. While the Thomasville Built Buses facility is a major employer in south High Point, trips may be better suited to this facility through a vanpool or other commute solution service that can be tailored to the travel times of workers at this or other manufacturing facilities.

Service Operating Characteristics and Cost Estimates

A set of preliminary operating characteristics were used to help establish the operating cost estimates shown above. These characteristics are subject to change. Exhibit 46 presents the weekday service operating characteristics, while Exhibit 47 presents the Saturday operating characteristics. All numbers shown should be considered approximate.

Exhibit 47. Saturday Service Operating Characteristics

Route	Round Trip Miles	Saturday Frequency (Mins)	Total Hours of Service	Saturday Trips	Saturday Miles	Round Trip Time (Mins)	Bus Needs
10	12.1	60	6	6	72.5	50.0	1
11	10.1	60	6	6	60.3	45.5	1
13	7.7	60	5	5	38.6	32.0	1
14	7.6	60	5	5	38.2	31.6	1
15	0.0	0	0	0	0.0	-	-
16	6.0	60	6	6	36.1	32.6	1
17	13.0	60	5	5	65.1	57.9	1
18	8.8	60	5	5	43.8	36.9	1
19	7.6	60	5	5	38.1	30.3	1
20	5.9	60	5	5	29.3	30.5	1
Total	78.8	-	48	48	422.1	-	9

Source: HDR, Inc., 2014

In effort to satisfy the community's expressed desires for future transit service and to quantify the tradeoffs associated with the recommendations, a comparative summary of the current and estimated weekday operating costs by route based on the recommendations and using FY 13 financial data is provided in Exhibit 48. The second column, "Estimated Operating Cost," provides an estimate of the annual operating cost associated with the recommended routing pattern by route described above. It should be noted that this estimate is based in part on route mileage, which was calculated using Geographic Information Systems (GIS) software, and is subject to some variability.

Exhibit 49 provides a comparative summary of Saturday operating costs. Additional detail on the operating assumptions that contributed to the creation of these operating cost estimates, along with a comparison between existing and projected new operating costs, is provided below. All costs shown are approximate, rounded to the nearest hundredth dollar. These costs should only be considered as “order-of-magnitude” costs used for planning purposes only.

Exhibit 48. Weekday Operating Cost Estimate

Route	FY14 Operating Cost ^{1,2}	Estimated Operating Cost ^{1,2}	Difference ³	Percent Change
10	\$343,100	\$381,100	\$38,000	11.1%
11	\$360,300	\$336,900	\$(23,400)	-6.5%
12	\$167,700	\$0	\$(167,700)	-100.0%
13	\$168,000	\$165,700	\$(2,300)	-1.4%
14	\$182,900	\$163,700	\$(19,150)	-10.5%
16	\$223,300	\$228,800	\$5,500	2.5%
17	\$162,600	\$251,100	\$88,550	54.5%
18	\$180,100	\$186,500	\$6,400	3.6%
19	\$168,700	\$154,400	\$(14,300)	-8.5%
20	\$148,100	\$147,300	\$(800)	-0.5%
21	\$25,700	\$0	\$(25,700)	-100.0%
25	\$154,700	\$104,900	\$(49,800)	-32.2%
PDC	\$0	\$162,400	\$162,400	100.0%
Total	\$2,285,100	\$2,282,900	\$(2,200)	-0.1%

Source: HDR, Inc., 2014 (Based in part on FY13 High Point Transit System Operating Data)

¹ FY13 weekday operating cost and estimated operating cost assumes 250 non-holiday weekdays.

² All operating costs shown are influenced by operating assumptions, including average travel speeds of buses by route. Without the ability to test the routing recommendations in real-time conditions, the average speeds of buses by route were held constant.

³ Parenthetical brackets refer to negative numbers and should be interpreted as cost savings.

Conservatively, it should be assumed that operating costs will increase approximately 3% annually, reflecting inflation rates for capital and operating expense. While costs fluctuate regularly for things such as fuel, it should be assumed that operator wages, insurance, and other administrative costs will continue to rise steadily over the life of the SRTP. Additional detail on agency financials is provided in Chapter 6.

Exhibit 49. Saturday Operating Cost Estimate

Route	FY13 Operating Cost ^{1,2}	Estimated Operating Cost ^{1,2}	Difference ³	Percent Change
10	\$11,800	\$17,400	\$5,600	47.5%
11	\$14,300	\$16,500	\$2,200	15.4%
13	\$14,500	\$13,000	\$(1,500)	-10.3%
14	\$12,400	\$12,900	\$500	4.0%
15	\$11,900	\$0	\$(11,900)	-100.0%
16	\$13,100	\$14,800	\$1,700	13.0%
17	\$11,500	\$14,800	\$3,300	28.7%
18	\$14,300	\$13,300	\$(1,000)	-7.0%
19	\$14,300	\$12,900	\$(1,400)	-9.8%
20	\$11,100	\$12,300	\$1,200	10.8%
Total	\$129,300	\$128,000	\$(1,300)	-1.0%

Source: HDR, Inc., 2014 (Based in part on FY13 High Point Transit System Operating Data)

¹FY13 weekday operating cost and estimated operating cost assumes 52 Saturdays.

² All operating costs shown are influenced by operating assumptions, including average travel speeds of buses by route. Without the ability to test the routing recommendations in real-time conditions, the average speeds of buses by route were held constant.

³Parenthetical brackets refer to negative numbers and should be interpreted as cost savings

Benefits and Costs of the Recommended Fixed-Route Service Scenario

The principal reason for adjusting the transit service is to improve service for existing riders and increase ridership. Ridership can be increased by both attracting new riders to the system and encouraging existing riders to use the system more often. The expansion of service to new markets such as Lexington Avenue and the Palladium/Deep River region would provide access to the transit system not currently available. The recommendations outlined above are conservatively estimated to increase system ridership by approximately 2 to 5%. While this is a very modest estimation of anticipated ridership growth, increases in ridership are expected due to:

» **Extended service spans** – To the degree service can be extended into the evening hours, the availability of transit service will be beneficial to

populations who require transport later at night, such as GTCC students or shift workers.

- » **Changes in service frequency** – To the degree service frequency can be increased, available transit industry data suggest that for every 100% increase in service frequency, there is a corresponding 20% increase in ridership.
- » **Increased simplicity and directness of the service provided** – The reduction of large loops at the end of service runs, particularly where service is least productive, and the straightening of service along streets served improves expediency of travel and
- » **Service to new markets** – The addition of service along streets such as Lexington Avenue and the Palladium/Deep River region expands the



coverage area of transit, opening the opportunity for those who currently do not use the fixed-route network or rely on Dial-a-Lift service to take use fixed-route service.

- » **Service reductions on unproductive or duplicative routes**
 - Elimination of duplicative, overlapping route coverage, particularly in south High Point, is anticipated to reduce operating costs that may be reinvested into the system to enhance services where they are most needed. Reducing or eliminating duplicative service also minimizes internal competition between bus routes for the same ridership base, making those services that remain most cost effective.

While efforts have been made to account for as many factors as possible, and care has been taken to ensure that estimates adhere to accepted practices in ridership estimation, ridership projections offer an order-of-magnitude estimate for anticipated ridership changes resulting from modifications to the existing service patterns, rather than exact forecasts. Moreover, it typically takes at least one year for the full impacts of service adjustments to result in ridership changes, since it takes riders time to adjust to the service changes, as well as time for potential new riders who would be attracted to the system based on the improvements to learn about and understand how services operate.

Because most of the routes were modified, and parts of multiple routes combined to form new routes, new routes do not translate one-to-one with their existing service counterparts. Therefore, ridership changes are described as a percentage of overall system ridership.

Still, a number of benefits may be accrued from implementation of the recommendations discussed above for fixed-route service, many of which stem from a combination of simplifying the network and categorizing the routes into a clear hierarchy that matches service types and levels of service to the demand for service. The network will be simplified by straightening the routes, and eliminating route branches and deviations. These actions will improve passengers' ability to understand and use the system and simultaneously make the

service easier to operate, thereby improving service reliability. Straightening routes can also improve operating speeds, and therefore decrease operating costs. The elimination of unproductive service branches and deviations will save operating cost and improve cycle times.

As noted, tradeoffs exist in transit planning that result in benefits and costs to system users and the operating agency. Several challenges to the current and future High Point Transit System have already been discussed, but perhaps the most significant challenge is funding availability. Without additional funds, it will be difficult for the High Point Transit System to maintain current service levels in the near, mid, and long-term futures, particularly as service needs grow. It is recommended that the High Point Transit System maximize the use of all available funds from various contributing sources to fully invest in the current system while planning for service modifications or expansion in the future.

Future Service Expansion Needs

The recommended service scenario discussed above attempts to maximize the service coverage area and provide a relatively similar coverage level as exists today. However, a number of service needs were identified during the study process that were not possible to implement at this time given limitations on existing financial resources.

As funding becomes available, the following service expansions or improvements are recommended as priorities for the future service network:

- » **Increased Service Frequency along Key Local Bus Routes:** Most High Point Transit System routes currently operate with half-hour headways during peak periods and hourly headways during the mid-day off-peak period. While adequate for the current system, it also means service is challenging for many riders. Not only does it require riders to organize their days around the bus schedule, any problem in service (e.g. vehicle malfunction, traffic delay, or missed connections) means that riders may have nearly an hour wait

to catch the next bus, resulting in a more than two hour trip in one direction.

To improve service network redundancy and attract more riders, most service should ideally be operated every 30 minutes or less. Service frequency could be increased to every 30 minutes during peak periods first on major Routes 10 and 11.

- » Increased Service Span: Many study participants expressed the need for service later the evenings on weekdays. Analyses of ridership patterns revealed that ridership on most routes is fairly high on the first trip of the day, indicating that service is likely needed earlier in the morning. As funding permits, a top priority should be the expanding operating hours to provide service later into the evening (roughly 6:00AM – 9:00PM).

5.2 Demand Responsive Service Recommendations

The following recommendations are made for demand-responsive services offered by the High Point Transit System in an effort to further improve both service delivery and to help stabilize operating costs over the life of the short range transit plan. Overall, the High Point Transit System's demand-responsive service has been operating efficiently, and the recommendations provided herein are intended to further improve overall performance. The performance analysis contained in Chapter 3 provides a broad-brush examination of the High Point Transit System's demand-response services, and the recommendations identified above are focused on policies and procedures related to the delivery of service, eligibility, and administrative practices.

At a minimum, the High Point Transit System should continue to maintain its strong operational performance. While the operating cost per revenue hour and revenue mile is anticipated to increase over time, and certain factors that influence operating costs are beyond the High Point Transit System's control (e.g. the cost of fuel), improved service productivity can help control overall operating costs by limiting the number of annual revenue hours necessary to handle demand.

Modify service eligibility requirements, particularly the passenger age requirement

While initially controversial, it is recommended that the High Point Transit System consider modifications to service eligibility requirements within

all legal parameters of ADA. Tightening service eligibility standards will temporarily stem the growth in overall demand, and encourage persons who require transit for basic mobility to use fixed-route services. This is not intended to penalize individuals, but as a necessary means of controlling costs. In particular, consideration should be given to increasing the eligibility age of participants from 60 to 65. Generally, persons between the ages of 60 and 65 are capable of boarding standard bus vehicles, and the low floor fleet vehicles used by the High Point Transit System currently make boarding relatively easy for all individuals, including those with mobility devices. Of course, there will be individuals below the age of 65 who require specialized transportation, but these persons would most likely qualify for demand-responsive services to begin with.

It is advised that any increase in the eligibility age should not adversely affect currently eligible participants below a new minimum age threshold; therefore, persons aged 60 years and over who are now program participants should continue to be eligible for demand-responsive services. This new service eligibility requirement would apply to new applicants only.

Institute a transit travel training program for seniors and persons with disabilities

Increasingly, transit agencies across the country are incorporating transit travel training programs as part of the services they offer, targeted specifically to seniors and persons with disabilities. Educational programs at senior centers or assisted living and care facilities where a transit agency representative can directly demonstrate how to board a bus vehicle and pay a fare has been proven as a method of encouraging persons to use fixed-route services. As noted in Transit Cooperative Research Program (TCRP) Report 163, limited experience with using fixed-route services is frequently identified by seniors and persons with disabilities as a reason for choosing demand-responsive services over fixed-route services. Often, a live demonstration can help ease uncertainties on how to use the fixed-route system that may prevent persons from using it currently. While a travel training program introduces additional administrative components and costs to the High Point Transit System service program, these educational programs have proven to help reduce costs in the long-term.

Schedule Non-Essential Trips during Low Volume Periods.

As funding programs become more constrained, the High Point Transit System should consider scheduling non-essential trips during off-peak travel times. This would lower the cost of these trips by transferring them



to times when the system has capacity.

Establish a Community Service route to consolidate trips to common locations

Similar to a fixed-route, a community service route is a service that operates on a fixed-route schedule (and to a degree on a fixed-route alignment) but is designed to consolidate trips to common locations frequently accessed by demand-responsive service users. These destinations include senior centers, assisted living and care facilities, public housing complexes, medical facilities, shopping centers, and libraries, among other destinations. For the passengers, a benefit of this service is that it does not require the need to pre-arrange trips, and fares may be lower. For the transit provider, pre-scheduling trips patterns made multiple times per week or per month can reduce the burden on the call intake system, and reduce the need to dispatch a driver and vehicle to the same destination multiple times per week or month, thereby reducing overall operating hours and miles. While there is a cost to provide this type of service, successful implementation could reduce demand-response costs to sufficiently cover the operating cost of the service.

Also, a third beneficiary of this strategy could be a retailer, for example. Transit agencies across the country now often coordinate with local retailers or civic institutions frequently visited by seniors or persons with disabilities to provide incentives on specific days of the week or month. For example, it may be possible for the High Point Transit System to negotiate with a local retailer where trips are commonly made by demand-responsive passengers to provide a designated time of day when a group of ten or more passengers would be dropped off for shopping purposes. The retailer benefits from the economic activity, while the High Point Transit System benefits from consolidating trips that would otherwise be made individually.

Consider free-fare policy on fixed-route services for qualified demand-responsive participants

Depending on budget availability, it may be prudent to consider a free fare policy for qualified demand-responsive

participants on fixed-route services. While this would subsidize an individual's entire trip cost, the cost associated with providing the same trip via the current demand-response program is likely to outweigh the cost of providing a free trip on the fixed-route network. A free fare policy could replace the discounted fare policy for fixed-route services.

Create a bus stop improvement program for improved bus stop accessibility

The placement of bus stops and passenger amenities is an important component in attracting and retaining transit ridership within a community. Beyond pedestrian safety and passenger comfort, the location of bus stops and supporting infrastructure are important components to bus operations, and can play a key role in future land use development and compatibility with transit service. As noted in TCRP Report 163:

“Improving the accessibility of bus stops and the pedestrian infrastructure is an important strategy for enabling people with disabilities to use fixed-route transit. Transit agencies have addressed the accessibility of bus stops for some years; however, the need for accessibility extends beyond the bus stop and, increasingly, transit agencies are expanding their accessible bus stop programs to focus on improving pathways of travel to and from stops, facilitating travel to and from the accessible stops for people with disabilities.”²

It is recommended that the High Point Transit System, as part of both a fixed-route and demand-responsive operating program, establish a bus stop accessibility improvement program and conduct a review of all existing bus stops in the network. As noted, a major challenge facing the City of High Point is the lack of sidewalks and pedestrian amenities that can allow pedestrians to safely access bus stop locations without having to walk in the street. Depending on annual budget availability, the High Point Transit System may be able to help provide capital funding for bus stop or sidewalk improvements as part of the city's capital improvement

program. It is recommended that if such a program is started, investments be prioritized based on demand for boardings and alightings at bus stops to focus investments where they are most warranted.

Consider a functional assessment test as part of demand eligibility determination

While controversial, functional assessments are increasingly standard practice by transit agencies to evaluate the physical fitness of demand-responsive applicants and to determine overall eligibility. Functional assessment screening can be an effective method for limiting the growth of demand-responsive applicants. If instituted, a functional assessment would require demand-responsive applicants to demonstrate that they are unable to use the fixed-route network. If an individual is physically able to perform basic functions such as boarding and alighting, the High Point Transit System may be able to temporarily restrict their access to demand-responsive services until they meet the minimum age or other eligibility requirements, or educate the individual in the use of fixed-route services.

Establish a supplemental service agreement with area taxi providers

Increasingly, transit agencies establish agreements with local taxi companies to help handle non-wheelchair or mobility-aid trips. The High Point Transit System may consider contracting with local taxi operators as a technique to reduce overall costs, especially during periods of very high and very low demand. A voucher program could be created wherein individuals purchase vouchers through the transit agency that may be used to help pay for cab rides or driver tips up to a certain valuation limit, with any costs beyond the voucher limit paid for by the individual.

A benefit of supplemental taxi service programs is that service is almost always available (depending on taxi service operating schedules), taxi services come with their own dispatch system, helping to relieve dispatch on the transit operators end, and taxis can sometimes be more responsive to individual passenger needs and travel schedules. Challenges include ensuring consistent service quality and the fact that taxi operators are often reluctant to meet federal standards for insurance and driver requirements (training, drug and alcohol testing).

5.3 Vehicle Fleet Needs

In addition to overall operating costs (discussed above), the recommended service modifications also considered the availability of existing physical resources, including the number of vehicles used in peak service. Although

the number of routes is increased somewhat, the number of vehicles used during the weekday peak period is not increased (see Exhibit 50). This is a critical metric to determine if the service scenario can be operated within the existing fleet, or whether additional vehicles will be necessary.

Exhibit 50. Fleet Requirements – Existing and Recommended Service Scenario

Time	Existing Network		Recommended Network	
	Weekday	Saturday	Weekday	Saturday
Peak	12	-	14	-
Off-Peak	7	10	9	10

Source: HDR, 2014

Fleet replacement needs are driven by a number of factors, the primarily factors being vehicle age, mileage, vehicle type and the operating environment. The FTA has developed a set of replacement guidelines based on age. The FTA's guidelines for the useful life of transit vehicles is shown in Table 5-9. These guidelines provide general parameters for the ages at or beyond which FTA will generally help fund vehicle replacement. Before these timeframes, replacement funding is also possible, but requires special justification. Conversely, vehicles may also be used beyond the minimum standard for vehicle life, in order to conserve financial resources. However, this must be balanced against the typically increased maintenance costs, and the increased risk of in-service breakdowns.

As discussed earlier, the average age of High Point Transit System buses is approximately 8.7 years of age, while demand response vans have an approximate age of 2.6 years. Fifteen of the buses are scheduled to be replaced in 2016, one in 2019, and one in 2022. A vehicle lifecycle and replacement plan is in place for both fixed-route and demand-responsive vehicles. All present and planned vehicles are ADA-accessible. Until recently, the fleet consisted exclusively of 29-30 foot transit buses and the ADA-compliant paratransit demand-responsive vehicles. A new 41-foot suburban bus was acquired to operate along Route 25 specifically.

As service is extended, both to new geographic regions of the city or in terms of operating characteristics (e.g. service frequency increases), additional fleet vehicles will be required. The size and configuration of new vehicles purchased should be tailored to the service characteristics and



markets to be served. For example, smaller vehicles would be more appropriate for demand-responsive services and/or lower density areas with lower peak loads, while larger vehicles may be more appropriate for fixed-route services carrying more passengers. The High Point Transit System should seek to acquire fuel-efficient and low-emissions buses that employ clean engine technology. In fact, the High Point Transit System should consider new fleet purchases that offer hybrid fuel technologies which provide greater fuel economy, reduced greenhouse-gas emissions, and can accrue cost savings to the agency.

As the High Point Transit System grows and its existing vehicles and equipment age it will be vital to continue to program expansion and replacement equipment and parts into its annual capital budget.

Vehicle Technologies

As the High Point Transit System considers the replacement of the current revenue vehicle fleet, it is a good time to consider the use of alternative vehicle fuel types. With technology improvements in recent years, many transit agencies are realizing cost savings and environmental benefits accrued with the use of hybrid electric-gasoline vehicles.

Currently, all High Point Transit System buses use diesel fuel, with all paratransit vehicles using gasoline. Alternatives to diesel fuel include:

» **Hybrid-Electric:** Hybrid vehicles are powered by batteries which in turn are charged by an internal combustion engine. The engines can run on a variety of fossil fuels. At this time diesel hybrids are the most popular due to the ability of the transit agencies to retain their existing fueling infrastructure. Hybrids are more energy efficient than standard fossil fuel engines. While there is a strong incentive for transit agencies to incorporate hybrid-electric technology in order to improve air quality and meet EPA emissions standards, especially nitrogen oxides (NO_x) and particulates (PM), the vehicle cost of hybrid-electric

technology is much higher – potentially almost double the cost of the comparative conventional diesel model.

- » **Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG):** CNG is the most used fuel source in the transit industry after diesel fuel. CNG buses emit over 90% less particulate mass than diesel. CNG buses cost about \$25,000 to \$100,000 more than diesel buses, but the fuel is often less expensive. According to an APTA survey of transit agencies, CNG accounts for approximately 10% of transit buses in the United States although it makes up over 20% of new bus orders. LNG accounts for only 2% of buses. LNG contains almost no sulfur, so the fuel has lower emissions of air contaminants than most fossil fuels.
- » **Biodiesel:** Biodiesel is made from natural ingredients, such as seed crops. It contains no petroleum and it is biodegradable with virtually no sulfur, resulting in lower emissions than petroleum diesel. One of the most attractive features of biodiesel for operators is that it can be used in standard diesel engines with little or no modifications.
- » **Hydrogen Fuel Cell Technology:** A hydrogen fuel cell converts chemical energy directly into electricity by combining oxygen and hydrogen gas. Fuel cells do not need recharging and continue to produce electricity as long as hydrogen is refilled. Fuel cell engines are cleaner than fossil fuel engines; in fact, fuel cells emit only water vapor. The hydrogen used as fuel can be produced by renewable energy sources as well as standard fuels such as gasoline, ethanol and natural gas. Although there are number of pilot programs throughout the United States, fuel cell technology still has not proven to be a reliable power source for transit buses. Furthermore, fuel cell buses are much more expensive than diesel and CNG buses (as much as \$300,000 more per bus).

A critical drawback to developing alternative fuel fleets is the need to build expensive new infrastructure including re-fueling stations, new pumps, and training maintenance crews. An order-of-magnitude small system CNG/LNG fueling depot can cost \$2 million or more to install. In addition, changing

fuel technology may also result in the need to hire specialized maintenance staff based on the significantly more complicated engine technology, especially for hybrid vehicles.

5.4 Facilities and Passenger Amenities

Passenger Facilities

As discussed, the central passenger facility of the High Point Transit System is the Broad Avenue Terminal. With nearly one half of the transit system's weekday boardings occurring at this facility, this first-class facility makes a huge difference in the public perception of the High Point Transit System and makes the system more attractive to choice riders.

Outside of downtown High Point and the Broad Avenue Terminal, enhanced passenger facilities should be located based on boardings and alightings. These could be considered transit satellite stations at locations where two or more routes connect and could facilitate transfers. These facilities would include sheltered waiting areas with lights, bicycle racks, and real-time passenger information (in the future). The locations for these satellite stations include the following:

- » GTCC High Point Campus
- » Guilford County Complex
- » Lexington and North Main Street
- » Walmart South Shopping Center
- » Five Points District

The High Point Transit System has a bus shelter expansion and replacement program, a bus stop bench program, and a bus stop signage update program. However, the warrants associated with standards for locating bus stops and the infrastructure at stop locations should be investigated. These programs and warrants will be important when considering current and future bus stop facilities in order to meet the needs of current riders and make transit more attractive to new riders, as well as reducing operating costs.

The addition of a circulator service in the Palladium/Deep River district provides the opportunity for the creation of a transit transfer facility in northeast High Point. A signature facility in this region could help facilitate transfers between services for passengers and coordinate service among

providers. The design of such a facility would need to take into account anticipated service levels and function, but at a minimum should include sheltered waiting areas, street furniture, an operator break room/restroom facility, and real-time travel information.

As discussed, a significant challenge facing the High Point Transit System is the lack of sidewalks in High Point along several transit routes. While the High Point Transit System may not have sufficient resources to help pay capital costs for sidewalk upgrades, it is advisable that a stop improvement program be considered (with some financial resources available) to annually make investments and improvements in stop locations based on boarding and alighting activity.

In addition to shelters and benches, in some instances, covered walkways linking parking, major employers, and trip generators to transit corridors could be used to offer more pleasant, safe, and comfortable pedestrian connections to bus stops. In such instances, it may be appropriate to approach employers to help cover the cost of such facilities, if service is specifically focused on reaching businesses or civic facilities.

Such walkways allow bus routes to stay on main corridors rather than diverting to these generators, saving on operating expenses and minimizing travel time for through passengers. Also, as new services in outlying areas are implemented, transfer points at these remote areas must be designed to enhance rider convenience, including informational signing, shelters, seating, lighting, and other amenities.

Specifically, High Point Transit System services in the Palladium/Deep River region will immediately warrant investment in sheltered waiting areas with sufficient passenger amenities as part of the effort to enhance rider comforts and the pedestrian environment leading to the stop locations.

At this time, construction and operation of park-and-ride facilities are not recommended at this time.

Operations and Maintenance Facility

The current High Point Transit System operations and maintenance facility is in very good condition, but requires parking of some transit vehicles outside. Indoor storage helps extend the life of transit vehicles and also makes them easier to start, particularly in cold weather conditions.

A looming need is for the additional vehicle storage capacity at the High Point Transit System operations and maintenance center. Based on the service improvements proposed, the High Point Transit System vehicle fleet will need to grow by 2 buses in the peak period. Over time, it will also be necessary to grow the number of ADA-compliant vans. The potential exists that all vehicles will be housed at the High Point Transit System operations center, which is strategically located to help minimize deadhead mileage. For planning purposes, it is appropriate to consider a 25-vehicle facility.

Expansion in the fleet will require additional outdoor storage space for buses. With a total current fleet size of 17 buses, the peak pullout cannot exceed 12 buses and still maintain a recommended 20% spare ratio. With the proposed short-term improvements, peak pullout increases from 12 buses to 14 buses, thus necessitating the purchase of at least 1 new bus to maintain a sufficient minimum fleet of revenue service and spare vehicles.

As service expands, the High Point Transit System will need to explore and create additional indoor bus parking with bus lift facilities at or adjacent to this facility. The High Point Transit System should continue to maintain and update internal systems (such as, but not limited to, communications, maintenance equipment, and HVAC) at this facility as necessary, should also enhance its facility to accommodate additional staff space as necessary to support growth in operational departments.

Ancillary Facilities

Ancillary facilities, including streetside improvements, are an important component to the success of transit and can include such items as sidewalks, street connectivity, and the locations of social service agencies, particularly for communities where the predominant ridership base are transit-dependent riders. As noted, a challenge to growing ridership is the limited availability of sidewalks throughout the city. The lack of sidewalks along many routes may act as a deterrent to potential riders. The High Point Transit System

should work with city staff to help prioritize investments in sidewalks based on boarding and alighting volumes at stop locations, and emphasize accessibility to the stop by all persons, including those with mobility assistance devices.

Street connectivity is also a challenge in High Point as it is in several other cities in North Carolina and across the United States. The street network and current design standards for streets makes efficient routing of transit service difficult. As noted, the closure of Montlieu Avenue presents a particularly difficult challenge to orchestrating efficient transit service.

The circuitous routing patterns of certain routes, such as Route 16, limit the reach of routes geographically, especially if the network is designed to pulse at the Broad Avenue Terminal. The High Point Transit System staff should continue to coordinate with city engineers and streets technicians on future designs of roadways to help ensure transit needs are met.

Over the course of this study, Sounding Board and Steering Committee participants commented on the locations of bus stops and fixed-route services relative to the social service agencies, both public and private. Further, a goal of the High Point Transit System is to encourage those individuals who may be capable of using fixed-route service to do so as opposed to using demand responsive services. While it is an admirable goal to serve as many social service agencies and facilities throughout the city, prioritizing those agencies that warrant service will be important toward creating a network that connects travelers with where they need to go, especially given the current limited resources available for service, and the expressed desires for enhanced frequency and span of service.

Future comprehensive transportation plans should carefully review the location of thoroughfares and collector streets compared with the location of existing and future bus service so that buses can have a more direct routing to all major locations.

5.5 Intelligent Transportation Systems (ITS) Solutions

The High Point Transit System has been investigating technology enhancements to improve efficiency, convenience, and customer service with respect to the passenger experience on board High Point Transit System vehicles and at stop locations. The recent renovations to the Broad Avenue Terminal greatly improved the image of the High Point Transit System, and both City of High Point and High Point Transit System staff are currently engaged in development of computer-based and mobile phone applications to enhance passenger communications. In recent years, new scheduling software has been installed to increase the efficiency of service scheduling.

A clear priority is to provide real-time bus arrival information to waiting passengers, particularly at the Broad Avenue Terminal, where the majority of passenger transfers occur. Coupled with the efforts of city and High Point Transit System staff to develop a GPS-based bus location application to inform passengers of arrival times, it is recommended that High Point Transit System staff continue to research systems that could provide real-time passenger information at bus stops throughout the system, particularly those where transfer activities occur.

Longer term, additional ITS investments should be considered, such as upgrades to the fare payment system for smart cards (particularly if transfers between services are required), automated ticket vending machines, public Wi-Fi service at major transfer points such as the Broad Avenue Terminal, and consideration of transit signal phasing along key corridors to enhance service frequency and reliability. With the implementation of Automatic Vehicle Location (AVL) systems planned for buses, and similar technology being used currently for demand responsive and ADA-compliant paratransit vehicles, this will provide better passenger information and improve the efficiency of operations.

In addition to an electronic display of arrival times at the Broad Avenue Terminal, it may also be pertinent for the High Point Transit System to consider the following ITS systems for implementation in the future:

- » Computer Aided Dispatch (CAD) software/hardware linked to the driver scheduling software

- » Automatic Vehicle Location (AVL) software/hardware linked to CAD
- » Predictive capacity added to AVL with on-time performance reporting
- » Real-time arrival info available via telephone and cell phone
- » Real-time arrival info linked to a web-based traveler information system such as Google Transit
- » Real-time arrival info linked to interactive voice system
- » Real-time arrival info linked to electronic signs at high boarding locations in the High Point Transit System such as the GTCC High Point and GTCC Jamestown campuses

Queue jump lanes (also known as “queue jumpers”), or lanes that allow a bus to jump ahead of cars stopped at a traffic light, may be warranted at specific locations around the city. Given the length and travel times of certain routes, it may be possible to implement simple traffic solutions that can improve travel times for transit. High Point Transit System staff should work with the city’s traffic engineers to identify locations and potential intersection solutions that can support improved.

As the city plans and implements streetscape improvements, these and other transit-supportive street solutions should be considered. Centennial Street, East Green Drive, and Westchester Drive (among other streets and roadways in town) all show a number of good characteristics for transit-supportive investments such as bus only lanes during peak travel periods, potential ITS system improvements at intersections, or other roadway striping projects that maintain current capacity without needing to acquire new public rights-of-way. Additionally, traffic calming and streetscape enhancement projects like those on Main Street can be very transit-supportive in the design elements that aim to encourage multi-modalism and reduce dependency on the automobile.

5.6 Public and Stakeholder Comment

As part of finalizing the preferred scenario, the High Point Transit System staff and the study team encouraged the public and project stakeholders to review and comment on the recommended service scenario. To facilitate this input and comment period, the project team prepared a handful of summary documents that outline and describe the preferred service scenario.

Summary documents (see Appendix D), together with several of the study documents were posted on the project's website, with paper copies available upon request. Paper copies of the draft SRTP were also made available at the Broad Avenue Terminal and at city offices. The project team alerted members of the public and riders that the information was available by placing posters and advertisements in transit vehicles, at stop locations, and sending emails to participants who had been in contact with the project to request additional information. The project team also set up a telephone hotline to encourage people to call the team directly with comments. In total, the project team received XXX comments, with XX in the form of letters, XX emails, and XX telephone calls received.

TO BE COMPLETED FOLLOWING PUBLIC WORKSHOP

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¹ Route 21 provides only one morning and one afternoon trip.

² Transportation Research Board, Transit Cooperative Research Program, Report 163, Page 44, 2013