



Major Change
and
Service Equity Analysis

September 2018 Schedule Changes



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Overview

This report summarizes the results of the Major Change and Service Equity analysis conducted on the September 2018 service changes. The service changes include enhancements to the Henrico County local route network, additional peak trips to City of Richmond local routes in the west end, and the removal of the City of Richmond route 8. The proposed changes were identified as Major Service Changes from the current June 2018 schedule, requiring the performance of a service equity analysis, per the requirement of GRTC's Title VI Program – Service and Fare Equity Policy (February 2017). The analysis results determined that the new schedule will not have a disparate impact on minority populations or impose a disproportionate burden on low income populations.

Service and Fare Equity (SAFE)

GRTC has a fare and service equity analysis policy and process to evaluate proposed service and fare changes. The Service and Fare Equity (SAFE) process shall be performed in any and all of the following conditions:

- Any fare change (increase or reduction) is considered on one or more routes or services (local, express, specialized or other)
- A major service change (increase or reduction) is considered on one or more routes or services

All major service changes shall undergo a service equity analysis to ensure that these changes do not have disparate impacts on minority populations, or impose a disproportionate on low-income populations, consistent with the intent and requirements of FTA Circular 4702.1B and Title VI of the Civil Rights Act of 1964.

Identifying Fare Change

The route 19 – West Broad Street will be decreasing its fare from \$2.00 to \$1.50. The route 19 is a local Henrico County route that travels east and west on West Broad Street between Willow Lawn Drive to Bon Secours Parkway. The route has historically had its western terminus at Pemberton Road. The September schedule change includes an extension of the route farther west. The fare change will reduce the fare to be equivalent with all other local routes in the City of Richmond and Henrico County. This will result in a savings for local route customers, as they will not have to pay an upcharge for riding the route 19.

The below table provides a breakdown of the Minority and Low-Income population within .25 miles of the service area. The data source is the 2018 ACS. The average minority population for the system is 54 percent. The minority population for the .25 miles around the route 19 is 40 percent. The average low-income population for the system is 29 percent. The low-income population for the .25 miles around the route 19 is 17 percent. Both minority distribution and low-income distribution are within 20 percent of the system average and are not a greater burden to either group.

| Route - Minority and Low Income Summary by Route Type | | | | | | | | |
|---|---------------------------|------------------------------------|------------------|---------------------------|--------------------------------------|-------------------------------|----------------|--|
| Route 19 Sept | | | | | | | | |
| 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 | |
| RADIAL | | | | | | | | |
| 19 | 12,772 | 5,044 | 39.5% | 5,592 | 949 | 17% | Line | |

Figure 1

Figure 2 displays the distribution of the minority population compared to the system average within the .25 miles around route 19.

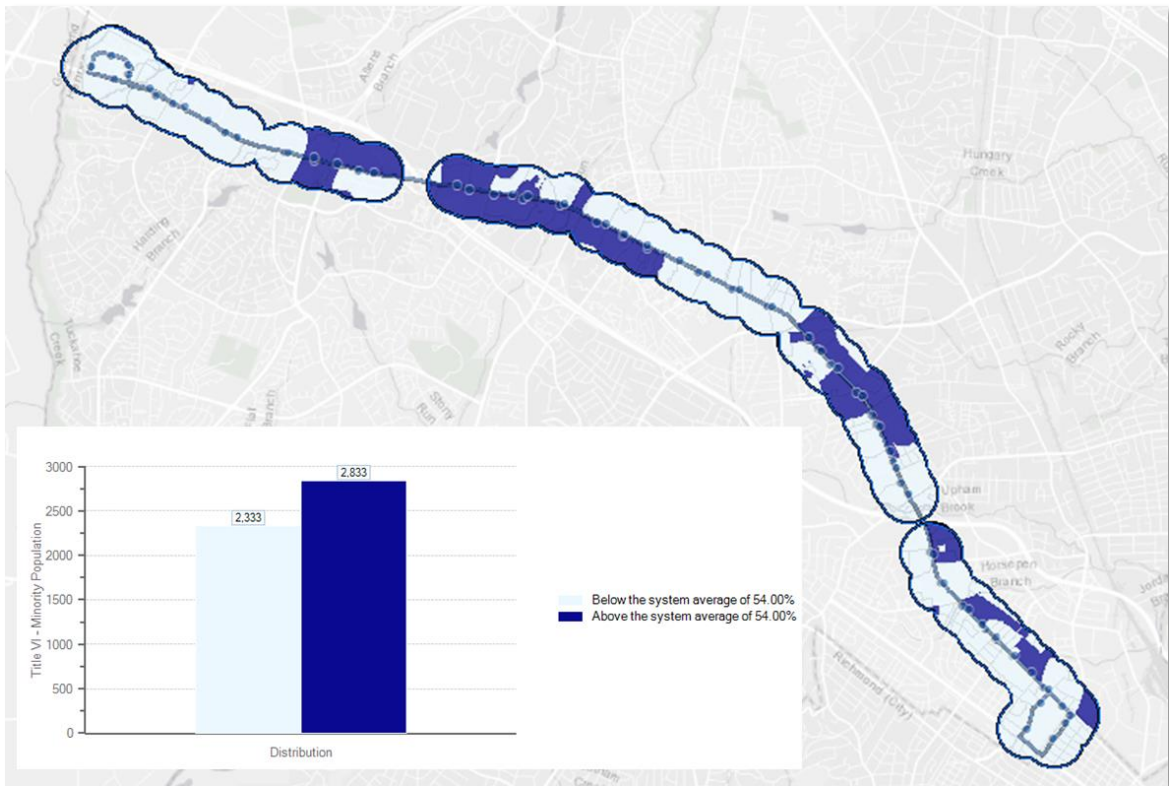


Figure 2

Figure 3 displays the distribution of low-income population compared to the system average within the .25 miles around route 19.

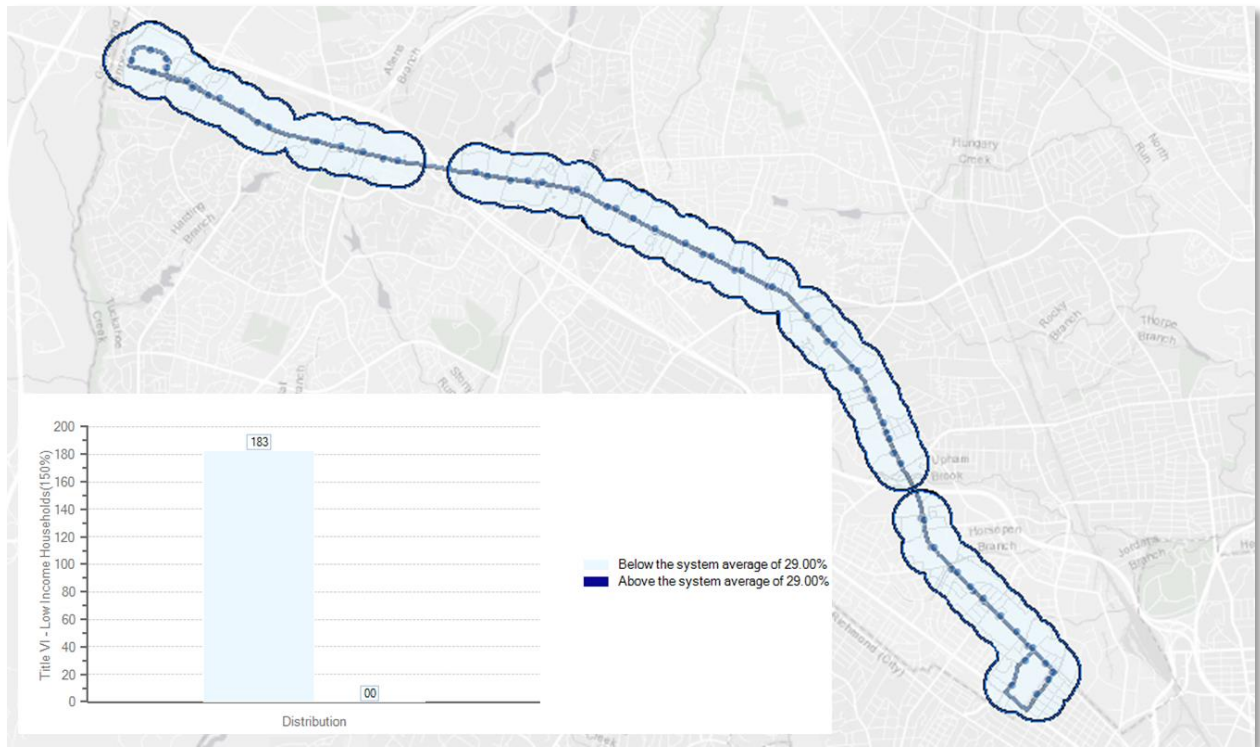






Figure 3

Identifying Major Service Change

The table below lists the metrics and thresholds that identify whether a service change is identified as major. There are six metrics (a-f) that determine if a change to an individual route is a major change, and two metrics (g-h) that determine if a change is a system level major change. The table describes the metric, the threshold, provides an example, and lists the identified major changes respective to each metric. All metrics that were triggered as major changes have the route listed in red in the table and have a star. The full analysis for each metric follows the table.

Route Level Metrics

| Route Level Metric | Level of Change Required to be Classified as a Major Change | Example | Sept 2018 Proposed Changes |
|---|---|---|---|
| a. Change in number of trips  | 25% change in number of scheduled one-way trips on the Weekday, Saturday or Sunday schedule. | Decreasing number of trips from 80 daily one-way trips to 50 one-way trips. | <ul style="list-style-type: none"> ● Route 7A – Above 25% Change ● Route 7B – Above 25% Change ● Route 8 – Above 25% Change ● Route 19 – Above 25% Change ● Route 75 – Above 25% Change ● Route 76 – Above 25% Change ● Route 77 – Above 25% Change ● Route 78 – Above 25% Change ● Route 88 – Below 25% Change ● Route 91 – Above 25% Change ● Pulse – Below 25% Change |
| b. Change in servicespan  | 25% change in the number of hours between the beginning and end of the Weekday, Saturday or Sunday schedule, in either direction. | Changing Weekday span on a route from 20 hours to 15 hours or less. | <ul style="list-style-type: none"> ● Route 7A – Above 25% Change ● Route 7B – Above 25% Change ● Route 8 – Above 25% Change ● Route 19 – Above 25% Change ● Route 78 – Below 25% Change ● Route 88 – Below 25% Change ● Route 91 – Above 25% Change ● Pulse – Below 25% Change |
| c. Re-directing a route  | Rerouting at least 25% of a route's path onto a different street or road, measured in single-direction route miles. | Moving two miles of an eight-mile route to another street or road (even if the new routing is very near the current routing). | <ul style="list-style-type: none"> ● Route 2B – Below 25% Change ● Route 12 – Below 25% Change ● Route 18 – Above 25% Change ● Route 19 – Above 25% Change ● Route 76 – Below 25% Change ● Route 77 – Below 25% Change ● Route 79 – Below 25% Change ● Route 88 – Below 25% Change |
| d. Change in total miles serviced by the route  | 25% change in total miles on a route's path | Extending or shortening a line. | <ul style="list-style-type: none"> ● Route 2B – Below 25% Change ● Route 12 – Below 25% Change ● Route 18 – Above 25% Change ● Route 19 – Above 25% Change ● Route 76 – Below 25% Change ● Route 77 – Below 25% Change ● Route 79 – Below 25% Change ● Route 88 – Below 25% Change |


| Route Level Metric | Level of Change Required to be Classified as a Major Change | Example | Sept 2018 Proposed Changes |
|--|--|---|----------------------------|
| e. Shortlining or Longlining | 25% change in number of scheduled one-way trips ending at a route's terminal points. | On a route originally going from points A to B to C, terminating certain trips at B. On a route originally going from A to B, extending certain trips to travel all the way to point C. | • N/A |
| f. Eliminating Route(s)  | Eliminating one or more routes. | Discontinuing an existing route (even if replacing this route with nearby service). | • Route 8 |

Figure 4

a. Change in number of trips (route level) – Major Change

Routes 7A, 7B, 8, 19, 75, 76, 77, 78, 88 and 91 are above the 25 percent threshold.

| Jurisdiction | Rte | Weekday | | | | Saturday | | | | Sunday | | | | Change Category |
|----------------------|-----|---------|---------|-----|--------|----------|---------|-----|--------|--------|---------|-----|--------|-----------------|
| | | Chng | Current | New | % Chng | Chng | Current | New | % Chng | Chng | Current | New | % Chng | |
| Henrico | 7A | 8 | 27 | 35 | 30% | 33 | 0 | 33 | New | 26 | 0 | 26 | New | Major |
| Henrico | 7B | 6 | 29 | 35 | 21% | 31 | 0 | 31 | New | 24 | 0 | 24 | New | Major |
| Richmond | 8 | -13 | 13 | 0 | -100% | -66 | 66 | 0 | -100% | -66 | 66 | 0 | -100% | Major |
| Henrico | 19 | 19 | 50 | 69 | 38% | 70 | 0 | 70 | New | 50 | 0 | 50 | New | Major |
| Richmond | 75 | 5 | 12 | 17 | 42% | - | - | - | - | - | - | - | - | Major |
| Richmond | 76 | 8 | 28 | 36 | 29% | - | - | - | - | - | - | - | - | Major |
| Richmond | 77 | 8 | 28 | 36 | 29% | - | - | - | - | - | - | - | - | Major |
| Richmond | 78 | 15 | 29 | 44 | 52% | - | - | - | - | - | - | - | - | Major |
| Richmond | 88 | 5 | 26 | 31 | 19% | - | - | - | - | - | - | - | - | Minor |
| Henrico | 91 | 10 | 24 | 34 | 42% | 32 | 0 | 32 | New | 26 | 0 | 26 | New | Major |
| Richmond/ Henrico | 108 | 36 | 176 | 212 | 20% | - | - | - | - | - | - | - | - | Minor |

Figure 5

b. Change in service span (route level) – Major Change

Routes 7A, 7B, 8, 19, 88, and 91 are above the 25 percent threshold.

| Jurisdiction | Rte | Weekday | | | Saturday | | | Sunday | | | Change Category |
|----------------------|-----|------------------|------------------|--------|------------------|------------------|--------|------------------|-------------------|--------|-----------------|
| | | Current | New | % Chng | Current | New | % Chng | Current | New | % Chng | |
| Henrico | 7A | 5:53am - 7:35pm | 5:53am - 11:40pm | 30% | No Svc | 7:00am - 11:47pm | New | No Svc | 10:00am - 10:47pm | New | Major |
| Henrico | 7B | 6:15am - 8:01pm | 5:11am - 11:05pm | 29% | No Svc | 7:26am - 11:26pm | New | No Svc | 10:00am - 10:20pm | New | Major |
| Richmond | 8 | 6:45pm - 10:06pm | No Svc | -100% | 5:44am - 10:06pm | No Svc | 100% | 5:44am - 10:06pm | No Svc | 100% | Major |
| Henrico | 19 | 7:00am - 7:30pm | 6:00am - 11:49pm | 40% | No Svc | 6:00am - 11:58pm | New | No Svc | 10:19am - 10:39pm | New | Major |
| Richmond | 78 | 5:05am - 7:35pm | 5:05am - 10:07pm | 17% | - | - | - | - | - | - | Minor |
| Richmond | 88 | 5:54am - 7:18pm | 5:54am - 11:34pm | 31% | - | - | - | - | - | - | Major |
| Henrico | 91 | 6:25am - 6:25pm | 6:25am - 11:25pm | 42% | No Svc | 7:00am - 10:55pm | New | No Svc | 10:00am - 10:55pm | New | Major |
| Richmond/ Henrico | 108 | 5:30am - 1:35am | 5:00am - 1:37am | 2% | - | - | - | - | - | - | Minor |

Figure 6

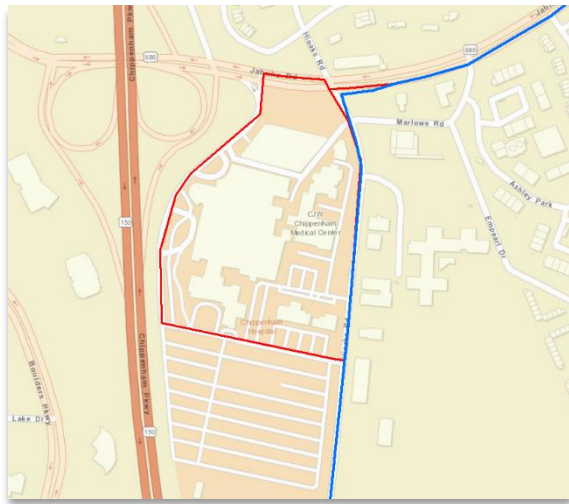
c. Redirecting a route (route level) – Major Change

Route 18 and Route 19 are above the 25 percent threshold.

| Jurisdiction | Rte | North/West | | | | South/East | | | | Change Category |
|--------------|-----|------------|---------|--------|--------|------------|---------|--------|--------|-----------------|
| | | Chng | Current | New | % Chng | Chng | Current | New | % Chng | |
| Richmond | 2B | -0.75 | 13.58 | 12.83 | -6% | - | - | - | - | Minor |
| Richmond | 12 | - | - | - | - | -0.13 | 6.524 | 6.397 | -2% | Minor |
| Henrico | 18 | -1.90 | 7.368 | 5.467 | -26% | -1.09 | 9.79 | 8.704 | -11% | Major |
| Henrico | 19 | 5.36 | 5.71 | 11.073 | 94% | 3.87 | 7.522 | 11.393 | 51% | Major |
| Richmond | 76 | -0.08 | 3.898 | 3.822 | -2% | 0.72 | 3.861 | 4.579 | 19% | Minor |
| Richmond | 77 | 1.23 | 6.093 | 7.323 | 20% | -0.14 | 6.346 | 6.209 | -2% | Minor |
| Henrico | 79 | 0.49 | 8.318 | 8.805 | 6% | -0.17 | 7.298 | 7.129 | -2% | Minor |
| Richmond | 88 | 0.00 | 5.443 | 5.443 | 0% | 0.00 | 6.61 | 6.61 | 0% | Minor |

Figure 7

Route 2B



Route 2B northbound was removed from circling through the Chippenham hospital grounds due to issues making a left-hand turn. The route will continue to service the stop outside the hospital Hioaks.

Figure 9

Route 12

Route 12 will no longer travel east on Broad due to an inconsistent no left turn arrow on Broad Street.



The route will now travel on Marshall street.

Figure 10

Route 12 will no longer travel north and south on 24th street but will use the roundabout to travel north and south on 25th street. This will provide front door service to the new grocery store on 25th and Fairmount.

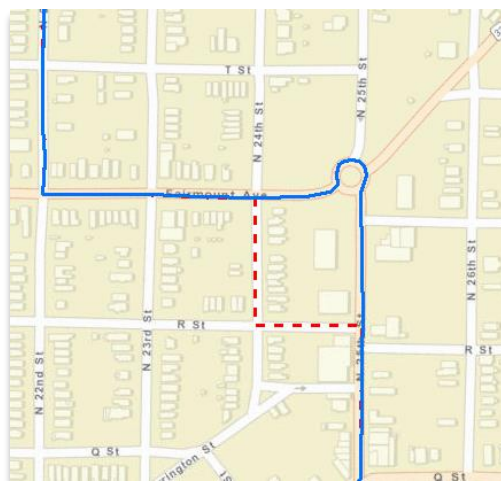


Figure 11

Route 18

Route 18 has been re-directed to create more efficient service on Staples Mill Road. This alignment provides service to the Willow Lawn Pulse Station, the Libbie Mill mixed use development which includes the Library, Amtrak, Henrico Government Center, and Henrico Doctor's Hospital. The area removed on Broad Street will be covered by the enhanced service on the route 19.

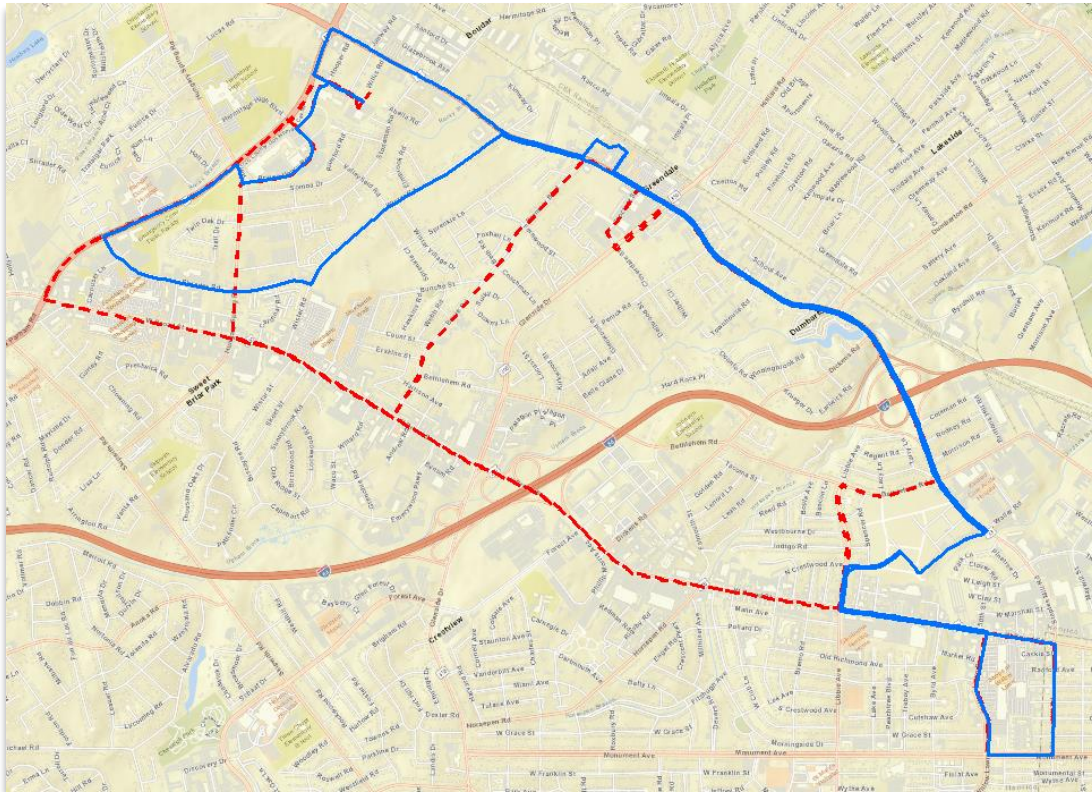


Figure 12

Route 19

Route 19 is extended an additional seven miles, providing service to Short Pump Town Center, and West Broad Marketplace at the very western portion of Henrico County.

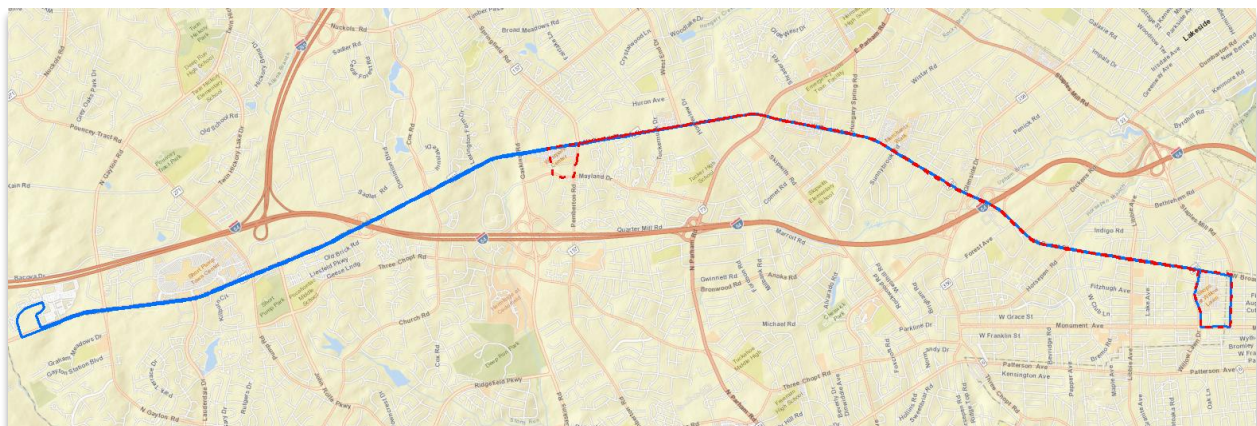


Figure 13

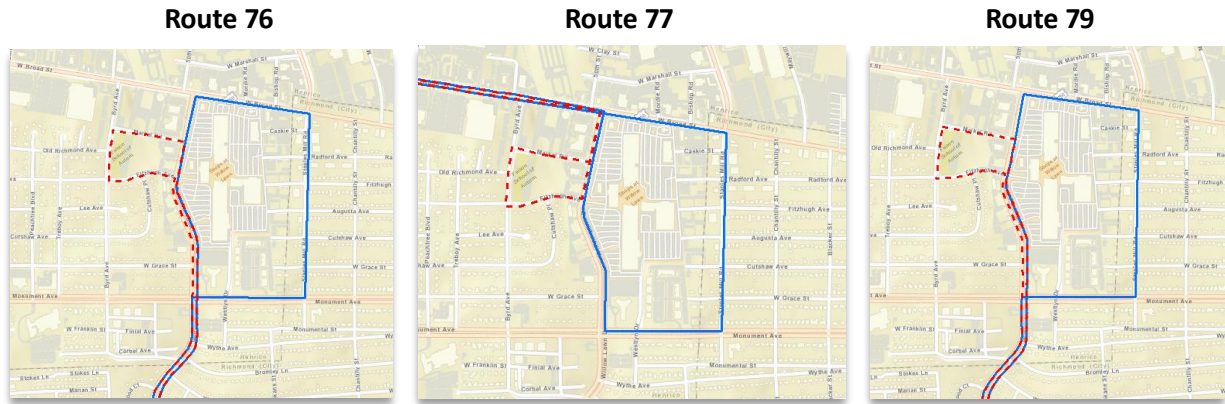


Figure 14

Routes 76, 77, and 79 were re-directed at the end of the line because of layover congestion at the Markel and Byrd stop. They will now serve the shelter on Willow Lawn Drive as the end of the line.

Route 88

Route 88 will no longer travel on Bells Road but will be re-directed to travel bi-directionally on Ruffin Road. This change will better service the employees at Phillip Morris by providing service at the primary gate on Commerce Road.

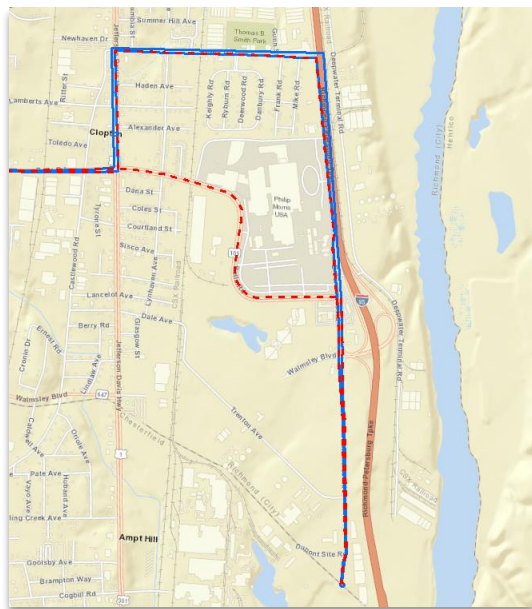


Figure 15

d. Change in total miles serviced by the route (route level) – Major Change
Route 18 and Route 19 are above the 25 percent threshold.

| Jurisdiction | Route | North/West | | | | South/East | | | | Change Category |
|--------------|-------|------------|---------|--------|--------|------------|---------|--------|--------|-----------------|
| | | Chng | Current | New | % Chng | Chng | Current | New | % Chng | |
| Richmond | 2B | -0.75 | 13.58 | 12.83 | -6% | - | - | - | - | Minor |
| Richmond | 12 | - | - | - | - | -0.13 | 6.524 | 6.397 | -2% | Minor |
| Henrico | 18 | -1.90 | 7.368 | 5.467 | -26% | -1.09 | 9.79 | 8.704 | -11% | Major |
| Henrico | 19 | 5.36 | 5.71 | 11.073 | 94% | 3.87 | 7.522 | 11.393 | 51% | Major |
| Richmond | 76 | -0.08 | 3.898 | 3.822 | -2% | 0.72 | 3.861 | 4.579 | 19% | Minor |
| Richmond | 77 | 1.23 | 6.093 | 7.323 | 20% | -0.14 | 6.346 | 6.209 | -2% | Minor |
| Henrico | 79 | 0.49 | 8.318 | 8.805 | 6% | -0.17 | 7.298 | 7.129 | -2% | Minor |
| Richmond | 88 | 0.00 | 5.443 | 5.443 | 0% | 0.00 | 6.61 | 6.61 | 0% | Minor |

Figure 16

e. Shortlining or longlining (route level) – N/A

The number one-way trips at a route’s terminal point does not change for the September 2018 Booking.

f. Eliminating routes (route level) – Major Change

Route 8 is proposed to be eliminated. However, the service it currently provides will be absorbed and enhanced with the route 7 service increase for nights and weekends.

System Level Metrics

| System Level Metric | Level of Change Required to be Classified as a Major Change | Example | September 2018 Scenario B Major Changes |
|-------------------------------------|--|--|---|
| g. Adding new route(s) | Adding one or more new routes. | Creating a new route to reaching a previously unserved area. | • N/A |
| h. Change total daily revenue hours | 25% change in revenue hours over the system on the Weekday, Saturday or Sunday schedule. | Reduction of 30% of weekday revenue hours due to a budget shortfall. | • Below 25% Change |

Figure 17

g. Adding new route(s) (system level) – N/A

No routes are being added.

h. Change total daily revenue hours (system level) – Minor Change

The percent change is below the threshold of 25 percent.

| Change in Total Daily Revenue Hours | | | | |
|-------------------------------------|--------|----------|----------|----------|
| Schedule | Change | Current | New | % Change |
| Weekday | 88.25 | 1,097.50 | 1,185.75 | 8% |
| Saturday | 106.75 | 798.00 | 904.75 | 13% |
| Sunday | 73.50 | 645.50 | 719.00 | 11% |
| Total | 268.50 | 2,541.00 | 2,809.50 | 11% |

Figure 18

Disparate Impact Analysis

“Disparate impact refers to a facially neutral policy or practice that disproportionately affects members of a group identified by race, color, or national origin, where the recipient’s policy or practice lacks a substantial legitimate justification and where there exist one or more alternatives that would serve the same legitimate objectives but with less disproportionate effect on the basis of race, color, or national origin.” (FTA) Title VI of the Civil Rights Act prevents discrimination based on race, color and national origin in federally-funded programs or activities. GRTC will ensure that all service changes will be equitable in terms of Title VI. In order to ensure equity in access to transit service across the service area, major service changes shall not adversely affect minority populations more than non-minority populations, by more than the threshold defined below. Furthermore, service changes that result in increases in service shall not benefit non-minority populations more than minority populations, by more than that same threshold defined below. If the difference in measured effects on minority and non-minority populations is greater than the set threshold, the proposed change would be considered to have a **disparate impact** on minority populations.

The threshold shall be a **20-percentage point** difference between:

1. The percentage of impacts borne by minority populations in the proposed service change.
2. The percentage of minority populations in GRTC’s service area.

Given that minorities are approximately 60% of the population in the City of Richmond. This means that:

- If service increases, minorities must receive at least 40% of the benefit.
- If service decreases, minorities cannot bear more than 80% of the burden.

Methodology

GRTC uses the methodology of people trips to analyze the burden of service change borne by minority populations. The 4/5th rule is used identifying 20% as the threshold against the system minority average based on ACS census block ground data. GRTC’s service area includes Henrico County, City of Richmond, and Chesterfield County. 2018 ACS 5-year estimates were used as the data source for population. Total population by block group is identified using line for local routes and stop for express routes. Total minority population is identified, and non-minority. These population numbers are multiplied by the number of annual trips traveling through each block group and aggregated. This process is done for both the status quo service scenario and the service change scenario. The resultant changes in minority and non-minority people trips between scenarios is contrasted. The minority burden of the change is identified. This number is subtracted from the system minority average. If the difference between two

numbers is less than 20% then the proposed scenario service change does not have a disparate impact on the minority population. Transit Boardings Estimation and Simulation Tool (TBEST) was used in the Service Equity Analysis.

Results

The below table (figure 11) displays the results of the analysis for annual people trips for each route identified as a major change. The table concludes that the schedule changes proposed for Sept 2018 (Scenario B) do not have a disparate impact on minority populations. There is an overall annual increase in people trips for the total population as well as for the minority population. The disparate impact for each route is below 20%.

| Route | Annual Service Trips | | | Total Population | | | Minority Population | | | Percent Minority | | | Population People Trips (mil) | | | Minority People Trips (mil) | | | Minority Burden | % Disparate |
|-------|----------------------|--------|----------|------------------|--------|----------|---------------------|--------|----------|------------------|-------|----------|-------------------------------|--------|----------|-----------------------------|-------|----------|-----------------|-------------|
| | A | B | % Change | A | B | % Change | A | B | % Change | A | B | % Change | A | B | % Change | A | B | % Change | | |
| 7A | 6,120 | 9,365 | 53% | 17,460 | 17,334 | -0.7% | 11,463 | 11,385 | -0.7% | 65.7% | 65.7% | 0% | 79.36 | 120.04 | 51.3% | 53.11 | 79.34 | 49.4% | 64.5% | 1.2% |
| 7B | 6,120 | 9,145 | 49.4% | 18,008 | 17,873 | -0.7% | 11,822 | 11,735 | -0.7% | 65.6% | 65.7% | 0% | 82.55 | 118.29 | 43.3% | 54.89 | 77.85 | 41.8% | 64.2% | 1.4% |
| 8 | 7,480 | NA | -100% | 9,778 | NA | -100% | 6,665 | NA | -100% | 68.2% | NA | -100% | 68.64 | NA | -100% | 46.60 | NA | -100% | NA | NA |
| 18 | 5,865 | 5,610 | -4.3% | 15,723 | 10,490 | -33.3% | 6,263 | 4,368 | -30.3% | 39.8% | 41.6% | 1.8% | 55.52 | 44.27 | -20.3% | 22.85 | 17.63 | -22.8% | 46.4% | 6.6% |
| 19 | 11,220 | 18,840 | 67.9% | 11,403 | 11,728 | 2.9% | 4,564 | 4,764 | 4.4% | 40.0% | 40.6% | 0.6% | 115.77 | 202.47 | 74.9% | 48.03 | 84.74 | 76.4% | 42.3% | 2.3% |
| 75 | 2,550 | 3,825 | 50% | 6,033 | 6,002 | -0.5% | 1,084 | 1,074 | -0.9% | 18.0% | 17.9% | -0.1% | 14.68 | 21.60 | 47.1% | 2.61 | 3.88 | 48.6% | 18.3% | 0.4% |
| 76 | 8,870 | 10,400 | 17.2% | 12,157 | 12,636 | 3.9% | 1,614 | 1,645 | 1.9% | 13.3% | 13.0% | -0.3% | 104.44 | 123.36 | 18.1% | 13.89 | 16.36 | 17.8% | 13.1% | 0.2% |
| 77 | 8,870 | 10,400 | 17.2% | 16,614 | 17,495 | 5.3% | 1,860 | 1,931 | 3.8% | 11.2% | 11.0% | -0.2% | 142.99 | 171.37 | 19.8% | 15.78 | 18.98 | 20.2% | 11.2% | 0.0% |
| 78 | 8,870 | 11,165 | 25.9% | 24,714 | 24,719 | 0% | 9,467 | 9,468 | 0% | 38.3% | 38.3% | 0% | 201.12 | 253.11 | 25.8% | 78.71 | 99.12 | 25.9% | 39.3% | 0.9% |
| 88 | 6,785 | 7,550 | 11.3% | 5,153 | 4,998 | -3% | 4,125 | 4,049 | -1.8% | 80.1% | 81.0% | 1% | 28.36 | 34.12 | 20.3% | 22.67 | 27.70 | 22.2% | 87.3% | 7.3% |
| 91 | 6,120 | 9,310 | 52.1% | 17,347 | 17,347 | 0% | 11,288 | 11,288 | 0% | 65.1% | 65.1% | 0% | 97.66 | 148.57 | 52.1% | 63.56 | 96.68 | 52.1% | 65.1% | 0.0% |

Figure 19

Disproportionate Burden Analysis

“Disproportionate burden refers to a neutral policy or practice that disproportionately affects low-income populations more than non-low-income populations. A finding of disproportionate burden requires the recipient to evaluate alternatives and mitigate burdens where practicable.” (FTA)

Per the requirements of FTA Circular 4702.1B, and understanding the linked nature of civil rights and environmental justice issues, GRTC will also ensure that all service changes will be equitable with respect to low-income populations. In order to ensure equity in access to transit service across the service area, major service changes shall not adversely affect low-income populations more than non-low-income populations, by more than the threshold defined below.

Furthermore, service changes that result in increases in service shall not benefit non-low-income populations more than low-income populations, by more than that same threshold defined below. If the difference in measured effects on minority and non-minority populations is greater than the set threshold, the proposed change would be considered to have a **disproportionate burden** on low-income populations. GRTC shall also describe alternatives available to low-income passengers affected by the service change.

The threshold shall be a **20-percentage point** difference between:

1. The percentage of impacts borne by low-income populations in the proposed service change.
2. The percentage of low-income populations in GRTC’s service area.

Given that low-income populations are approximately 29% of the population in Richmond. This means that:

- If service increases, low-income populations must receive at least 9% of the benefit.
- If service decreases, low-income populations cannot bear more than 49% of the burden

Methodology

GRTC uses the methodology of people trips to analyze the burden of service change borne by low-income populations. The 4/5th rule is used identifying 20% as the threshold against the system low-income average based on ACS census block ground data. GRTC’s service area includes Henrico County, City of Richmond, and Chesterfield County. 2018 ACS 5-year estimates were used as the data source for population. Total population by block group is identified using line for local routes and stop for express routes. Total low-income population is identified, and non-low income. These population numbers are multiplied by the number of annual trips traveling through each block group and aggregated. This process is done for both the status quo service scenario and the service change scenario. The resultant changes in low-income and non-low-income people trips between scenarios is contrasted. The low-income burden of the change is identified. This number is subtracted from the system low-income average. If the difference between two numbers is less than 20% then the proposed scenario service change does not have a disproportionate burden on the low-income population. Transit Boardings Estimation and Simulation Tool (TBEST) was used in the Service Equity Analysis.

Results

The below table (figure 12) displays the results of the analysis for annual people trips for each route identified as a major change. The table concludes that the schedule changes proposed for Sept 2018 (Scenario B) do not have a disproportionate burden on low-income populations. There is an overall annual increase in people trips for the total population as well as for the low-income population. The disparate impact for each route is below 20%.

| Route | Annual Service Trips | | | Total Households | | | Low Income Households | | | Percent Low Income | | | Households People Trips (mil) | | | Low Income People Trips (mil) | | | Low Income Burden | % Disparate |
|-------|----------------------|--------|----------|------------------|-------|----------|-----------------------|-------|----------|--------------------|-------|----------|-------------------------------|-------|----------|-------------------------------|-------|----------|-------------------|-------------|
| | A | B | % Change | A | B | % Change | A | B | % Change | A | B | % Change | A | B | % Change | A | B | % Change | | |
| 7A | 6,120 | 9,365 | 53% | 7,997 | 7,936 | -0.8% | 2,654 | 2,639 | -0.6% | 33.2% | 33.3% | 0.1% | 36.98 | 56.23 | 52% | 12.94 | 19.52 | 50.8% | 34.2% | 1.0% |
| 7B | 6,120 | 9,145 | 49.4% | 8,240 | 8,174 | -0.8% | 2,726 | 2,708 | -0.7% | 33.1% | 33.1% | 0% | 38.55 | 55.39 | 43.7% | 13.34 | 19.12 | 43.3% | 34.3% | 1.2% |
| 8 | 7,480 | NA | -100% | 4,754 | NA | -100% | 1,756 | NA | -100% | 36.9% | NA | -100% | 33.44 | NA | -100% | 12.39 | NA | -100% | NA | NA |
| 19 | 11,220 | 18,840 | 67.9% | 5,037 | 5,153 | 2.3% | 879 | 893 | 1.6% | 17.5% | 17.3% | -0.1% | 50.99 | 88.89 | 74.3% | 9.01 | 15.52 | 72.3% | 17.2% | 0.3% |
| 75 | 2,550 | 3,825 | 50% | 1,986 | 1,973 | -0.7% | 249 | 247 | -0.8% | 12.5% | 12.5% | 0% | 4.84 | 7.07 | 46% | 0.60 | 0.88 | 27.9% | 12.5% | 0.0% |
| 76 | 8,870 | 10,400 | 17.2% | 6,001 | 6,215 | 3.6% | 833 | 851 | 2.2% | 13.9% | 13.7% | -0.2% | 51.55 | 60.71 | 17.8% | 7.12 | 8.32 | 16.8% | 13.1% | 0.8% |
| 77 | 8,870 | 10,400 | 17.2% | 8,185 | 8,599 | 5.1% | 1,191 | 1,251 | 5% | 14.6% | 14.5% | 0% | 70.58 | 84.53 | 19.8% | 10.24 | 12.30 | 20.2% | 14.8% | 0.2% |
| 78 | 8,870 | 11,165 | 25.9% | 9,644 | 9,647 | 0% | 3,222 | 3,223 | 0% | 33.4% | 33.4% | 0% | 77.80 | 97.92 | 25.9% | 26.85 | 33.82 | 25.9% | 34.6% | 1.2% |
| 87 | 8,760 | 8,760 | 0% | 5,840 | 5,913 | 1.2% | 2,451 | 2,482 | 1.3% | 42.0% | 42.0% | 0% | 46.49 | 47.33 | 1.8% | 19.52 | 19.88 | 1.9% | 43.3% | 1.3% |
| 88 | 6,785 | 7,550 | 11.3% | 1,736 | 1,688 | -2.8% | 817 | 786 | -3.8% | 47.1% | 46.6% | -0.5% | 9.55 | 11.54 | 20.8% | 4.38 | 5.34 | 22.1% | 48.7% | 1.6% |

Figure 20

Conclusion

Many of the service changes proposed for September 2018 were identified as major changes, triggering five of the six route level major change thresholds, and zero of the two system level major change thresholds. The change identification did require GRTC to perform a fare and service equity analysis to determine if the changes would cause a disparate impact for minority populations or disproportionate burden for low-income populations. The results of the analysis determined that the proposed alternative is within the acceptable change limits resulting in a sustained equitable distribution of service.

Board Approval Signatures

The GRTC Board of Directors has reviewed the Major Change and Service and Fare Equity Analysis and agrees with its findings, acknowledging that this a minor change and does not require a disparate impact or disproportionate burden analysis. Based on the results of the analysis, the GRTC board of directors approves the schedule changes proposed for September 2018.

Gary Armstrong
President/ Chair (City of Richmond)

Date

Eldridge F. Coles
Vice-President/ Vice-Chair (Chesterfield County)

Date