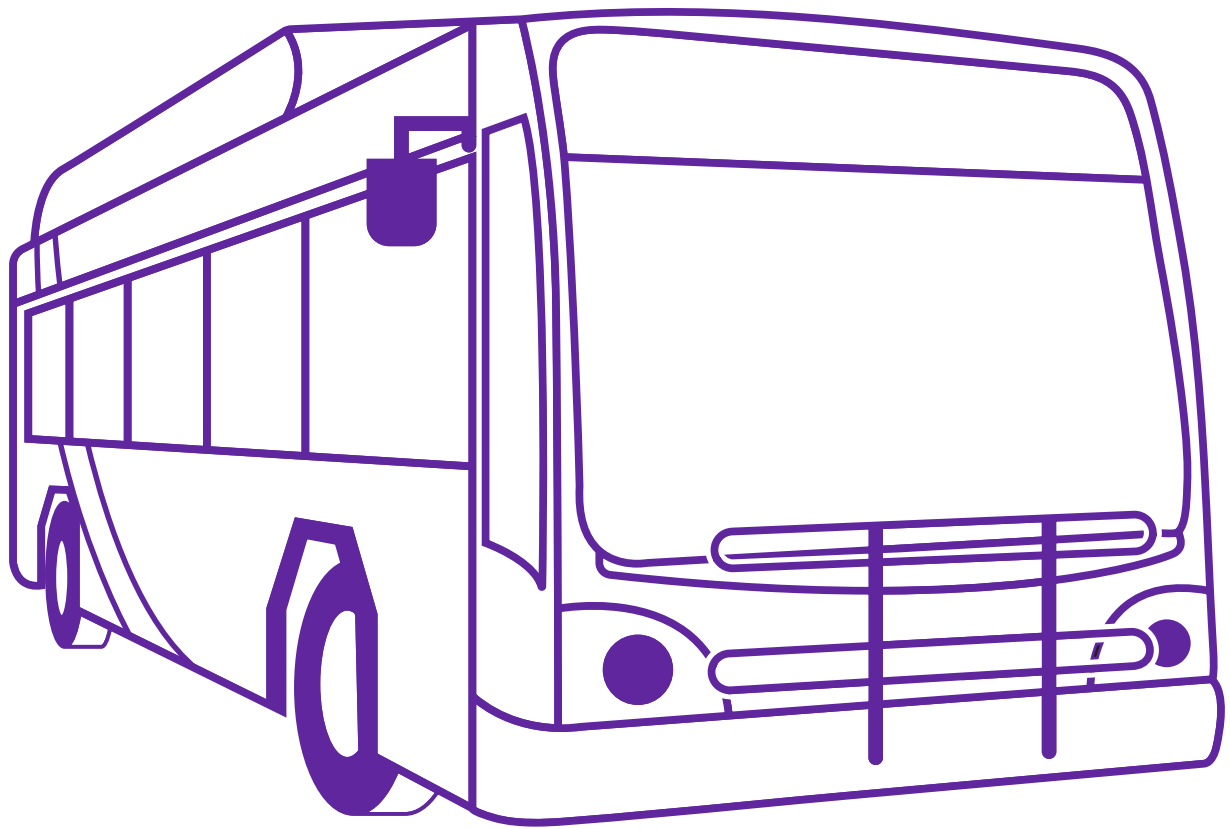


# Title VI Program Update

March 2023



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# Introduction: GRTC's Commitment to Title VI

## What is Title VI?

Title VI of the Civil Rights Act of 1964 states that “no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance” (42 U.S.C. Section 2000d).

Recipients of public transportation funding from the Federal Transit Administration (FTA), inclusive of GRTC, are required to develop policies, programs, and practices that ensure that federal and state transit dollars are used in a manner that is nondiscriminatory. This document details how GRTC Transit System incorporates nondiscrimination policies and practices in providing services to the public.

## GRTC's Title VI Policy Statement

GRTC Transit System is committed to ensuring that no person shall, on the grounds of race, color, national origin, as provided by Title VI of the Civil Rights Act of 1964 and the Civil Rights Restoration Act of 1987 (PL 100.259), be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity, whether those programs and activities are federally funded or not.

## Organization & Title VI Program Responsibilities

GRTC's Title VI Officer is responsible for ensuring implementation of the agency's Title VI Program. They are responsible for supervising the staff assigned with Title VI responsibilities in implementing, monitoring, and reporting on GRTC's compliance with Title VI regulations, including:

- Identifying, investigating, and eliminating discrimination when found to exist;
- Processing Title VI complaints in accordance with the agency's Nondiscrimination Complaint Procedures;
- Meeting with staff periodically to monitor and discuss progress, implementation, and compliance issues; and
- Periodically reviewing and updating the agency's Title VI Program to assess if administrative procedures are effective, staffing is appropriate, and adequate resources are available to ensure compliance.

## Annual Nondiscrimination Assurance to the FTA

As part of the Certifications and Assurances submitted to the FTA, GRTC submits a Nondiscrimination Assurance which addresses compliance with Title VI as well as nondiscrimination in hiring (BEO) and contracting (DBE), and nondiscrimination on the basis of disability (ADA). In signing and submitting this assurance, GRTC confirms to the FTA the agency's commitment to nondiscrimination and compliance with federal and state requirements.

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## Program Requirements

All large public transit agencies that are recipients of FTA funds (of which GRTC is included) must comply with Title VI requirements as outlined by the Federal Transit Administration in Circular 4702.B. They are detailed on the following pages.

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### GENERAL RECORD-KEEPING AND NOTIFICATIONS

- Providing notice to the public and any beneficiaries of the service of their rights under Title VI;
- Developing Title VI-related complaint procedures and forms;
- Maintaining a log of all Title VI-related complaints, investigations, and lawsuits;
- Developing and maintaining a record of the membership of the system's non-elected committees and councils, and how the system encourages the participation of minorities on such committees;
- Maintaining a log of all major service and fare changes; and
- Obtaining Board approval of all Title VI-related procedures.

### DATA COLLECTION AND ANALYSIS

- Collecting and maintaining demographic information about ridership, including demographic and service profile maps and charts; and
- Collecting demographic ridership and travel patterns through surveys.

### POLICY & PROGRAM DEVELOPMENT

- Developing service standards and policies;
- Developing a public engagement processes for setting the major service change policy;
- Developing a Public Participation Plan;
- Developing a Language Assistance Plan;
- Evaluating Service and Fare Equity; and
- Developing a plan for managing subrecipients.

---

## GRTC's Notice to Beneficiaries of Title VI

GRTC Transit System provides a Title VI notice to its customers in English and Spanish, which can be found in Appendix B. This notice is posted on GRTC's website ([www.ridegrtc.com](http://www.ridegrtc.com)), at GRTC's headquarters, and inside buses.

## Title VI Complaint Procedures

Any individual may exercise their right to file a complaint with GRTC if that person believes that they (or any other program beneficiaries) have been subjected to unequal treatment or discrimination in the receipt of transit service. GRTC will make a concerted effort to resolve complaints using the complaint procedures described below. All Title VI complaints and their resolution will be logged as described and reported with all program updates. Should any Title VI investigations be initiated by FTA, or any Title VI lawsuits be filed against GRTC, the agency will follow these procedures.

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## HOW TO FILE A COMPLAINT

- Any person who believes they have been discriminated against on the basis of race, color, or national origin by GRTC may file a Title VI complaint by completing and submitting the agency's Title VI Program Complaint Form.
- All complaints must be in written form and use the GRTC Title VI Program Complaint Form.
  - Any person that contacts GRTC Customer Service and alleges discrimination based on race, color, national origin, or income status will be offered a digital or hard copy of the Title VI Program Complaint Form to fill out and return.
  - Customer Service staff will also offer to assist the person with filling out the form and send a hard copy of the completed form to the person to sign and return via email or mail, as described below.
- A copy of the Agency's Title VI Program Complaint Form may be obtained as follows:
  - Website at <http://ridegrtc.com/media/main/TitleVIComplaintform.pdf>
  - Phone: Call (804) 358-GRTC (4782) and ask to speak with Customer Service who will email or mail a copy of the form.
- Written complaints must be submitted in one of the following ways:
  - A complaint submitted by mail must be addressed as follows:  
GRTC Transit System  
Attention: Title VI Officer  
301 East Belt Boulevard  
Richmond, VA 23224
  - A complaint can be emailed to [TitleVI@ridegrtc.com](mailto:TitleVI@ridegrtc.com); Subject: Title VI Complaint
- Complaints must be received within 180 days of the date of the alleged incident and must be complete and provide the requested information.
- A Title VI complaint may also be filed directly with the Federal Transit Administration (FTA). The Complaint Form may be found online at <https://www.transit.dot.gov/regulations-and-guidance/civil-rights-ada/fta-civil-rights-complaint-form>.

## HOW TITLE VI COMPLAINTS ARE PROCESSED

- The GRTC Title VI Officer will notify the alleging party within three days of the complaint's receipt. This notification initiates the review period.
- The Title VI Officer will conduct a prompt investigation of each discrimination complaint filed and will develop a complete case record. A complete case record consists of the name and address of all parties interviewed/consulted and a summary of their statements, copies of summaries of pertinent documents, and a narrative summary of all evidence disclosed in the complaint investigation. It also includes the completed Title VI Program Complaint Form.
- A written report is to be prepared at the conclusion of the investigation and this shall include a summary of the complaint, description of the investigation, findings, and recommendations.

## DISPOSITION APPROVAL AND NOTICE

- The Title VI Officer will present recommendations to GRTC's Chief Operating Officer (COO) for approval of the disposition. If the complaint is determined to be valid, the recommendation will



include proposed actions to address the situation. A resolution with no actions will be recommended if the complaint is found not valid or there is insufficient evidence to support the complaint.

- The Title VI Officer will notify the alleging party about the resolution/disposition of the complaint within 30 days of its receipt by the Title VI officer. Proper log of the resolution to the complaint will be kept on file.

## APPEALS

- The alleging party may submit an appeal within 30 days from the date the notice of disposition is issued.
- Appeals will be reviewed within 30 days. The appeal will be heard by the GRTC Chief Executive Officer (CEO).
- If the alleging party so chooses, they may at any time pursue a complaint through the Federal Transit Administration (FTA).

## MONITORING

- The Title VI Officer, Director of Planning & Scheduling, Director of Communications, and Customer Service Manager will conduct a quarterly review of all Title VI complaints reviewed by GRTC. Corrective actions taken at the time of each resolution will be reviewed in these quarterly sessions. The Title VI Officer may waive the requirement of a quarterly meeting if no complaint or corrective action has been taken in the closing quarter.

See **Appendix C** for a copy of GRTC’s Title VI Program Complaint Form.

## List of Active Title VI-related Investigations, Complaints, & Lawsuits

Date of Complaint	Internal/ External	Complaint ID	Type of Complaint	Complainant Name	Summary (Basis)	Issue Status	Disposition
1/12/2021	External	29954	Rude Operator Discrimination/ Title VI	Derek Wilmer	Customer stated that he had exited the bus and then attempted to board to go home and the operator would not let him on. He feels that this is because he’s Caucasian.	Resolution date: 1/12/2021	Closed, operator followed joy-riding policy which is in affect during time of zero fares.

**Table 1:** List of Active Title VI-related Investigations, Complaints, & Lawsuits

## Non-Elected Committees & Councils

GRTC is led by a Board of Directors consisting of nine members. Three are appointed by Chesterfield County, three by Henrico County, and three by the City of Richmond. GRTC does not select any members of the Board of Directors.

	African American	American Indian/ Alaska Native	Asian	Hawaiian/ Pacific Islander	Hispanic of any race	White	Multi-Racial (non-white other)	No response	Total Members
#	2	0	0	0	0	7	0	0	9
%	22%	0%	0%	0%	0%	78%	0%	0%	100%

Table 2: Racial breakdown of the GRTC Board of Directors

## Major Fare & Service Changes

### LIST OF FARE CHANGES IN THE LAST 3 YEARS (FISCAL YEAR 2020 - FISCAL YEAR 2022):

Date of Change	Jurisdiction	Route	Fare After Change
March 2020	System-Wide	System-Wide	\$0.00

Table 3: Fare changes on GRTC Transit System since 2020

### LIST OF MAJOR SERVICE CHANGES IN THE LAST 3 YEARS (FISCAL YEAR 2020 - FISCAL YEAR 2022):

Date of Change	Jurisdiction	Route	Type of Change(s)
April 2020	Richmond	102x	Proposed Route Suspension
April 2020	Richmond	75	Proposed Route Suspension
April 2020	Richmond	39	Proposed Route Suspension
April 2020	Richmond	28	Proposed Route Suspension
April 2020	Richmond	64x	Change in Number of Trips
April 2020	Henrico	23x	Change in Number of Trips, Change in Service Span
April 2020	Henrico	26x	Change in Number of Trips
April 2020	Henrico	27x	Change in Number of Trips
April 2020	Henrico	29x	Change in Number of Trips
September 2020	Richmond	1	Consolidate Route 1A, 1C into Route 1 on Sunday
September 2020	Richmond	1C	Change in Number of Trips, Change in Total Miles Serviced by the Route

Date of Change	Jurisdiction	Route	Type of Change(s)
September 2020	Henrico	23x	Change in Service Span
September 2020	Richmond	50	Re-directing a Route, Change in Total Miles Serviced by the Route
September 2020	Richmond	76	Re-directing a Route, Change in total Miles Serviced by the Route
September 2020	Richmond	77	Change in Number of Trips, Re-directing a Route, Changes in Total Miles Serviced by the Route
September 2020	Richmond	78	Change in Number of Trips
January 2021	Richmond	4A	Change in Number of trips
January 2021	Richmond	4B	Change in Number of Trips
September 2021	Richmond	29x	Change in Number of Trips
September 2021	Richmond/Henrico	23x	Proposed Elimination of Route
September 2021	Richmond/Henrico	26x	Proposed Elimination of Route
September 2021	Richmond/Henrico	27x	Proposed Elimination of Route
September 2021	Richmond/Chesterfield	111	Proposed Elimination of Route
December 2021	Richmond	4A	Change in Number of Trips
December 2021	Richmond	4B	Change in Number of Trips
December 2021	Richmond	5	Change in Number of Trips
December 2021	Richmond	76	Change in Number of Trips
December 2021	Richmond/Henrico	Pulse	Change in Number of Trips
May 2022	Richmond/Henrico	Pulse	Change in Number of Trips
May 2022	Henrico	19	Change in Number of Trips
May 2022	Richmond	20	Change in Number of Trips
May 2022	Richmond	76	Change in Number of Trips
May 2022	Richmond	77	Change in Number of Trips
May 2022	Richmond	78	Change in Number of Trips
May 2022	Richmond	88	Change in Number of Trips
January 2023	Richmond/Henrico	1	Change in Number of Trips, Change in total miles serviced by the route, Shortlining or Longlining
January 2023	Richmond/Chesterfield	1A	Change in Number of Trips, Change in total miles serviced by the route, Shortlining or Longlining
January 2023	Richmond	1B	Change in Number of Trips, Change in total miles serviced by the route, Shortlining or Longlining
January 2023	Richmond	1C	Change in Number of Trips, Change in total miles serviced by the route, Shortlining or Longlining

**Table 4:** Service changes on GRTC Transit System since 2020

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## Demographic Data Collection & Analysis

GRTC is required by FTA to develop demographic and service profile maps and charts as part of the Title VI update, because GRTC Transit System operates more than 50 fixed route vehicles in the peak service time and is located in a Metropolitan Statistical Area of more than 200,000 people. This data is used to gain a better understanding of GRTC's service area population and ridership base, and set a background context to evaluate service.

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### GRTC'S SERVICE AREA

GRTC operates 32 local bus routes, four express bus routes, and one Bus Rapid Transit (BRT) route. Local routes provide service at the neighborhood level, and exist on a loosely arranged hub-and-spoke model, with most local routes servicing the downtown core for destinations and transfers. Express routes mainly serve to bring commuters to Richmond's downtown business district or other job centers. The BRT route is designed to provide quick service to core areas for enhanced connectivity.

In order to define GRTC's local service area, US Census block groups containing local fixed routes were used to approximate the ridership base. Census block groups were used because they are a more detailed dataset, which allows analysis on a more representative sample of the population living near the local transit routes.

Express routes were not included in the local service area because of the more diffused location of the ridership base as well as the nature of express service – which serves to offer commuting choices rather than provide a comprehensive transit service.

### LOCAL SERVICE AREA GEOGRAPHY AND DEMOGRAPHICS

GRTC's local service area includes most of the City of Richmond, significant parts of Henrico County, and limited areas of Chesterfield County. The level of transit service offered within this area varies, and is based on factors including population and/or job density, ridership levels, historical service areas, popular destinations, and funding availability. For the purposes of Title VI, GRTC analyzed US Census data for the population of the local transit service area. Data was gathered for minority status, low income status, and language proficiency status. GRTC's Minority population by block group is shown below. Minority persons are defined by FTA as people who identify as any of the following:

1. American Indian and Alaska Native, which refers to people having origins in any of the original peoples of North and South America (including Central America), and who maintain tribal affiliation or community attachment.
2. Asian, which refers to people having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
3. Black or African American, which refers to people having origins in any of the Black racial groups of Africa.
4. Hispanic or Latino, which includes persons of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.
5. Native Hawaiian or Other Pacific Islander, which refers to people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Low-Income persons are defined as individuals whose median household income is at or below 150% of the U.S. Department of Health and Human Services (HHS) poverty guidelines.

Limited-English-Proficiency persons are those over age five who report speaking English less than “very well” according to the American Community Survey, but identify with speaking another language “very well”.

Charts showing the following details can be found in **Appendix E**.

- Minority population (as a % of total population) by Block Group
- Limited English Proficiency (LEP) population (as a % of total population over age 5) by Block Group
- Low Income population (as a % of total population) by Block Group

## Demographic Ridership & Travel Patterns

GRTC conducts a large-scale ridership survey at least every three years. The latest was completed in 2019. The purpose of the survey is to measure origins and destinations of riders as well as to collect opinions on GRTC’s quality of service from riders. GRTC staff compile the survey data into a Level and Quality of Service Compliance Assessment (which is included in the appendix of this document). The next ridership survey will be conducted in 2023.

## Service Standards & Policies

GRTC monitors its level and quality of service on an ongoing basis in order to ensure equity in access to public transit services. Level of service refers to the amount of transit offered, and can be measured in a variety of ways. GRTC uses the following five indicators, which The Federal Transit Administration (FTA) considers to be significant measures of level of service:

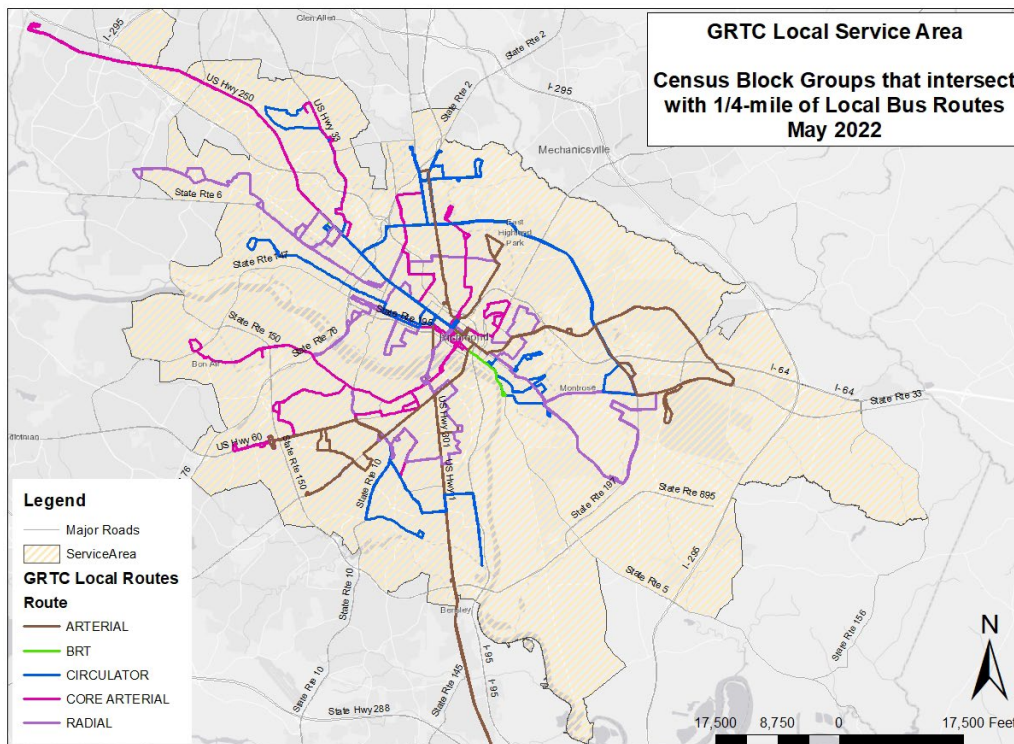


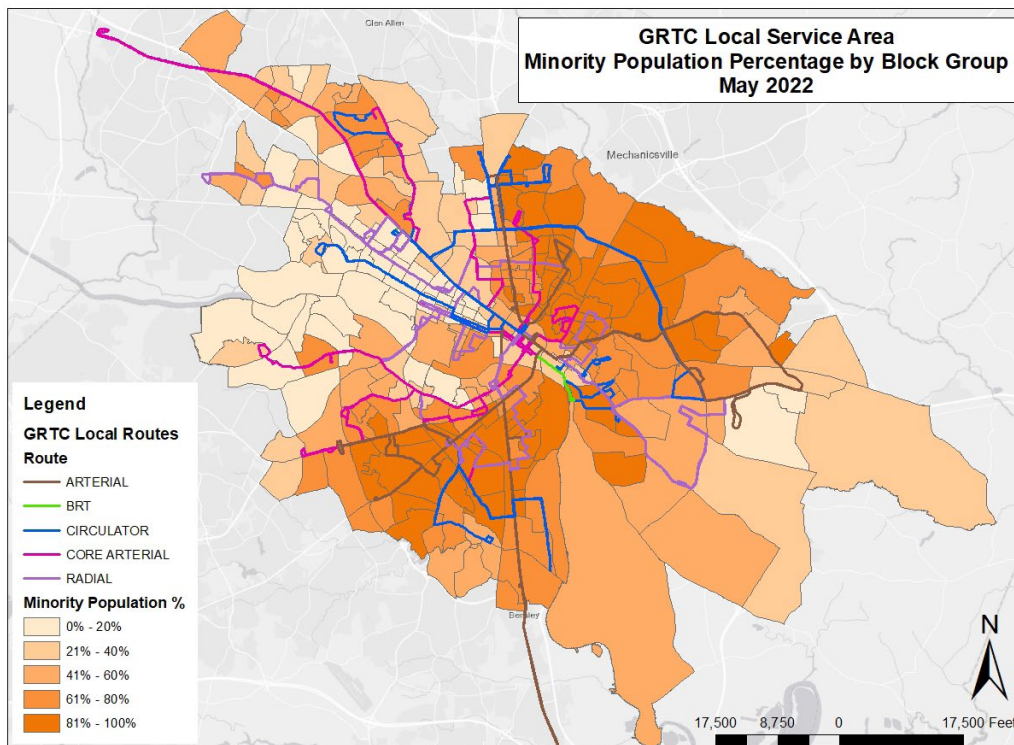
Figure 1: Census Block Groups that intersect with 1/4-mile of Local Bus Routes (May 2022)

- **Vehicle load:** the number of passengers, or load, carried per hour measures the efficiency of service. GRTC’s system-wide ridership goal for local buses is to average 10 boardings or more per trip.
- **Vehicle assignment:** the process by which transit vehicles are placed into service in depots and on routes throughout the transit provider’s system (which bus goes where).
- **Vehicle headways:** the amount of time between two vehicles traveling in the same direction on a given line or combination of lines. A shorter headway corresponds to more frequent service.
- **Distribution of transit amenities:** items of comfort, convenience, and safety that are available to the general riding public (benches, shelters, trash cans, etc).
- **Service access/availability:** a general measure of the distribution of routes within a transit provider’s service area.

GRTC also monitors quality of service through a large-scale customer satisfaction and origin-destination survey at least every five years. The indicators used include:

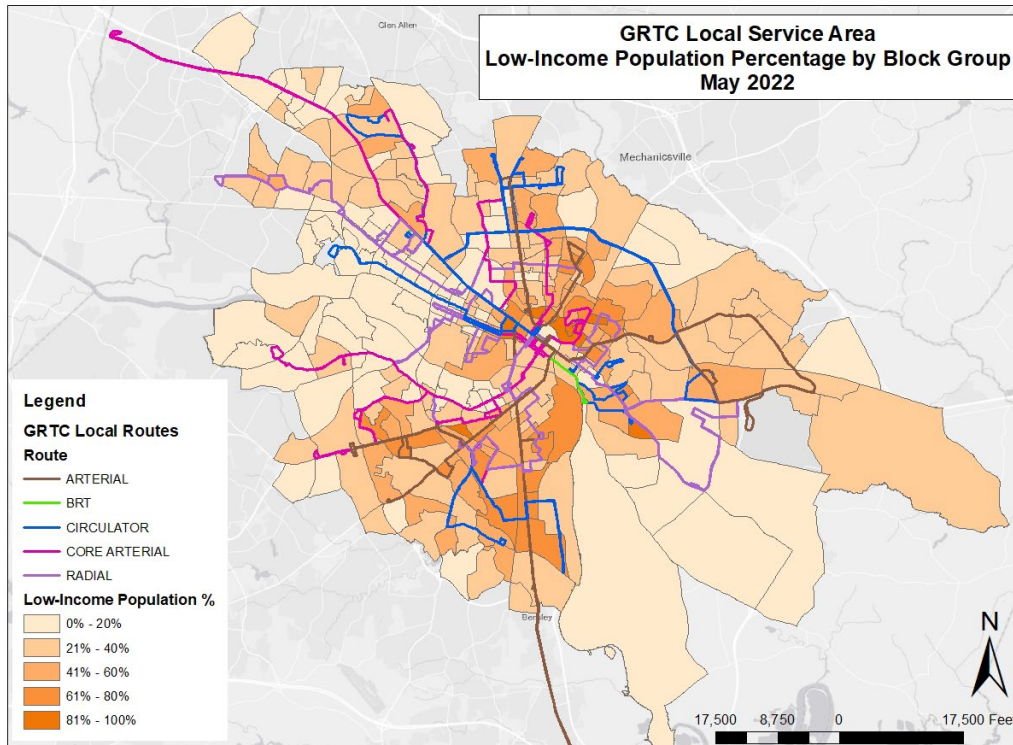
- Bus Cleanliness & Travel Comfort
- On-time Adherence
- Schedule (Convenience)
- Driver Courteous/Professional
- Customer Service Representatives Courteous/Professional
- Customer Service Prompt Response
- Cost of Fares

GRTC completes a Level and Quality of Service Compliance Assessment based on this data every three years as required by FTA. The assessment measures for service equity on minority and non-minority routes (minority areas defined as areas with higher than median minority populations for the service area) to ensure compliance with Title VI. This assessment was last updated through May 2022 and is in **Appendix F**.



**Figure 2: Minority Population Percentage by Block Group (May 2022)**

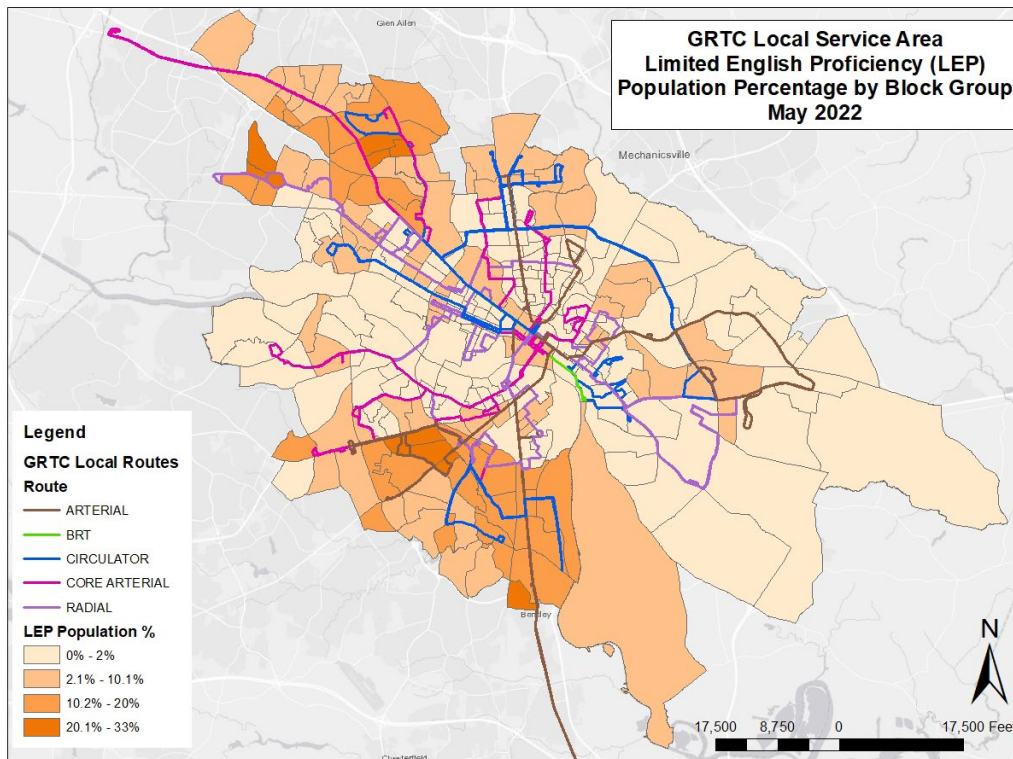
In the analysis, GRTC found that it was not meeting its set standards for service span, on-time performance, and directness of routing. According to GRTC’s standard, service span for the system should average 16 hours but instead is 15.6 hours on average for the Saturday schedule for local routes. On-time performance is 80% for GRTC standards but the overall average for local routes is 66%. In this case, the standard should be adjusted to account for additional time loading/unloading and for traffic concerns. The directness of routing should be 1.7 to align with the GRTC standard, instead for local routes was found to be 1.83, this could be due to routes that are designed to serve neighborhoods and communities in which directness of routing is not as high of a priority.



**Figure 3:** Low-Income Population Percentage by Block Group (May 2022)

The Title VI disparities that were found and need additional investigation into their causes are headway for both Minority and LEP population groups, and directness of routing for the Minority population group.

GRTC will be undergoing a transit strategic planning effort in 2023 and will examine ways to improve minority and LEP route headways and directness of routing on minority routes.



**Figure 4:** Limited English Proficiency (LEP) Population Percentage by Block Group (May 2022)

## Public Participation Plan

GRTC has created a Public Comment Process to ensure that no one is excluded from participating in GRTC’s service planning and development process. It is included in the appendix. GRTC’s Public Comment Process applies when:

- A fare change of any type is proposed;
- A major service change of any type is proposed; and

For minor schedule and service changes not rising to the level of a major service change, GRTC will post service change notices on-line, in advance of the change date. Major planning programs (capital projects) will have individual public participation plans devised that address Title VI requirements.

Outreach to Limited English Proficiency (LEP) populations will be done according to the Language Assistance Plan (LAP).

## LANGUAGE ASSISTANCE PLAN (LAP)

A Language Assistance Plan is included in the Title VI Program update to satisfy Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency,” the intent of which is to ensure that persons with limited English proficiency (LEP) are accorded equal treatment by agencies receiving federal funding. The order and subsequent guidance has enabled GRTC to put together this plan, which helps identify the existence of any limited English proficient populations and the size of any such population, determine what methods may be used to assist that population and then assign resources for the tasks involved.



GRTC has conducted a “Four-Factor Analysis” using US Census and American Community Survey data to discover the presence of LEP populations in the local service area. From this analysis GRTC developed the Language Assistance Plan (LAP), which acts as a guideline for including the LEP population when interacting with our customer base. The LAP has specific steps and activities that we can implement to engage the LEP population and make them aware of language assistance available to them.

This plan is updated at least every three years with the Title VI Program Update.

## FOUR FACTOR ANALYSIS

The FTA recommends a Four Factor Analysis before completing an LAP, considering:

1. The number and proportion of LEP persons eligible in the GRTC service area who may be served or likely to encounter a GRTC program, activity, or service;
2. The frequency with which LEP persons come into contact with GRTC services and programs;
3. The nature and importance of GRTC’s services and programs in people’s lives; and
4. The resources available to GRTC for LEP outreach, as well as the costs associated with that outreach.

GRTC completed the Four Factor Analysis, shown below, as part of the LAP.

### 1. CONSIDER THE NUMBER AND PROPORTION OF LEP PERSONS ELIGIBLE IN THE GRTC SERVICE AREA WHO MAY BE SERVED OR LIKELY TO ENCOUNTER A GRTC PROGRAM, ACTIVITY, OR SERVICE.

Overall, the greater Richmond area is a diverse urban area with many different languages present. The table below shows the languages spoken in the GRTC local service area demographics using data from the American Community Survey. Overall, about 4.7% of the local service area population over age five is considered to have Limited English Proficiency.

Language	Total Speakers	LEP Speakers	% of Total Population LEP
Total Population 5 and older	467,987	21,953	4.7%
Spanish		13,104	2.8%
French		468	0.1%
Arabic		468	0.1%
German		0	0.0%
Vietnamese		1,404	0.3%
Tagalog		0	0.0%
Chinese		936	0.2%
Korean		468	0.1%
Russian		468	0.1%
Other Asian Language		1,170	0.3%
Other Indo-European Language		2,340	0.5%
Other Unspecified Language		468	0.1%

**Table 5:** Limited English Proficiency (LEP) population in the GRTC local service area over age 5

## **2. CONSIDER THE FREQUENCY WITH WHICH LEP INDIVIDUALS COME IN CONTACT WITH A GRTC PROGRAM, ACTIVITY, OR SERVICE.**

GRTC does not directly collect onboard data on LEP individuals, so in order to estimate the frequency in which LEP persons come into contact with the bus service we use indirect methods.

- In an effort to make the Level and Quality Analysis survey accessible, it was available in English with an option to call a Tele-Language assistance number to have it translated into Spanish.
- GRTC's Customer Service department subscribes to a Tele-Language service that enables the representatives to include a translator of the caller's language on the call. This enables our representatives to communicate with speakers of 150 different languages.

Combining these indirect methods, it appears that LEP persons use transit less frequently than the service area population as a whole.

## **3. CONSIDER THE NATURE AND IMPORTANCE OF THE PROGRAM, ACTIVITY, OR SERVICE PROVIDED BY GRTC TO THE LEP COMMUNITY.**

Since it appears that LEP individuals use GRTC transit service less frequently than the population as a whole, more work needs to be done to determine whether or not the system is meeting the needs of the LEP population.

The results of the mapping exercise reveal that there are concentrations of Spanish-speaking LEP customers in the South side of Richmond/Northern Chesterfield County, and in Western Henrico County. Bus service is less concentrated in this area due to lower population density and lack of local transit funding in Chesterfield, and many routes operate Monday-Friday only as compared to the areas closer to downtown Richmond.

## **4. CONSIDER THE RESOURCES AVAILABLE TO GRTC AND THE OVERALL COSTS.**

GRTC recognizes the importance of providing language assistance to the growing LEP community. Results of discussion with LEP outreach organizations reveals that radio is the most popular choice of media. Another suggestion was for written information to use simple language and supplement with visualizations. GRTC will work to include these means of communication in future advertising and outreach.

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## **CONCLUSION FROM FOUR-FACTOR ANALYSIS**

GRTC will continue its recent efforts to reach out to Spanish-speaking LEP communities and find out how to make service more useful or welcoming.

# Language Assistance Plan (LAP)

## Safe Harbor Protocol for Written Documents

**Responsible:** Director of Communications, and Title VI Officer

**Timeline:** On-going

**Duties:**

1. Vital Written Documents for translation:
  - ADA Notice, Title VI Notice, Title VI Complaint Form, Title VI Complaint Procedures, and a Language specific page on the redesigned GRTC website
2. Translate all vital written documents into all safe harbor languages and make accessible to the public via the website. The Safe Harbor languages that were identified using ACS data for the local service area are Spanish and Vietnamese.
3. Continue to provide basic web translation in multiple languages using Google Translate toolbar.

## LEP Protocol & Training Procedures for GRTC Staff

**Responsible:** Director of Communications, Customer Service Manager, Chief of Transit Operations, Training Manager, and Title VI Officer

**Timeline:** On-going

**Duties:**

1. Customer Service staff receives training on how to use Tele-Language, telephone translation service, to identify common LEP languages and phrases.
2. Develop and implement LEP Guidelines for specific projects or activities. Major projects may require more LEP resources, such as translated project sheets or announcements, or advertisements. This should be accounted for in major project outreach budgets.
3. Provide notation at bottom of all all important notices to include additional contact information for any special accommodation requests.

## Provider Directed Outreach to Spanish & Vietnamese-speaking LEP Population in Service Area

**Responsible:** Marketing Department

**Timeline:** On-going

**Duties:**

1. Maintain contact with local outreach organizations and partner with these organizations on local outreach events, such as Imagine Festival, Que Pasa Festival, “Meet the bus,” or similar activities.
2. Provide Spanish and Vietnamese-directed advertisements as resources allow.

## Monitoring and Updating the LAP

**Responsible:** Marketing Department and Title VI Officer

**Timeline:** Annually, ongoing

**Duties:**

1. Continue to monitor use of resources currently in place.
  - Tele-language, and Google Translate.

## Service and Fare Equity

GRTC has created a fare and service equity analysis policy and process to evaluate proposed service and fare changes.

The following is the updated process for this program update.

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

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## MAJOR SERVICE CHANGE POLICY

GRTC proposes service changes to meet the needs of the ridership base and match the available operating budget. All major service changes, as defined below, 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.

Any proposed service change meeting the following thresholds on a single route level in the GRTC system will constitute a major service change:

Category	Level of Change Required to be classified as a Major Change	Examples
Change in Number of Trips	25% change in # of scheduled one-way trips on the Weekday, Saturday, or Sunday schedule.	Decreasing # of trips from 80 daily one-way trips to 50 one-way trips.
Change in Service Span	25% change in # of hours between the beginning and the end of the Weekday, Saturday or Sunday schedule, in either direction.	Changing Weekday span on a route from 20 hrs to 15 hrs or less.
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 2 miles of an 8-mile route to another street or road (even if the new routing is very near the current routing).
Change in Total Miles Serviced by the Route	25% change in total miles on a route's path.	Extending or shortening a line.

Category	Level of Change Required to be classified as a Major Change	Examples
Shortlining or Longlining	25% change in # 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.
Eliminating Route(s)	Eliminating one or more routes.	Discontinuing an existing route (even if replacing this route with nearby service).

Any proposed service change meeting the following system-level thresholds will also be considered a major change requiring a service equity analysis:

Category	Level of Change Required to be classified as a Major Change	Examples
Adding New Route(s)	Adding one or more routes. 25% change in revenue hours over the system on the Weekday, Saturday or Sunday schedule.	Creating a new route to reaching a previously unserved area.
Change Total Daily Revenue Hours	Adding one or more routes. 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

**Table 7:** System-level thresholds for major service changes that require a service equity analysis.

### CUMULATIVE IMPACTS

In certain cases, a single proposal for service changes may not on its own trigger the thresholds for a major service change. However, when combined with other recent changes, it is possible that a significant improvement or degradation in service has in fact occurred. For example, one could remove 10% of a route's one-way trips in March, and 20% more in September. In this case, if both service changes had occurred simultaneously, they would be considered a major service change.

The threshold impacts of services changes that go into effect will be recorded to allow staff to identify cumulative service changes over time. The amount of time to consider cumulative changes shall be 18 months or five system service changes whichever is a longer amount of time. If, when combined with a new service change proposal, the cumulative impacts of changes during this period meet or exceed any of the thresholds identified above, the proposed service change shall be considered a major service change requiring a service equity analysis.

### EXEMPTIONS

The following service changes are exempt from this policy. They shall not be considered major service changes, and they shall not be considered in any analysis of cumulative impacts:

- Standard seasonal variations in service
  - Temporary additions of service lasting less than 12 months (i.e. demonstration projects)
  - Temporary detours due to street closures or construction activities that prevent the permanent route from being serviced and lasting less than 9 months
  - Temporary additions, deletions, disruptions, or reductions in service resulting from natural or human-caused disasters, and lasting less than 6 months.
- 

## DISPARATE IMPACT POLICY

“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 exists 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.

If a proposed service change is found to have a disparate impact on minority populations, GRTC will analyze viable alternatives that would meet the objectives of the proposed service change and the goals of the agency. Such alternatives should be designed to avoid, minimize and mitigate any disparate impact on minority populations. If this alternatives analysis yields a modified service change proposal, the modified proposal will be analyzed in a service equity analysis. If no viable alternatives are found that reduce or eliminate the finding of disparate impact, and GRTC has a substantial and legitimate justification for the change, GRTC may implement the initially proposed service change.

## DISPROPORTIONATE BURDEN

“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.

If a proposed service change is found to have a disproportionate burden on low-income populations, GRTC will analyze viable alternatives that would meet the objectives of the proposed service change and the goals of the agency. Such alternatives should be designed to avoid, minimize and mitigate any disproportionate burden on low-income populations. If this alternatives analysis yields a modified service change proposal, the modified proposal will be analyzed in a service equity analysis. If no viable alternatives are found that reduce or eliminate the finding of disproportionate burden, GRTC may implement the initially proposed service change.

## **FARE CHANGE POLICY**

GRTC proposes fare changes from time to time to meet the needs of the ridership base and match the available operating budget. All fare changes shall undergo a fare equity analysis to ensure that these changes are equitable in the effects they have on GRTC's ridership base, in terms of Title VI. Fare changes include changes to any current fare amount or fare media. Examples include but are not limited to: increases in fares, decreases in fares, introductions of new fares or fare media options, discontinuation of fares or fare media options.

Exceptions to this policy shall include:

- Special programs allowing all passengers to ride free as a part of air quality mitigation measures (ex. "Spare the Air" days)
- Promotional fare reductions lasting less than six months
- Fare reductions used in mitigation of other actions such as construction projects or disruptions in normal operations.

## **FARE DISPARATE IMPACT POLICY**

GRTC will ensure that all fare changes will be equitable in terms of Title VI. In order to ensure equity, fare increases, or reductions in fare media options, shall not adversely affect minorities more so than non-minorities, by more than the threshold amount defined below. To further ensure equity, fare decreases or additions in fare media options shall not benefit non-minorities more so than minorities, by more than that same threshold amount defined below. If the affected populations differ by a span greater than the set threshold, the proposed change would be considered to have a **disparate impact** on the minority population.

The threshold shall be a **20-percentage point** difference between the minority and non-minority populations affected by the fare change compared to the overall service area.

## **FARE DISPROPORTIONATE BURDEN POLICY**

GRTC will ensure that all fare changes will be equitable for low-income populations. In order to ensure

equity, fare increases, or reductions in fare media options, shall not adversely affect low-income populations more so than non-low-income population, by more than the threshold amount defined below. To further ensure equity, fare decreases, or additions in fare media options, shall not benefit non-low-income populations more so than low-income populations, by more than that same threshold amount defined below. If the affected populations differ by a span greater than the set threshold, the proposed change would be considered to have a **disproportionate burden** on the low-income population.

The threshold shall be a **20-percentage point** difference between the low-income and non-low-income populations affected by the fare change compared to the overall service area.

## **GRTC'S PROCESS FOR COMPLETING A SERVICE & FARE EQUITY (SAFE) ANALYSIS:**

1. As soon as any change in fare or service is proposed, describe in detail the proposed change. Be detailed in describing what routes, schedules, and service indicators (level and/or quality of service) would be affected. For example, will this be an across-the-board change or only affect certain routes? Also describe the need or impetus for the change. If it is a fare change, proceed to step four.
2. Is this considered a major service change under the policy? Explain. If not, review previous records from the last 18 months or five service changes to check for cumulative impacts. If yes, continue with the analysis.
3. What is the difference between the existing service and proposed service for those impacted by the change: is it an increase or a decrease in service?
4. Analysis of possible adverse effects:
  - Determine the affected area.
  - Describe the demographic and ridership data being used for the analysis and how it was collected.
  - Describe how the data will be used to determine if the proposed change will have an adverse effect (use people-trips methodology, as seen in the Appendix).
  - Compare the ridership population that will be affected by the change as compared to the general ridership population using percentages of the affected population and percentages of population for the service area.
  - Analyze the data to describe the details and extent of the possible impacts.
    - Create maps showing the affected areas and demographic data along with route information
    - Create tables showing impacts of each type of change and the affected and overall ridership population
    - Determine whether the proportion of minorities and/or low-income population is affected is significant when compared to the general population set (use thresholds as defined in each policy). If not, finalize the analysis and provide to the Board. If so, steps need to be taken to describe these negative effects and to develop alternative options that mitigate, avoid, or minimize these effects.
5. Repeat the analysis for any alternative options.
6. Present the findings to the Board of Directors for review and acceptance.

The following chart from FTA Circular 3702.B provides guidance in determining which analysis should take place depending on the potential impacts.

GRTC's Public Comments Process also needs to be followed for any fare increases or service reductions.



## **FACILITY EQUITY ANALYSIS**

GRTC will follow the requirements of the equity analysis when a new facility is needed.

## **SUBRECIPIENT MANAGEMENT UNDER TITLE VI**

GRTC does not currently have any subrecipients.

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## **Contact Information and Board Approval**

For additional information on GRTC's Title VI Program Update, or its efforts to comply with the Civil Rights Act of 1964 or Executive Order 13166 Improving Access to Services for Persons with Limited English Proficiency, please contact:

### **Title VI Officer**

GRTC Transit System  
301 East Belt Blvd  
Richmond, Virginia 23224  
Phone: (804) 358-3871  
Email: [TitleVI@ridegrtc.com](mailto:TitleVI@ridegrtc.com)

# Appendix A: Title VI Authorities

Title VI of the 1964 Civil Rights Act provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance (refer to 49 CFR Part 21). The Civil Rights Restoration Act of 1987 broadened the scope of Title VI coverage by expanding the definition of the terms “programs or activities” to include all programs or activities of Federal Aid recipients, sub-recipients, and contractors, whether such programs and activities are federally assisted or not.

Additional authorities and citations include: Title VI of the Civil Rights Act of 1964 (42 U.S.C. Section 2000d); Federal Transit Laws, as amended (49 U.S.C. Chapter 53 et seq.); Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601, et seq.); Department of Justice regulation, 28 CFR part 42, Subpart F, “Coordination of Enforcement of Nondiscrimination in Federally-Assisted Programs” (December 1, 1976, unless otherwise noted); U.S. DOT regulation, 49 CFR part 21, “Nondiscrimination in Federally-Assisted Programs of the Department of Transportation Effectuation of Title VI of the Civil Rights Act of 1964” (June 18, 1970, unless otherwise noted); Joint FTA/Federal Highway Administration (FHWA) regulation, 23 CFR part 771, “Environmental Impact and Related Procedures” (August 28, 1987); Joint FTA/FHWA regulation, 23 CFR part 450 and 49 CFR part 613, “Planning Assistance and Standards,” (October 28, 1993, unless otherwise noted); U.S. DOT Order 5610.2, “U.S. DOT Order on Environmental Justice to Address Environmental Justice in Minority Populations and Low Income Populations,” (April 15, 1997); U.S. DOT Policy Guidance Concerning Recipients’ Responsibilities to Limited English Proficient Persons, (December 14, 2005), and Section 12 of FTA’s Master Agreement, FTA MA 13 (October 1, 2006).

# Appendix B: Title VI Notice (English/Spanish Poster)

## NOTICE TO BENEFICIARIES OF PROTECTION UNDER TITLE VI

This notice is provided in compliance with 49 CFR Section 21.9 (d).

### Non-Discrimination Notice

GRTC Transit System provides services and operates programs without regard to race, color, and national origin in compliance with Title VI.

### Request for Information

To request additional information about GRTC Transit System's non-discrimination obligations, send your written request to: Title VI Officer, GRTC Transit System Headquarters, 301 East Belt Boulevard, Richmond, Virginia 23224.

### Complaint Process

As a member of the general public if you desire to file a discrimination complaint under Title VI, the following procedure should be followed:

- Any person who believes he or she has been subjected to unlawful discrimination may directly file a complaint or use an authorized representative. A complaint form is available from the Title VI Officer or from the GRTC website, [www.ridegrtc.com](http://www.ridegrtc.com)
- The form must be filled out completely with as many details as possible and sent to:  
Title VI Officer  
GRTC Transit System Headquarters  
301 East Belt Boulevard  
Richmond, Virginia 23224

## AVISO PARA BENEFICIARIOS SOBRE PROTECCIÓN SEGÚN EL TÍTULO VI

Este aviso se proporciona conforme al Título 49 del CFR, Sección 21.9 (d).

### Aviso antidiscriminación

GRTC Transit System presta servicios y lleva a cabo programas independientemente de la raza, color y nacionalidad conforme al Título VI.

### Pedido de información

Para solicitar información adicional acerca del compromiso antidiscriminación de GRTC Transit System, envíe su solicitud por escrito a : Title VI Officer, GRTC Transit System Headquarters, 301 East Belt Boulevard, Richmond, Virginia 23224.

### Proceso para presentar quejas

Como miembro del público general, si desea presentar una queja por discriminación conforme al Título VI, deberá cumplir con el siguiente procedimiento:

- Cualquier persona que considere que sufrió un acto de discriminación ilegal puede presentar una queja en forma directa o a través de un representante autorizado. Puede solicitar una forma de quejas al Oficial del Título VI u obtenerla directamente de la página web de GRTC, [www.ridegrtc.com](http://www.ridegrtc.com)
- Deberá llenar la forma de quejas de forma completa y proveer la descripción de los hechos con el mejor detalle posible, y enviarla a:  
Title VI Officer  
GRTC Transit System Headquarters  
301 East Belt Boulevard  
Richmond, Virginia 23224.

# Appendix C: Title VI Complaint Form

## Title VI Program Complaint Form



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*Title VI of the Civil Rights Act of 1964 states, "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from, participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal assistance."*

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- ① Today's Date: \_\_\_\_\_
  
- ② Complainant's Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, ZIP Code: \_\_\_\_\_  
Phone: \_\_\_\_\_ Email: \_\_\_\_\_
  
- ③ Person being discriminated against (if someone other than Complainant):  
Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, ZIP Code: \_\_\_\_\_  
Phone: \_\_\_\_\_ Email: \_\_\_\_\_
  
- ④ What was the discrimination complaint based on? (Check all that apply):  
 Race     Color     National Origin
  
- ⑤ Date of alleged incident resulting in discrimination: \_\_\_\_\_
  
- ⑥ Describe the alleged discrimination. Who was responsible? If more space is needed, attach any written materials or other information that you believe supports your complaint on an additional sheet of paper.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  
- ⑦ Where did the incident take place? Provide location, bus number, GRTC employee name, etc.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Title VI Complaint Form



8 Witness(es) (if applicable). Please provide their contact information.

Witness Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, ZIP Code: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Witness Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, ZIP Code: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

9 Did you file this complaint with any other federal, state, or local agency or with a Federal or State court (check the appropriate space)?

Yes  No

If yes, check all that apply:

Fed. agency  Fed. court  State agency  State court  Local agency

10 Please provide contact information for the agency/court where the complaint was filed:

Agency: \_\_\_\_\_

Name/Title: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, ZIP Code: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

11 If you need any special accommodations for communication regarding this complaint, please specify which alternative format you prefer:

Large Print (specify size): \_\_\_\_\_  TDD  Audio  Other: \_\_\_\_\_

**Signature and date required below.**

Signature \_\_\_\_\_ Date \_\_\_\_\_

Print Name \_\_\_\_\_

If you feel that you have been discriminated against, a formal complaint may be filed with GRTC's Title VI Officer within 180 days after the date of the alleged discrimination. These procedures do not deny you the right to file formal complaints with other state or federal agencies. Once completed, please mail or deliver the completed and signed form to:

GRTC Transit System  
Attention: Title VI Officer  
301 East Belt Boulevard  
Richmond, VA 23224

(804) 358-GRTC (4782)  
webcustomerservice@ridegrtc.com

# Appendix D: GRTC Public Comment Procedures Regarding Fare & Service Changes

## Timing & Cause for Solicitation of Public Comment

The Federal Transit Administration requires its grantees to have a locally developed written process for soliciting and considering public comment before raising a fare or carrying out a major transportation service reduction. The law does not require that fare decreases or service increases be preceded by public comment.

Therefore, GRTC will solicit public comment when:

1. There is any increase in fare.
2. There is any Major service reduction.

GRTC's proposed Major Service Change Policy defines a major service change as any proposed change at the route level affects more than 25% of trips, service span, routing miles, and/or total miles, as well as route eliminations. At the system level, it means a total system change of at least 25% of daily revenue hours or adding a new route. For the purposes of this document, any major service change that results in a reduction in service will require GRTC to solicit and review public comments, while changes that only result in an increase of service will not.

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## EXCEPTIONS AND CONDITIONS

Standard seasonal variations, temporary detours due to detours lasting less than 9 months, and service disruptions due to natural or human-caused disasters lasting less than 6 months may be excluded as per the proposed Major Service Change Policy.

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## Public Notification

### REQUIREMENTS

Prior to the institution of a fare change or a service change that falls within the levels established above, GRTC shall ensure that a notice of intent to solicit public comment is published in at least one newspaper with major circulation in the urbanized area. The notice must be published at least fourteen (14) days prior to a scheduled meeting. The notice must contain a basic description of the contemplated service changes, or the fare change and the time and place of any planned face-to-face or electronic public meeting. To ensure that all segments of the community are included in the process of sharing information, GRTC will use some or all of its available communication tools to publicize public meetings. Communication tools can include e-mail campaigns, media relations, paid advertising, on-board communication, and others (e.g., social media. Website, etc.).

### OPPORTUNITIES FOR PUBLIC COMMENT

Meaningful public engagement that provides opportunities for public comment may include public meetings, public hearings, pop-up meetings, onboard ride-alongs with customers, interactive web-based tools, distribution of written materials at major transfer points, posting of informational flyers, and soliciting comments directly through the GRTC website.

## PUBLIC SOLICITATION PROCESS

1. GRTC will detail the intent, reasoning, and potential impacts associated with a fare increase and/or major service reduction.
2. GRTC Planning staff will then conduct a service and fare equity analysis (following FTA's Fare and Service Guidance found FTA Cir 4702.1B) to determine whether the proposed changes will have a discriminatory impact.
  - If the requested changes are acceptable and/or non-discriminatory, GRTC will begin the public outreach process.
  - If the requested changes are found to be unacceptable and/or discriminatory, GRTC will:
    - Identify that there is a substantial legitimate justification for the proposed service change, and
    - Verify that there are no reasonable alternatives that would have a less disparate impact on minority riders but would still accomplish the transit provider's legitimate program goals.

It is important to understand that in order to make this showing, the transit provider must consider and analyze alternatives to determine whether those alternatives would have less of a disparate impact on the basis of race, color, or national origin, and then implement the least discriminatory alternative.

3. If the requested changes are acceptable to all parties, GRTC staff will begin the formal public solicitation process.
4. All public meetings and hearings shall be held at accessible locations. Written communications can be received up to five (5) business days after a meeting or hearing.
5. Public comments will be compiled by GRTC staff and sent to the applicable jurisdiction or the GRTC Board of Directors for review and assessment prior to making a final decision on the implementation of the proposed fare increase and/or service reduction. Written comments received after this time will still be accepted but may not be included in the Board review due to time constraints.
6. GRTC may exercise the option to undergo a public comment process for minor changes and service improvements, though it is not required.

# Appendix E: Demographic Charts by Block Group for GRTC Local Service Area

Census ID	Block Group	County, State	Total Population	Minority	Low Income	LEP
51041100106	1	Chesterfield, Virginia	1893	10%	14%	2%
51041100107	1	Chesterfield, Virginia	2322	60%	31%	8%
51041100205	1	Chesterfield, Virginia	867	72%	25%	13%
51041100205	2	Chesterfield, Virginia	2545	81%	14%	13%
51041100205	3	Chesterfield, Virginia	3682	87%	25%	13%
51041100209	1	Chesterfield, Virginia	1230	80%	0%	4%
51041100210	1	Chesterfield, Virginia	1773	61%	26%	6%
51041100300	1	Chesterfield, Virginia	1624	67%	36%	14%
51041100300	2	Chesterfield, Virginia	1124	50%	49%	14%
51041100403	3	Chesterfield, Virginia	2051	26%	27%	1%
51041100405	1	Chesterfield, Virginia	1842	76%	34%	22%
51041100804	1	Chesterfield, Virginia	2133	49%	39%	6%
51041100804	3	Chesterfield, Virginia	1211	48%	10%	6%
51041100819	1	Chesterfield, Virginia	1619	78%	54%	4%
51041100902	1	Chesterfield, Virginia	1140	9%	14%	0%
51041100902	2	Chesterfield, Virginia	2054	4%	4%	0%
51041100902	3	Chesterfield, Virginia	733	13%	5%	0%
51041100907	2	Chesterfield, Virginia	1128	32%	29%	16%
51041100923	1	Chesterfield, Virginia	1731	27%	14%	1%
51041100926	3	Chesterfield, Virginia	2255	24%	2%	2%
51085320500	1	Hanover, Virginia	999	5%	7%	0%
51085320500	2	Hanover, Virginia	1259	8%	17%	0%
51085320601	1	Hanover, Virginia	1198	11%	14%	1%
51085320601	2	Hanover, Virginia	1904	34%	83%	1%
51085320601	3	Hanover, Virginia	1503	50%	41%	1%
51085320602	1	Hanover, Virginia	1632	27%	26%	5%
51085320602	2	Hanover, Virginia	1706	37%	27%	5%
51085320701	2	Hanover, Virginia	2351	16%	6%	1%
51085320801	1	Hanover, Virginia	2753	15%	11%	0%
51085321100	3	Hanover, Virginia	2030	12%	13%	4%
51085321202	1	Hanover, Virginia	2630	30%	35%	2%
51085321202	2	Hanover, Virginia	1282	13%	5%	2%
51087200104	2	Henrico, Virginia	2684	17%	21%	5%
51087200104	3	Henrico, Virginia	1669	28%	20%	5%



Census ID	Block Group	County, State	Total Population	Minority	Low Income	LEP
51087200105	1	Henrico, Virginia	3157	67%	41%	21%
51087200105	2	Henrico, Virginia	2168	31%	25%	21%
51087200106	1	Henrico, Virginia	1462	23%	30%	13%
51087200106	2	Henrico, Virginia	1731	49%	21%	13%
51087200108	1	Henrico, Virginia	772	7%	6%	1%
51087200108	2	Henrico, Virginia	2025	4%	5%	1%
51087200109	2	Henrico, Virginia	1118	5%	0%	1%
51087200116	1	Henrico, Virginia	2078	21%	17%	4%
51087200119	1	Henrico, Virginia	2686	55%	11%	6%
51087200119	3	Henrico, Virginia	2490	33%	9%	6%
51087200119	4	Henrico, Virginia	973	39%	14%	6%
51087200125	1	Henrico, Virginia	2406	61%	16%	17%
51087200125	2	Henrico, Virginia	1714	53%	23%	17%
51087200126	1	Henrico, Virginia	1084	52%	5%	6%
51087200126	2	Henrico, Virginia	1414	46%	6%	6%
51087200126	3	Henrico, Virginia	1160	73%	2%	6%
51087200127	1	Henrico, Virginia	1352	30%	7%	7%
51087200129	1	Henrico, Virginia	8744	39%	6%	5%
51087200201	1	Henrico, Virginia	1199	2%	4%	2%
51087200201	2	Henrico, Virginia	1555	14%	8%	2%
51087200202	1	Henrico, Virginia	1128	2%	2%	0%
51087200202	2	Henrico, Virginia	1132	1%	3%	0%
51087200202	3	Henrico, Virginia	949	1%	4%	0%
51087200202	4	Henrico, Virginia	780	2%	5%	0%
51087200301	1	Henrico, Virginia	1376	11%	21%	0%
51087200302	1	Henrico, Virginia	1061	1%	8%	2%
51087200302	2	Henrico, Virginia	934	18%	6%	2%
51087200302	3	Henrico, Virginia	1213	24%	11%	2%
51087200303	1	Henrico, Virginia	1827	57%	30%	11%
51087200303	2	Henrico, Virginia	1609	23%	29%	11%
51087200305	1	Henrico, Virginia	929	17%	25%	12%
51087200305	2	Henrico, Virginia	1122	16%	34%	12%
51087200305	3	Henrico, Virginia	1972	45%	28%	12%
51087200404	1	Henrico, Virginia	1058	21%	21%	8%
51087200404	2	Henrico, Virginia	1924	45%	29%	8%
51087200407	1	Henrico, Virginia	1977	36%	17%	8%
51087200407	2	Henrico, Virginia	1874	31%	11%	8%
51087200407	3	Henrico, Virginia	1256	15%	22%	8%

Census ID	Block Group	County, State	Total Population	Minority	Low Income	LEP
51087200409	1	Henrico, Virginia	2689	66%	29%	17%
51087200410	1	Henrico, Virginia	501	77%	17%	22%
51087200410	2	Henrico, Virginia	2878	64%	54%	22%
51087200410	3	Henrico, Virginia	2046	65%	32%	22%
51087200411	1	Henrico, Virginia	1800	54%	20%	7%
51087200411	2	Henrico, Virginia	2263	45%	7%	7%
51087200411	3	Henrico, Virginia	886	47%	8%	7%
51087200412	1	Henrico, Virginia	2270	64%	41%	12%
51087200501	1	Henrico, Virginia	1155	65%	43%	13%
51087200501	2	Henrico, Virginia	1215	43%	29%	13%
51087200502	1	Henrico, Virginia	1538	23%	20%	6%
51087200502	2	Henrico, Virginia	829	27%	21%	6%
51087200503	1	Henrico, Virginia	3256	36%	14%	11%
51087200503	2	Henrico, Virginia	1038	24%	12%	11%
51087200700	1	Henrico, Virginia	1817	70%	56%	4%
51087200700	2	Henrico, Virginia	1301	8%	26%	4%
51087200700	3	Henrico, Virginia	745	12%	20%	4%
51087200801	1	Henrico, Virginia	2090	56%	33%	5%
51087200802	1	Henrico, Virginia	2189	34%	21%	4%
51087200804	1	Henrico, Virginia	1511	96%	33%	3%
51087200804	2	Henrico, Virginia	1514	91%	53%	3%
51087200804	3	Henrico, Virginia	2294	72%	27%	3%
51087200805	1	Henrico, Virginia	2208	96%	60%	3%
51087200805	2	Henrico, Virginia	601	91%	19%	3%
51087200805	3	Henrico, Virginia	1118	91%	59%	3%
51087201001	1	Henrico, Virginia	1400	67%	21%	2%
51087201001	2	Henrico, Virginia	1996	91%	12%	2%
51087201001	3	Henrico, Virginia	3543	95%	18%	2%
51087201002	1	Henrico, Virginia	1140	78%	54%	1%
51087201002	2	Henrico, Virginia	589	85%	39%	1%
51087201002	3	Henrico, Virginia	977	63%	18%	1%
51087201003	1	Henrico, Virginia	2489	90%	23%	3%
51087201003	2	Henrico, Virginia	2101	95%	43%	3%
51087201003	3	Henrico, Virginia	944	100%	66%	3%
51087201101	1	Henrico, Virginia	2122	85%	50%	1%
51087201101	2	Henrico, Virginia	1382	88%	28%	1%
51087201101	3	Henrico, Virginia	1846	88%	46%	1%
51087201101	4	Henrico, Virginia	1448	71%	38%	1%

Census ID	Block Group	County, State	Total Population	Minority	Low Income	LEP
51087201102	1	Henrico, Virginia	1230	70%	27%	4%
51087201102	2	Henrico, Virginia	3532	73%	30%	4%
51087201201	1	Henrico, Virginia	3711	73%	34%	1%
51087201201	2	Henrico, Virginia	1331	53%	30%	1%
51087201201	3	Henrico, Virginia	1894	42%	33%	1%
51087201202	1	Henrico, Virginia	2989	97%	31%	1%
51087201202	2	Henrico, Virginia	1183	73%	39%	1%
51087201202	3	Henrico, Virginia	1644	59%	35%	1%
51087201401	1	Henrico, Virginia	2762	78%	52%	3%
51087201401	2	Henrico, Virginia	1126	95%	35%	3%
51087201401	3	Henrico, Virginia	891	45%	25%	3%
51087201403	1	Henrico, Virginia	2875	91%	35%	0%
51087201403	2	Henrico, Virginia	494	72%	0%	0%
51087201403	3	Henrico, Virginia	1164	0%	23%	0%
51087201403	4	Henrico, Virginia	1799	33%	19%	0%
51087201404	1	Henrico, Virginia	2289	34%	28%	0%
51087201501	1	Henrico, Virginia	2419	59%	8%	0%
51087201501	2	Henrico, Virginia	4637	87%	20%	0%
51087201501	3	Henrico, Virginia	1536	68%	21%	0%
51087201501	4	Henrico, Virginia	1529	100%	90%	0%
51087201501	5	Henrico, Virginia	690	45%	43%	0%
51087201502	1	Henrico, Virginia	1922	30%	19%	0%
51087201502	2	Henrico, Virginia	4136	60%	12%	0%
51087201602	1	Henrico, Virginia	4557	43%	13%	3%
51087201602	2	Henrico, Virginia	1745	35%	10%	3%
51087201701	1	Henrico, Virginia	2134	39%	22%	2%
51087201701	2	Henrico, Virginia	1287	9%	22%	2%
51087980100	1	Henrico, Virginia	0	0%	--	0%
51760010200	1	Richmond City, Virginia	975	57%	16%	1%
51760010200	2	Richmond City, Virginia	764	6%	8%	1%
51760010200	3	Richmond City, Virginia	1490	33%	25%	1%
51760010200	4	Richmond City, Virginia	1014	23%	9%	1%
51760010300	1	Richmond City, Virginia	1632	92%	58%	0%
51760010401	1	Richmond City, Virginia	1531	8%	15%	1%
51760010401	2	Richmond City, Virginia	1463	75%	45%	1%
51760010402	1	Richmond City, Virginia	1330	20%	17%	1%
51760010402	2	Richmond City, Virginia	1245	43%	34%	1%
51760010402	3	Richmond City, Virginia	1007	57%	39%	1%

Census ID	Block Group	County, State	Total Population	Minority	Low Income	LEP
51760010500	1	Richmond City, Virginia	1034	89%	33%	0%
51760010500	2	Richmond City, Virginia	524	62%	25%	0%
51760010600	1	Richmond City, Virginia	2234	70%	28%	2%
51760010700	1	Richmond City, Virginia	885	90%	55%	2%
51760010700	2	Richmond City, Virginia	987	87%	38%	2%
51760010700	3	Richmond City, Virginia	552	96%	32%	2%
51760010800	1	Richmond City, Virginia	1670	94%	45%	0%
51760010800	2	Richmond City, Virginia	1522	93%	62%	0%
51760010800	3	Richmond City, Virginia	849	91%	44%	0%
51760010900	1	Richmond City, Virginia	1244	87%	67%	2%
51760010900	2	Richmond City, Virginia	248	92%	32%	2%
51760010900	3	Richmond City, Virginia	738	95%	52%	2%
51760010900	4	Richmond City, Virginia	1005	90%	48%	2%
51760011000	1	Richmond City, Virginia	505	99%	51%	2%
51760011000	2	Richmond City, Virginia	648	74%	57%	2%
51760011000	3	Richmond City, Virginia	965	65%	39%	2%
51760011100	1	Richmond City, Virginia	831	75%	18%	1%
51760011100	2	Richmond City, Virginia	591	72%	36%	1%
51760011100	3	Richmond City, Virginia	536	82%	52%	1%
51760011100	4	Richmond City, Virginia	1169	69%	52%	1%
51760020100	1	Richmond City, Virginia	2049	99%	79%	2%
51760020200	1	Richmond City, Virginia	2173	100%	79%	0%
51760020200	2	Richmond City, Virginia	2234	94%	80%	0%
51760020300	1	Richmond City, Virginia	534	93%	46%	3%
51760020300	2	Richmond City, Virginia	1038	84%	55%	3%
51760020400	1	Richmond City, Virginia	864	97%	55%	1%
51760020400	2	Richmond City, Virginia	619	92%	95%	1%
51760020400	3	Richmond City, Virginia	763	88%	81%	1%
51760020400	4	Richmond City, Virginia	760	98%	45%	1%
51760020400	5	Richmond City, Virginia	1756	96%	100%	1%
51760020500	1	Richmond City, Virginia	1363	56%	24%	0%
51760020500	2	Richmond City, Virginia	3455	22%	23%	0%
51760020600	1	Richmond City, Virginia	1097	43%	24%	1%
51760020600	2	Richmond City, Virginia	620	29%	20%	1%
51760020700	1	Richmond City, Virginia	1362	76%	63%	1%
51760020800	1	Richmond City, Virginia	1786	24%	19%	0%
51760020900	1	Richmond City, Virginia	2050	77%	39%	0%
51760020900	2	Richmond City, Virginia	588	78%	45%	0%

Census ID	Block Group	County, State	Total Population	Minority	Low Income	LEP
51760020900	3	Richmond City, Virginia	569	70%	45%	0%
51760021000	1	Richmond City, Virginia	1060	76%	65%	0%
51760021000	2	Richmond City, Virginia	702	78%	55%	0%
51760021100	1	Richmond City, Virginia	1603	85%	46%	1%
51760021200	1	Richmond City, Virginia	1757	86%	47%	0%
51760030100	1	Richmond City, Virginia	917	98%	78%	1%
51760030100	2	Richmond City, Virginia	1837	95%	86%	1%
51760030200	1	Richmond City, Virginia	2011	52%	54%	2%
51760030200	2	Richmond City, Virginia	546	57%	0%	2%
51760030500	1	Richmond City, Virginia	1954	38%	24%	7%
51760030500	2	Richmond City, Virginia	1970	43%	74%	7%
51760040200	1	Richmond City, Virginia	2595	56%	64%	7%
51760040200	2	Richmond City, Virginia	1693	36%	16%	7%
51760040300	1	Richmond City, Virginia	3846	47%	86%	0%
51760040400	1	Richmond City, Virginia	2147	23%	46%	0%
51760040400	2	Richmond City, Virginia	1197	3%	36%	0%
51760040500	1	Richmond City, Virginia	1506	7%	21%	1%
51760040500	2	Richmond City, Virginia	1692	14%	24%	1%
51760040600	1	Richmond City, Virginia	1778	18%	11%	0%
51760040700	1	Richmond City, Virginia	2883	16%	18%	4%
51760040800	1	Richmond City, Virginia	1540	9%	10%	3%
51760040900	1	Richmond City, Virginia	1193	7%	9%	0%
51760040900	2	Richmond City, Virginia	1264	33%	8%	0%
51760041000	1	Richmond City, Virginia	1227	10%	11%	0%
51760041000	2	Richmond City, Virginia	1564	10%	21%	0%
51760041100	1	Richmond City, Virginia	540	21%	44%	1%
51760041100	2	Richmond City, Virginia	1551	25%	21%	1%
51760041100	3	Richmond City, Virginia	1742	18%	24%	1%
51760041200	1	Richmond City, Virginia	1150	16%	34%	3%
51760041300	1	Richmond City, Virginia	2000	72%	47%	0%
51760041300	2	Richmond City, Virginia	964	71%	52%	0%
51760041400	1	Richmond City, Virginia	1005	59%	33%	0%
51760041400	2	Richmond City, Virginia	946	49%	20%	0%
51760041600	1	Richmond City, Virginia	1211	45%	21%	2%
51760041600	2	Richmond City, Virginia	415	37%	11%	2%
51760050100	1	Richmond City, Virginia	1142	27%	37%	1%
51760050100	2	Richmond City, Virginia	1913	4%	13%	1%
51760050200	1	Richmond City, Virginia	995	5%	15%	3%

Census ID	Block Group	County, State	Total Population	Minority	Low Income	LEP
51760050200	2	Richmond City, Virginia	1347	4%	14%	3%
51760050200	3	Richmond City, Virginia	796	2%	0%	3%
51760050300	1	Richmond City, Virginia	1542	1%	8%	0%
51760050400	1	Richmond City, Virginia	1592	7%	7%	0%
51760050400	2	Richmond City, Virginia	1232	1%	11%	0%
51760050500	1	Richmond City, Virginia	1426	9%	13%	3%
51760050500	2	Richmond City, Virginia	1304	2%	3%	3%
51760050500	3	Richmond City, Virginia	2141	40%	--	3%
51760050600	1	Richmond City, Virginia	1131	5%	5%	0%
51760050600	2	Richmond City, Virginia	1513	6%	7%	0%
51760060200	1	Richmond City, Virginia	1224	80%	35%	3%
51760060200	2	Richmond City, Virginia	677	97%	43%	3%
51760060200	3	Richmond City, Virginia	552	88%	53%	3%
51760060400	1	Richmond City, Virginia	1239	99%	43%	3%
51760060400	2	Richmond City, Virginia	806	80%	73%	3%
51760060400	3	Richmond City, Virginia	1281	94%	83%	3%
51760060400	4	Richmond City, Virginia	740	77%	55%	3%
51760060400	5	Richmond City, Virginia	1468	65%	33%	3%
51760060500	1	Richmond City, Virginia	939	56%	14%	1%
51760060500	2	Richmond City, Virginia	1113	45%	17%	1%
51760060500	3	Richmond City, Virginia	796	6%	4%	1%
51760060500	4	Richmond City, Virginia	1087	7%	11%	1%
51760060500	5	Richmond City, Virginia	2192	62%	38%	1%
51760060600	1	Richmond City, Virginia	853	20%	6%	1%
51760060600	2	Richmond City, Virginia	841	22%	33%	1%
51760060600	3	Richmond City, Virginia	948	1%	2%	1%
51760060700	1	Richmond City, Virginia	1097	88%	53%	1%
51760060700	2	Richmond City, Virginia	1110	89%	72%	1%
51760060700	3	Richmond City, Virginia	1712	86%	67%	1%
51760060700	4	Richmond City, Virginia	940	76%	45%	1%
51760060700	5	Richmond City, Virginia	827	91%	37%	1%
51760060800	1	Richmond City, Virginia	1173	91%	64%	11%
51760060800	2	Richmond City, Virginia	1712	90%	63%	11%
51760060800	3	Richmond City, Virginia	585	76%	38%	11%
51760060900	1	Richmond City, Virginia	1471	74%	65%	20%
51760061000	1	Richmond City, Virginia	1053	49%	28%	2%
51760061000	2	Richmond City, Virginia	4285	67%	37%	2%
51760070100	1	Richmond City, Virginia	2962	18%	15%	2%

Census ID	Block Group	County, State	Total Population	Minority	Low Income	LEP
51760070100	2	Richmond City, Virginia	815	16%	33%	2%
51760070100	3	Richmond City, Virginia	1517	32%	0%	2%
51760070300	1	Richmond City, Virginia	2819	61%	27%	7%
51760070300	2	Richmond City, Virginia	794	20%	7%	7%
51760070400	1	Richmond City, Virginia	1608	40%	11%	1%
51760070400	2	Richmond City, Virginia	944	6%	11%	1%
51760070400	3	Richmond City, Virginia	1294	10%	9%	1%
51760070601	1	Richmond City, Virginia	1331	100%	61%	33%
51760070601	2	Richmond City, Virginia	2001	94%	36%	33%
51760070601	3	Richmond City, Virginia	1633	87%	60%	33%
51760070601	4	Richmond City, Virginia	1152	88%	77%	33%
51760070602	1	Richmond City, Virginia	1283	95%	44%	14%
51760070602	2	Richmond City, Virginia	1494	83%	42%	14%
51760070700	1	Richmond City, Virginia	2892	87%	26%	15%
51760070700	2	Richmond City, Virginia	2630	82%	57%	15%
51760070801	1	Richmond City, Virginia	2185	81%	34%	5%
51760070801	2	Richmond City, Virginia	1812	84%	38%	5%
51760070801	3	Richmond City, Virginia	985	68%	18%	5%
51760070801	4	Richmond City, Virginia	2841	86%	47%	5%
51760070802	1	Richmond City, Virginia	1276	78%	24%	10%
51760070802	2	Richmond City, Virginia	664	77%	49%	10%
51760070802	3	Richmond City, Virginia	835	61%	26%	10%
51760070900	1	Richmond City, Virginia	889	94%	55%	13%
51760070900	2	Richmond City, Virginia	2142	100%	60%	13%
51760070900	3	Richmond City, Virginia	2344	57%	49%	13%
51760070900	4	Richmond City, Virginia	1070	100%	21%	13%
51760070900	5	Richmond City, Virginia	1772	91%	46%	13%
51760071001	1	Richmond City, Virginia	860	88%	50%	2%
51760071001	2	Richmond City, Virginia	2298	79%	61%	2%
51760071001	3	Richmond City, Virginia	1454	60%	33%	2%
51760071001	4	Richmond City, Virginia	725	74%	38%	2%
51760071002	1	Richmond City, Virginia	1365	50%	25%	6%
51760071002	2	Richmond City, Virginia	2597	76%	45%	6%
51760071100	1	Richmond City, Virginia	1322	35%	17%	1%
51760071100	2	Richmond City, Virginia	961	43%	33%	1%
51760071100	3	Richmond City, Virginia	1805	55%	35%	1%
51760071100	4	Richmond City, Virginia	1753	44%	13%	1%

# Appendix F: Level & Quality of Service Analysis (January 2023 – May 2022 Booking)

## Executive Summary

GRTC Transit System is a public transit provider serving the Richmond region of central Virginia. The agency operates fixed-route transit service (both local and express), a bus rapid transit line, as well as demand-response paratransit service. GRTC is partially funded by the Federal Transit Administration (FTA) and is therefore obligated to comply with Title VI of the Civil Rights Act of 1964 and Executive Order 12898 of 1994. Title VI ensures that “no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.” Minority Populations and Limited English Proficiency (LEP) populations are protected under this Act. Executive Order 12898 of 1994 established the mission of Environmental Justice in federal agencies and protects Low-Income populations. GRTC must ensure equitable service to the above populations as a means to continue to receive Federal funding.

GRTC is a transit agency that operates more than 50 fixed-route vehicles in peak service and operates in an urbanized area with more than 200,000 residents. As part of Title VI, FTA requires transit agencies that fit this profile to monitor level and quality of service for civil rights equity at least every three years using FTA guidelines. This analysis document is prepared to fulfill this requirement and analyzes GRTC’s Local Route service.

The FTA offers guidance on how public transit agencies may monitor service for civil rights equity in the form of FTA Circular 4702.1B: Title VI Requirements and Guidelines for Federal Transit Administration Recipients. This guidance outlines the factors that should be monitored in this analysis and are based on agency-established service standards and policies. These standards are listed below. GRTC’s internal service performance standards can be found in GRTC’s 2018-2028 Transit Development Plan (TDP). The standards and policies are detailed in the technical analysis section of this document. They include both the factors required by FTA as well as several additional standards. The factors outlined below have been analyzed in this report.

### SERVICE STANDARDS REQUIRED TO BE MONITORED BY FTA

- Transit Access/Availability (distance to a Route)
- Vehicle Headway (how often the bus comes by on each Route)
- Vehicle Load (how many people are on a bus at any given time)
- Service Span (how many hours per day the bus is available)
- On-time Performance (how likely the bus arrives within 5 minutes of the expected time)

### SERVICE POLICIES REQUIRED TO BE MONITORED BY FTA

- Vehicle Assignment (how buses are assigned to each Route for the day)
- Distribution of Transit Amenities (where benches, shelters, and trash cans are located throughout the system)



## ADDITIONAL SERVICE STANDARDS MONITORED IN THIS REPORT

- Bus Stop Spacing (how far apart along a Route stops are found)
- Transfer Frequency (percentage of customers making transfers)
- Directness of Routing (how direct the Routes are on the street network)

## QUALITY OF SERVICE/CUSTOMER SATISFACTION SURVEY RESULTS

- Cleanliness & travel comfort
- On-Time Performance
- Schedule (how convenient)
- Driver courteousness/professionalism
- Customer service (phone/web)
- Cost

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## ANALYSIS RESULTS

The table below provides a summary of the findings of the level and quality of service analysis. The table lists the identified factors used to monitor the service standards for equity and the results for the three populations of focus: Minority, Low-Income, and LEP. Out of the eighteen factors analyzed, there were three standards as outlined in GRTC's Transit Development Plans that were not fully met: Service Span (specifically Saturday service), On-time Performance, and Directness of Routing. Headway and Directness of Routing showed potential issues relating to Title VI in that there was a greater than 20% disparity between either Minority, Low-Income, or LEP routes and their counterparts (see table) in level of service. GRTC will be undergoing a transit strategic planning effort in 2023 and will examine ways to improve headway and directness of routing to be more equitable. There were no disparities in the survey results regarding quality of service.

Category	Minority	Low-Income	LEP
Standard	Standard Met or Title VI Issue		
Level of Service:			
Headway	●		●
Load			
Service Span	○	○	○
On-time Performance	○	○	○
Vehicle Assignment			
Distribution of Amenities			
Stop Spacing			
Transfer Frequency			
Directness of Routing	●	○	○
Quality of Service:			
Cleanliness & Travel Comfort			
On-time adherence			●
Schedule (convenience)			
Driver friendliness/helpfulness			
Customer service (phone/web)			
Cost			

No issues meeting standard, no issues regarding Title VI = (blank)

Issues in meeting standard, no issues regarding Title VI = ○

No issues in meeting standard, potential issues regarding Title VI = ●

Issues in meeting standard, potential issues regarding Title VI = ●

**Table 8:** Level and quality of service analysis chart

## EXPRESS AND DEMAND-RESPONSE SERVICE

GRTC operates several Express Routes in addition to its local service. These Express Routes have limited stop service between suburban park-and-ride-locations and the downtown Richmond central business district. Most of these Routes have no stops between these two end points and are run only at peak commuter times. Because the nature of this service is different, the Express Routes are compared to each other rather than the local service. The Express Routes are not analyzed within the Level and Quality of Service Analysis and are instead analyzed in a separate report.

## FUNDING SOURCES/ OPERATIONAL ENVIRONMENT

GRTC Transit System is funded by a mix of federal and state formula based and discretionary grants, non-federal and state discretionary grants, local contributions, fare revenue, and advertising revenue. Each jurisdiction in GRTC's service area independently budgets the level of funding to contribute to GRTC's operating budget and to support public transit. GRTC operates a contract style service agreement with Henrico County, Chesterfield County, and the City of Petersburg. These three jurisdictions are invoiced for operated service miles for their jurisdictional specific Routes.

The City of Richmond provides an annual operating subsidy to GRTC at the beginning of each fiscal year to support the Routes operating within the City Limits. The City of Richmond is also unique in giving

GRTC the ability to make service adjustments without having to go through the City administration or elected officials for approval. All service changes for Henrico County, Chesterfield County, and the City of Petersburg must be authorized by the administration and/or elected officials.

## Determining Minority, Low-Income, & LEP Routes

### METHODOLOGY AND ANALYSIS

To form a basis for comparison, FTA advises transit providers to assign Routes as Minority or Non-Minority Routes in order to monitor service in terms of Title VI. A Minority Route is defined by the FTA as:

“A Route that has at least 1/3 of its total revenue mileage in a Census Block or Block Group, or traffic analysis zone(s) with a percentage of Minority population that exceeds the percentage of Minority population in the transit service area. A recipient may supplement this service area data with Route-specific ridership data in cases where ridership does not reflect the characteristics of the Census Block, Block Group, or Traffic Analysis Zone.” (FTA Circular 4702.1B)

GRTC defined its local service area as the Census 2020 Block Groups that touch within 1/4 mile of the Local Bus Routes (current Bus Routes as of May 2022 were used to define the local service area). Socioeconomic data on Minority status, Low-income status, and LEP status was gathered from American Community Survey (ACS) by Census Block Groups for the local service area.

GRTC then determined the average percentage by block group for each of the above socioeconomic characteristics in the local service area. Block groups with a higher-than-average rate of any of these populations were then described as Minority Areas, Low-Income Areas and/or LEP areas. These categories are not mutually exclusive. For example, there could be block groups that fall under all three categories, some, or none.

GRTC then calculated the total weekly scheduled revenue miles of each of its Local Routes (for the May 2022 booking) and how many of these miles traveled through the Minority block group areas, Low-Income Block Group Areas, and/or LEP block group areas. For Routes that travel along the boundary of two Block Group Areas, which was common as major roadways often form the boundary of Block Groups, the Block Group on the “right side” of the direction of travel was used. The list of Routes and their Title VI designations are listed in the table below and on the following page.

Route	Route Name	Minority Route?	Low Income Route?	Limited-English-Proficiency Route?
1	Chamberlayne/Hull/Southside Plaza	Minority Route	Low Income Route	
1A	Chamberlayne/Hull/Midlothian	Minority Route	Low Income Route	
1B	Chamberlayne/Hull/Warwick	Minority Route	Low Income Route	LEP Route
1C	Chamberlayne/Hull/Elkhardt	Minority Route	Low Income Route	LEP Route
2A	North Ave/Forest Hill	Minority Route	Low Income Route	
2B	North Ave/Jahnke/Midlothian	Minority Route	Low Income Route	
2C	North Ave/Midlothian/Belt Blvd	Minority Route	Low Income Route	
3A	Highland/Route 1/Harwood	Minority Route	Low Income Route	

Route	Route Name	Minority Route?	Low Income Route?	Limited-English-Proficiency Route?
3B	Highland/ Route 1	Minority Route	Low Income Route	
3C	Highland/ Route 1	Minority Route	Low Income Route	
4A	Montrose	Minority Route	Low Income Route	
4B	Darbytown	Minority Route	Low Income Route	
5	Cary/Main/Whitcomb	Minority Route	Low Income Route	
7A	Nine Mile Henrico	Minority Route	Low Income Route	
7B	Nine Mile Henrico	Minority Route	Low Income Route	
12	Church Hill	Minority Route	Low Income Route	
13	Oakwood	Minority Route	Low Income Route	
14	Hermitage/East Main			
18	Henrico Government Center	Minority Route	Low Income Route	LEP Route
19	West Broad Street			LEP Route
20	Orbital	Minority Route	Low Income Route	
29x	Gaskins Express			
50	Broad Street		Low Income Route	
56	South Laburnum	Minority Route		
64x	Stony Point Express			
76	Patterson			
77	Grove			
78	Cary/Maymont	Minority Route	Low Income Route	
79	Patterson/Parham			LEP Route
82x	Commonwealth 20 Exp			
86	Broad Rock/Walmsley	Minority Route	Low Income Route	LEP Route
87	Bellemeade/Hopkins	Minority Route	Low Income Route	LEP Route
88	Belt/Bells/Ruffin	Minority Route	Low Income Route	LEP Route
91	Laburnum Connector	Minority Route	Low Income Route	
93	Azalea Connector	Minority Route	Low Income Route	
95x	Richmond / Petersburg Express			
Pulse	Pulse		Low Income Route	

**Table 9:** Title VI designations by GRTC route

## RESULTS

Based on the described methodology, the results show that out of the 31 local routes, 26 are identified as Minority Routes, 26 are identified as Low-Income Routes, 8 are identified as LEP Routes, 6 Routes cross all three population categories, 25 Routes are both Minority and Low-Income, 6 Routes are both Minority and LEP, and 6 Routes are both Low-Income and LEP. There are 5 Routes that do not fall in any of the three population categories.

# Service Standards Required to be Monitored by FTA

## TRANSIT ACCESS AND AVAILABILITY

### DEFINITION/STANDARD

Service availability is a general measure of the distribution of routes within a transit provider's service area. GRTC defines Transit access/availability as distance to a Bus Route. The closer one is to a Bus Route, the higher the access/availability.

### METHODOLOGY/ANALYSIS

To measure household density, an analysis was conducted using American Community Survey data to determine population density and households within GRTC's local service area. Using GIS, population density was determined by dividing Census Block Groups by the area within a ¼ mile buffer of the fixed route system. The areas inside the ¼ mile buffer were then compared using the established protected population designations.

### RESULTS

The table below shows that 57% of the households within GRTC's service area can access a local route with a ¼ mile walk or less. Areas designated as Minority, Low-Income, and LEP have greater access to transit based on service demands. This is standard for GRTC and causes no issues. A transit access map by census block can be found in the Appendix.

Households	Within ¼ Mile	More than ¼ Mile
System	57%	43%
Minority	61%	39%
Non-Minority	52%	48%
Low-income	68%	32%
Non-low-income	55%	45%
LEP	54%	46%
Non-LEP	57%	43%

Table 10: Transit access and availability within a ¼ mile walk by Title VI designation

## HEADWAY

### DEFINITION/STANDARD

Headway is defined as the amount of time between buses on a given Route, or how often a bus passes by a single point. Headways typically vary throughout the day, and by the day of week, to accommodate fluctuations in demand. Headways are usually shortest during the weekday "peak" commuter times between 6:00 am and 9:00 am and between 4:00 pm and 6:00 pm, and longest on Sundays when there is the least demand.

Headways are determined on a route-by-route basis and are mainly decided due to demand/ridership on a route. Routes with the highest ridership have more trips and thus shorter headways. Headways are also affected by whether the route is twinned with another route or not. Several routes share the same routing as each other, especially the closer they get to downtown. These Routes effectively have their headways in these shared areas because a customer can board either Route at the same stop and get to the same destination.

Below are the average headways listed for local route types in the TDP for peak and off-peak headway standards. These standards should be considered for high demand Routes but may not be feasible for lower demand Routes due to cost considerations.

Type of Service	Headway Maximum	
	Peak	Off-Peak
Weekday	30-60 minutes	60 minutes
Saturday	30-60 minutes	60 minutes
Sunday	30-60 minutes	60 minutes
Express	--	Demand Driven

**Table 11:** Peak and off-peak maximum headway by type of service on weekday, weekend, and express service

## METHODOLOGY/ANALYSIS

In order to determine average headway, GRTC used May 2022 service booking data to determine the headway for each route for weekday peak, weekday off peak, Saturday, and Sunday schedules. Tables showing each Local Route's headways are shown in **Appendix C**, and in the following summary tables.

Headway Minutes						
Minority Analysis		Overall	Minority	Non-Minority	Difference	% Difference
Weekday	Peak	43	49.4	38.5	10.9	25%
Weekday	Off-Peak	40	50.6	35.4	15.2	35%
Saturday		36	48.7	39.5	9.2	21%
Sunday		33	52.6	40.3	12.3	27%

Headway Minutes						
Low Income Analysis		Overall	Low Income	Non-Low Income	Difference	% Difference
Weekday	Peak	43	47.1	43.0	4.1	9%
Weekday	Off-Peak	40	48.4	40.6	7.8	18%
Saturday		36	46.9	45.3	1.7	4%
Sunday		33	49.6	46.4	3.3	7%

Headway Minutes						
LEP Analysis		Overall	LEP	Non-LEP	Difference	% Difference
Weekday	Peak	43	54.5	43.4	11.1	23%
Weekday	Off-Peak	40	54.3	44.6	9.7	20%
Saturday		36	54.8	44.5	10.3	21%
Sunday		33	49.0	49.1	-0.1	0%

**Tables 12-14:** Average headway by type of service on weekday, weekend, and express service per Title VI designation

## RESULTS

The overall average headways meet GRTC standards for each schedule type (Weekday, Saturday, and Sunday). Weekday service averages 43 minutes during peak and 40 minutes off-peak. Saturday service averages 36-minute service all day. Sunday service averages 33-minute service all day.

When compared by Route, Minority Routes have a slightly longer peak headways on average (49 minutes vs 39 minutes) or about a 25% difference and longer off-peak headways on average (51 minutes vs 35 minutes) or about a 35% difference. When compared by Route, LEP Routes also have slightly longer peak headways on average (55 minutes vs 43 minutes) or about a 23% difference and longer off-peak headways on average (54 minutes vs 45 minutes) or about a 20% difference. These differences in Minority and LEP Routes requires further investigation.

When compared by Route, Low-Income Routes have a comparable peak headways on average (47 minutes vs 43 minutes) or about a 9% difference and comparable off-peak headways on average (48 minutes vs 41 minutes) or about an 18% difference. The average headways for Low-Income and Non-Low Income meet GRTC's standards and do not trigger any issues for Title VI.

Overall, GRTC’s Routes do meet the average standard for service but will require an investigation into Minority and LEP headways for Title VI standards.

## VEHICLE LOAD

### DEFINITION/STANDARD

Vehicle load refers to the number of passengers on board at a given time in relation to the seated capacity of the vehicle. A load of 1.0 means that every seat on the bus is taken by a passenger. A load of less than 1.0 means there are open seats, and a load of greater than 1.0 means there are people who have to stand. GRTC’s standard for vehicle load is defined by service type and time of day as detailed below.

Service Type	Maximum Loading Factor (Passenger/Seat)	
	Peak	Off-Peak
Local	1.20	1.00

**Table 15:** Vehicle load by type of service and time of day

### METHODOLOGY/ANALYSIS

Load is shown by three service types (BRT, Local, and Express) with data used from data taken from the Automatic Passenger Counter devices. The table below shows the average max load, or the maximum number of people recorded for each route designation and each schedule type (Weekend, Saturday, and Sunday). The table below shows average maximum passenger loads for routes as the average maximum number of persons seated and standing during a trip. Maximum load factors represent the maximum achievable capacity, and are calculated by dividing the total seated and standing capacity by the seated capacity of the vehicle.

Service Type	Peak	Off-Peak
BRT	0.88	0.70
Local	0.79	0.61
Express	0.60	N/A

**Table 16:** Average maximum passenger loads for routes as the average maximum number of persons seated and standing during a trip by type of service and time of day

## RESULTS

As seen in the tables below, on average the buses very rarely reach the 100% standard. On average, buses are approximately 50% - 60% full on a given trip. Additionally, BRT Service exceeds GRTC load thresholds during off-peak. There are no issues with system standards or Title VI triggered.



Weekday		Maximum Load Average
Minority		54.6%
Non-Minority		49.1%
Difference		5.5%
Low-Income		56.7%
Non-Low-Income		43.1%
Difference		13.6%
LEP		48.7%
Non-LEP		54.1%
Difference		-5.4%
Saturday		Maximum Load Average
Minority		47.9%
Non-Minority		52.7%
Difference		-4.8%
Low-Income		50.6%
Non-Low-Income		38.9%
Difference		11.7%
LEP		49.3%
Non-LEP		48.8%
Difference		0.5%
Sunday		Maximum Load Average
Minority		43.9%
Non-Minority		48.4%
Difference		-4.5%
Low-Income		45.5%
Non-Low-Income		42.4%
Difference		3.1%
LEP		45.9%
Non-LEP		44.8%
Difference		1.1%

**Table 17:** Maximum load average by weekday and weekend service comparing the difference between Title VI and non-Title VI designations

## SERVICE SPAN

### DEFINITION/STANDARD

Service Span is the number of hours per day that a Route/Service is available. For example, a Route running in service from 6:00 am to 6:00 pm would have a span of 12 hours. A route running from 6:00 am to 9:00 am only, then running 4:00 pm to 6:00 pm only, would have a span of 5 hours. GRTC’s standard for service span on Local Routes is below.

Day	Begin	End	Hours
Weekday	5:30 am	10:00 pm	16.5
Saturday	6:00 am	10:00 pm	16
Sunday	6:00 am	10:00 pm	16

**Table 18:** GRTC standards for span of service by day type

### METHODOLOGY/ANALYSIS

Span of a route is also determined by ridership, demand, and funding availability. Routes with low ridership generally have lower spans than the busier routes. Routes operated in Henrico and Chesterfield counties have spans restricted by funding availability.

### RESULTS

On average, the Local Routes do meet the weekday span requirement of 16.5-hours, they average around 16.5 hours. On Saturday, they average about 15.6 hours, which is under the 16-hour standard. On Sunday, they average 16.35 hours, which is over the 16-hour standard. Minority, Low-Income, and LEP routes spans are not more than 20% different compared to their counterparts on all days, thus triggering no issues for Title VI. Individual Route spans can be found in the Appendix.

Minority Analysis				
	Minority	Non-Minority	Difference	% Difference
Weekday	16.54	16.06	0.48	3%
Saturday	15.51	16.57	-1.06	-7%
Sunday	16.46	14.74	1.72	11%
Low-Income Analysis				
	Low-Income	Non-Low-Income	Difference	% Difference
Weekday	17.08	13.83	3.25	21%
Saturday	15.59	15.63	-0.04	0%
Sunday	16.50	14.13	2.37	15%
LEP Analysis				
	LEP	Non- LEP	Difference	% Difference
Weekday	16.13	16.56	-.43	-3%
Saturday	14.15	16.00	-1.85	-12%
Sunday	14.88	16.35	-1.47	-9%

**Table 19:** Span of service on comparing the difference between Title VI and non-Title VI designations

## ON-TIME PERFORMANCE

### DEFINITION/STANDARD

On-time performance measures the percentage of the time that a bus is less than one minute early and less than five minutes late to a timepoint stop along a Route. GRTC’s standards for each service type are listed below.

Time Period	BRT	Local	Express
Peak	80.0%	80.0%	90.0%
Off-Peak	85.0%	85.0%	N/A

**Table 20:** GRTC’s standards for on-time performance by type of service and time of day

### METHODOLOGY/ANALYSIS

While GRTC strives to improve on-time performance, there are several factors that create a challenge. One is that a substantial portion of GRTC’s local service is on busy city streets with no priority for public transit vehicles. There is a high density of signalized intersections as well as traffic. Broad Street is GRTC’s most heavily traveled corridor, and there are traffic signals every few blocks. These areas are also the areas with the highest population and employment density and therefore reliable transit is needed in these areas.

Time Period	BRT	Local	Express
Peak	70.5%	66.7%	63.9%
Off-Peak	68.8%	65.0%	N/A

**Table 21:** Average on-time performance by type of service and time of day

	On-Time (%)
Minority	67.4%
Non-Minority	67.0%
Difference	0.4%
Low-Income	68.0%
Non-Low-Income	64.3%
Difference	3.7%
LEP	66.3%
Non-LEP	67.6%
Difference	-1.3%

**Table 21:** Average on-time performance comparing the difference between Title VI and non-Title VI designations

## RESULTS

Overall, Minority Routes and Low-Income Routes have a higher on-time percentage than Non-Minority and non-Low-Income Routes. LEP routes are on average about 1.3% less on time than Non-LEP Routes. These results trigger no Title VI issues.

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## Service Policies Required to be Monitored by FTA

### VEHICLE ASSIGNMENT

#### DEFINITION/STANDARD

Vehicle assignment refers to the decision process to determine which bus travels on which route each day. Vehicle assignment is monitored as there can be differences in the vehicles within the transit fleet, including age. This standard is to be monitored on a quarterly basis. GRTC's TDP does not give specific standards for revenue vehicle assignment. However, GRTC considerations for vehicle assignment are the size of the buses, the street limitations and the age of the buses. First the larger capacity units are assigned to the heavier volume Routes based on anticipated routes. Larger vehicles are assigned to Routes where passenger boardings exceed 30,000 per month. Second, units are assigned according to the physical restrictions for street turns. Third, later model units are assigned to those Routes with higher mileage and time requirements to reduce maintenance calls. Routes with mileage of greater than 150 miles per day are assigned newer buses. In addition, buses greater than the rolling average age of GRTC fleet should be assigned to non-minority Routes 50% or more of the time on an annual basis, for both A.M. and P.M. assignments.

#### METHODOLOGY/ANALYSIS

GRTC staff first determined the average age of GRTC buses for the review period. Staff then tabulated the average vehicle age running on Minority Routes and Non-Minority Routes using Ridecheck Plus (a ridership analysis software) to analyze ridership information.

It is important to note that this policy is not neutral when it comes to Title VI – it specifically says that older vehicles are to be assigned to non-minority routes at least 50% of the time.

The reason for monitoring vehicle assignment is to ensure the equitable distribution of vehicles throughout the system. GRTC currently has several different vehicle models in service, with some differences between them. All Local Fixed-Route vehicles are wheelchair accessible, have AVL (GPS) on them, and have air-conditioning. All GRTC vehicles are accessible.

May 2022		
Route	Average Vehicle Age	
All Local Routes	5.46	
Minority	5.67	
Non-Minority	6.05	
Difference	-0.38	6%
Low-Income	5.75	
Non-Low-Income	5.89	
Difference	-0.14	2%
LEP	5.68	
Non-LEP	5.79	
Difference	-0.11	2%

**Table 22:** Average vehicle age comparing the difference between Title VI and non-Title VI designations

## RESULTS

In May 2022, on average, Minority Routes had a bus that was roughly 0.38 years (or about 139 days) older than Non-Minority Routes on a given trip, Low-Income Routes had a bus that was roughly 0.14 years (or about 51 days) older than Non-Low-Income Routes on a given trip, and LEP Routes had a bus that was roughly 0.11 years (or about 40 days) older than Non-Minority Routes on a given trip.

Minority, Low-Income, and LEP route’s average vehicle age are not more than 20% different compared to their counterparts on all days, thus triggering no issues for Title VI. Individual Route average vehicle age can be found in the Appendix.

## DISTRIBUTION OF TRANSIT AMENITIES

### DEFINITION/STANDARD

GRTC places benches, trash cans, and shelters at bus stops for passenger convenience. These amenities are placed based on boarding and alighting counts, and customer requests. Jurisdictional procedures must be followed for placement. The standards are detailed below.



Figure 5: Essential Transit Infrastructure Plan (ETI) qualification rubric for Attainable and Moderate Scenarios

### RIDERSHIP SCORE

- Number between **0** and **500+**
- Equal to Average Daily Boardings (ADB) of each stop

### EQUITY SCORE

- Number between **0** and **40**
- Awards points based on use, route type, and socioeconomic factors\*

### ELIGIBILITY

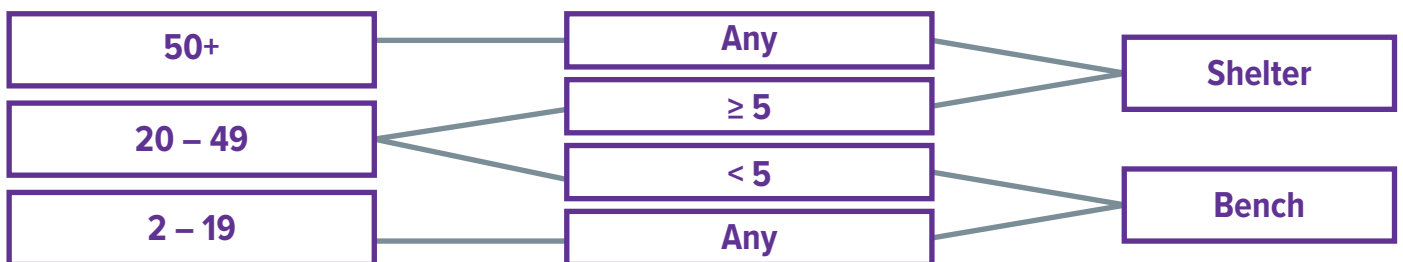


Figure 6: Essential Transit Infrastructure Plan (ETI) qualification rubric for Aspirational Scenario

### METHODOLOGY/ANALYSIS

GRTC has a total of 339 benches, 429 trash cans, and 84 shelters in use (May 2022). The table on the following page summarizes these statistics.

Amenities	Bus Stop		Benches		% Difference
	Count	% of Total	Count	% of Total	
Total	1591		339		
Minority	982	62%	206	61%	1%
Non-Minority	609	38%	133	39%	-1%
Low-Income	915	58%	213	63%	-5%
Non-Low-Income	676	42%	126	37%	5%
LEP	419	26%	62	18%	8%
Non-LEP	1172	74%	277	82%	-8%

Amenities	Bus Stop		Trash Cans		% Difference
	Count	% of Total	Count	% of Total	
Total	1591		429		
Minority	982	62%	274	64%	-2%
Non-Minority	609	38%	155	36%	2%
Low-Income	915	58%	270	63%	-5%
Non-Low-Income	676	42%	159	37%	5%
LEP	419	26%	75	17%	9%
Non-LEP	1172	74%	354	83%	-9%

Amenities	Bus Stop		Shelters		% Difference
	Count	% of Total	Count	% of Total	
Total	1591		84		
Minority	982	62%	65	77%	-16%
Non-Minority	609	38%	19	23%	16%
Low-Income	915	58%	51	61%	-3%
Non-Low-Income	676	42%	33	39%	3%
LEP	419	26%	20	24%	3%
Non-LEP	1172	74%	64	76%	-3%

**Tables 23-25:** Distribution of stop amenities (benches, trash cans, and shelters) and comparing the difference between Title VI and non-Title VI designations

Detailed maps that show a graphical representation of this analysis of the distribution of amenities can be found in the Appendix.

## RESULTS

On average, the distribution of bus stop amenities matches very closely with the distribution of bus stops by Block Group, meaning there is equitable distribution. No population type has greater than 20% difference more than other areas for shelters, benches or trash cans, therefore the overall the distribution of amenities triggers no issues in terms of Title VI.

# Additional Service Standards Monitored by GRTC

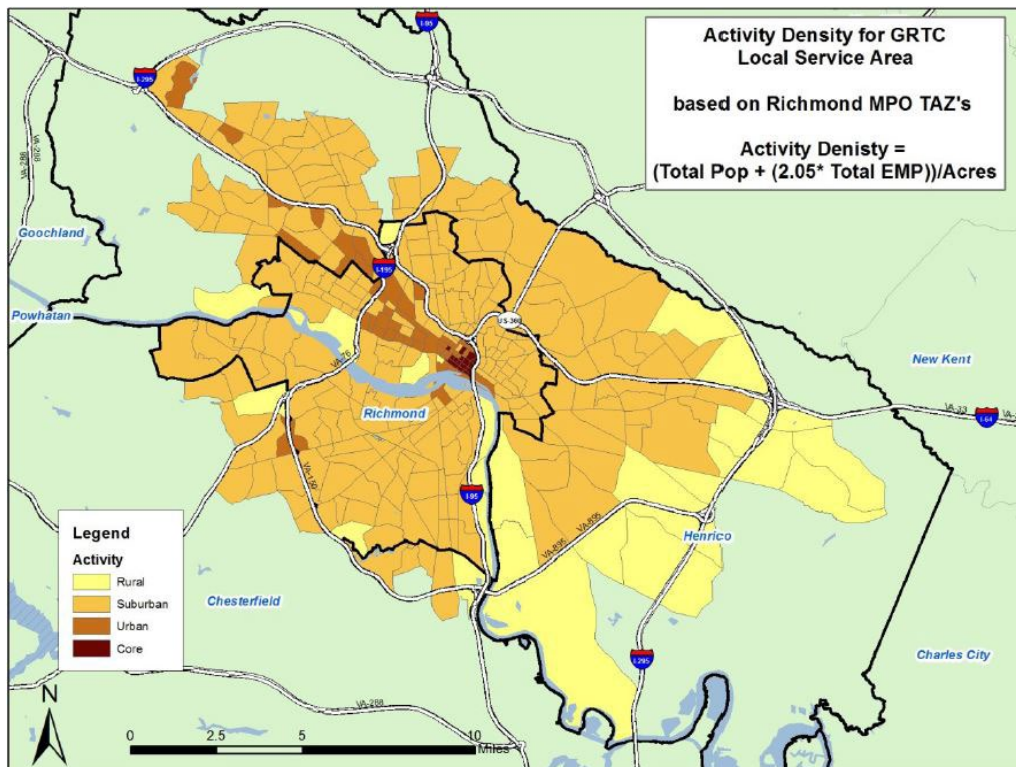
## BUS STOP SPACING

### DEFINITION/STANDARD

GRTC’s standard for bus stop spacing considers the activity density of the service area. Areas of higher population/employment density in general should have stops closer together along a Route than suburban and rural areas.

Service Area Type	Distance Between Stops (feet)
Core (Richmond CBD)	900-1200
Urban	600-1200
Suburban	600-2500
Rural	600-2500

**Table 26:** GRTC’s standard for bus stop spacing by service area type measured in feet.



**Figure 7:** Activity Density for GRTC Local Service Area based on Richmond MPO TAZ’s



## METHODOLOGY/ANALYSIS

A range is given because the local geography varies by area and by Route. For example, several Routes go over bridges, and although the general area may be urban, it does not make sense to place a stop in the middle of a bridge. On the other hand, an area may have a lower density but may have steep slopes or less pedestrian access, making more closely spaced stops a necessity. In other cases, places where Routes overlap may result in stops that are closer together than the standard but are necessary to ensure that Routes have convenient stops for transfers to other Routes.

Stop Spacing	Average Spacing (ft)	
Minority	1,209	
Non-Minority	1,144	
Difference	65	6%
Low-Income	1,167	
Non-Low-Income	1,254	
Difference	-87	7%
LEP	1,299	
Non-LEP	1,154	
Difference	145	12%

**Table 27:** Average stop spacing comparing the difference between Title VI and non-Title VI designations

## RESULTS

On average, Local Routes had stop spacing of about 1,179 feet, which is within the spacing standards. Route 18 has the highest average distance between stops at 2,002 feet, this route covers suburban and urban areas in Henrico & Richmond. For urban areas the spacing standard starts at 500 feet, so there is no issue seen with this spacing.

Routes/variants with greater than 1,179 feet average spacing included Route 79 (1,262 ft), Route 86 (1,183 ft), Route 20 (1,254 ft), Route 91 (1,382 ft), Route 7A (1,419 ft), Route 7B (1,431 ft), Route 88 (1,470 ft), Route 19 (1,498 ft), Route 93 (1,542 ft), Route 56 (1,682 ft) and Route 18 (2,002 ft). Many of these routes travel through suburban or rural areas for most of their routing. Overall, bus stop spacing is not a Title VI issue.

## TRANSFER FREQUENCY

### DEFINITION/STANDARD

Transfer Frequency refers to the number of customers that use more than one bus as a part of their journey. Ideally, there should be some transfers in the system as transferring reduces the need for redundant service along heavily traveled corridors. However, transfer frequencies that are too high are an inconvenience to customers because they can lengthen travel time (adds in wait time to catch a second bus).

## METHODOLOGY/ANALYSIS

Routing Standards	Metric
% of Transfer Passengers	Max 75%

**Table 28:** GRTC’s standard metric for transfer frequency

The average for all Routes, using data from the 2019 on-board survey, is 57.7%. The average for all Local Routes is 67.9%

Transfer Frequency	
Overall	68%
Minority	66%
Non-Minority	73%
Difference	-7%
Low-Income	66%
Non-Low-Income	74%
Difference	9%
LEP	77%
Non-LEP	65%
Difference	12%

**Table 29:** Transfer frequency comparing the difference between Title VI and non-Title VI designations

## RESULTS

There are 11 Local Routes with an average transfer frequency greater than 75%, but for the system the average is 67.9% which is within the system standards. There does not appear to be disparities based on Minority, Low-Income, and LEP Routes in regards to Title VI.

## DIRECTNESS OF ROUTING

### DEFINITION/STANDARD

Directness of routing is defined as the ratio of the miles traveled along a route to the straight-line distance between the two endpoints of the route. GRTC’s TDP established a standard of 1.7 as the maximum directness ratio, meaning the travel distance should be less than 1.7 times the straight-line distance between a route’s endpoints.

Routing Standard	Metric	Target
Directness	Terminal Distance in excess of straight-line mileage	70% of 1.7

**Table 30:** GRTC’s standard for calculating route directness

## METHODOLOGY/ANALYSIS

Directness of Routing Ratio		
Overall	1.83	
Minority	2.03	
Non-Minority	1.36	
Difference	0.67	39.53%
Low-Income	1.92	
Non-Low-Income	1.59	
Difference	0.33	18.80%
LEP	1.80	
Non-LEP	1.84	
Difference	-0.04	2.20%

**Table 31:** Directness of routing ratio comparing the difference between Title VI and non-Title VI designations

## RESULTS

Overall, GRTC’s current directness ratio is slightly higher than the standard maximum, meaning that GRTC’s Routes on average travel 1.83 times the “as the crow flies” distance from each end of line. This exceeds GRTC’s current directness standard of 1.7 and should be examined further.

On average, Minority Routes travel about 39.53% longer between their termini than Non-Minority Routes. There are no disparities based on Low-Income and LEP Routes in regards to Title VI. Minority routes require further investigation.

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## Quality of Service Survey Results

### METHODOLOGY/ANALYSIS

To assess quality of service in the local service area, GRTC must conduct a travel patterns and customer satisfaction survey on all or selected Routes. An onboard survey was conducted in October 2019 by Warner Transportation Consulting Inc. on a sample of all Routes. GRTC staff analyzed the survey data, categorizing the routes and grouping the results by Minority/Non-Minority, Low-Income/Non-Low-Income, and LEP/ Non-LEP status. The below factors were analyzed for Title VI results.

## RESULTS

### CLEANLINESS & TRAVEL COMFORT

Riders were asked to give their rating on whether the buses were clean. When satisfaction ratings 1 through 3 were combined (as an estimate of satisfied customers) there was very little difference based on Minority Non-Minority, Low-Income and Non-Low-Income, and LEP and Non-LEP Routes. This triggers no issues regarding Title VI. Riders were asked to give their rating on whether the buses were comfortable. Once again, when satisfaction ratings 1 through 3 were combined (as an estimate of satisfied customers) there was less than 20% difference based on Minority/Non-Minority, Low-Income and Non-Low-Income, and LEP and Non-LEP routes. This triggers no issues regarding Title VI.

"Buses are clean"							
Rating	Agree Strongly	2	3	No Opinion	5	6	Disagree Strongly
Minority	20%	14%	10%	14%	7%	4%	6%
Non-Minority	25%	16%	14%	14%	6%	4%	4%
Low-Income	21%	15%	10%	13%	8%	5%	6%
Non-Low-Income	22%	15%	14%	15%	7%	4%	5%
LEP	19%	14%	9%	17%	7%	3%	4%
Non-LEP	23%	15%	13%	13%	7%	5%	6%

**Table 32:** Rider responses to "Buses are clean" survey question comparing Title VI and non-Title VI designations

"Buses are clean"	
Rating	1 to 3
Minority	44%
Non-Minority	55%
Difference	-11%
Low-Income	46%
Non-Low-Income	51%
Difference	-5%
LEP	42%
Non-LEP	51%
Difference	-9%

**Table 33:** Rider responses between 1 and 3 to "Buses are clean" comparing Title VI and non-Title VI designations

## ON-TIME PERFORMANCE

On-time performance is also scored similarly between routes. When satisfaction ratings 1 through 3 were combined there was much less than 20% based on Minority/Non-Minority, and Low-Income and Non-Low-Income. LEP/Non-LEP satisfaction rating has a difference of 22% thus triggering an issue with Title VI that will be investigated further.

"Buses are generally on time"							
Rating	Agree Strongly	2	3	No Opinion	5	6	Disagree Strongly
Minority	17%	13%	10%	17%	10%	4%	10%
Non-Minority	21%	19%	10%	11%	11%	8%	7%
Low-Income	17%	14%	10%	17%	9%	4%	11%
Non-Low-Income	21%	18%	10%	11%	12%	7%	6%
LEP	14%	13%	10%	15%	13%	5%	9%
Non-LEP	20%	16%	10%	15%	10%	5%	9%

**Table 34:** Rider responses to "Buses are generally on time" survey question comparing Title VI and non-Title VI designations

"Buses are generally on time"	
Rating	1 to 3
Minority	40%
Non-Minority	50%
Difference	-10%
Low-Income	41%
Non-Low-Income	49%
Difference	-8%
LEP	37%
Non-LEP	15%
Difference	22%

**Table 35:** Rider responses between 1 and 3 to "Buses are generally on time" comparing Title VI and non-Title VI designations

**SCHEDULE**

Schedule suitability is also scored similarly between routes. When satisfaction ratings 1 through 3 were combined there was very little difference based on Minority/Non-Minority, Low-Income and Non-Low-Income, and LEP and Non-LEP routes. This triggers no issues regarding Title VI.

“Service (operating hours & frequency) is adequate”							
Rating	Agree Strongly	2	3	No Opinion	5	6	Disagree Strongly
Minority	20%	14%	11%	14%	9%	4%	7%
Non-Minority	20%	17%	13%	13%	7%	6%	7%
Low-Income	19%	14%	12%	13%	9%	4%	7%
Non-Low-Income	22%	17%	12%	14%	8%	6%	6%
LEP	22%	14%	11%	16%	6%	4%	6%
Non-LEP	20%	16%	12%	12%	9%	5%	7%

**Table 36:** Rider responses to “Service (operating hours & frequency) is adequate” survey question comparing Title VI and non-Title VI designations

“Service (operating hours & frequency) is adequate”	
Rating	1 to 3
Minority	45%
Non-Minority	50%
Difference	-5%
Low-Income	45%
Non-Low-Income	51%
Difference	-6%
LEP	47%
Non-LEP	48%
Difference	-1%

**Table 37:** Rider responses between 1 and 3 to “Service (operating hours & frequency) is adequate” comparing Title VI and non-Title VI designations

**DRIVER COURTEOUS/PROFESSIONAL**

Driver Courteous/Professional is scored similarly between Routes. When satisfaction ratings 1 through 3 were combined (as an estimate of satisfied customers) there was very little difference based on Minority/ Non-Minority, Low-Income and Non-Low-Income, and LEP and Non-LEP Routes. This triggers no issues regarding Title VI.

"Bus Drivers are courteous and professional"							
Rating	Agree Strongly	2	3	No Opinion	5	6	Disagree Strongly
Minority	28%	16%	10%	11%	8%	4%	4%
Non-Minority	34%	20%	8%	7%	6%	5%	5%
Low-Income	28%	14%	10%	11%	7%	4%	5%
Non-Low-Income	32%	22%	9%	8%	7%	4%	5%
LEP	27%	17%	10%	14%	8%	3%	4%
Non-LEP	31%	17%	10%	8%	7%	5%	5%

**Table 38:** Rider responses to "Bus Drivers are courteous and professional" survey question comparing Title VI and non-Title VI designations

"Bus Drivers are courteous and professional"	
Rating	1 to 3
Minority	54%
Non-Minority	62%
Difference	-8%
Low-Income	52%
Non-Low-Income	63%
Difference	-11%
LEP	54%
Non-LEP	58%
Difference	-4%

**Table 39:** Rider responses between 1 and 3 to "Bus Drivers are courteous and professional" comparing Title VI and non-Title VI designations

**CUSTOMER SERVICE REPRESENTATIVES COURTEOUS/PROFESSIONAL**

Customer Service Representatives Courteous/Professional is also scored similarly between routes. When satisfaction ratings 1 through 3 were combined (as an estimate of satisfied customers) there was very little difference based on minority/non-minority, Low-Income and Non-Low-Income, and LEP and Non-LEP routes. This triggers no issues regarding Title VI.

“Call center representatives are courteous and professional”							
Rating	Agree Strongly	2	3	No Opinion	5	6	Disagree Strongly
Minority	27%	15%	9%	16%	7%	2%	4%
Non-Minority	23%	10%	10%	25%	5%	2%	4%
Low-Income	28%	14%	9%	16%	6%	3%	4%
Non-Low-Income	22%	12%	10%	23%	8%	2%	4%
LEP	27%	15%	9%	17%	7%	2%	4%
Non-LEP	25%	12%	10%	19%	6%	2%	4%

**Table 40:** Rider responses to “Call center representatives are courteous and professional” survey question comparing Title VI and non-Title VI designations

“Call center representatives are courteous and professional”	
Rating	1 to 3
Minority	51%
Non-Minority	43%
Difference	8%
Low-Income	51%
Non-Low-Income	44%
Difference	7%
LEP	51%
Non-LEP	47%
Difference	4%

**Table 41:** Rider responses between 1 and 3 to “Call center representatives are courteous and professional” comparing Title VI and non-Title VI designations



## CUSTOMER SERVICE PROMPT RESPONSE

Customer Service Prompt Response is also scored similarly between routes. When satisfaction ratings 1 through 3 were combined (as an estimate of satisfied customers) there was very little difference based on minority/non-minority, Low-Income and Non-Low-Income, and LEP and Non-LEP routes. This triggers no issues regarding Title VI.

“Calls to GRTC customer service get prompt response”							
Rating	Agree Strongly	2	3	No Opinion	5	6	Disagree Strongly
Minority	24%	13%	10%	17%	8%	3%	5%
Non-Minority	20%	9%	7%	26%	6%	6%	5%
Low-Income	24%	13%	10%	17%	6%	3%	5%
Non-Low-Income	20%	9%	8%	24%	8%	5%	6%
LEP	25%	11%	11%	16%	8%	4%	4%
Non-LEP	22%	11%	8%	21%	7%	4%	6%

**Table 42:** Rider responses to “Calls to GRTC customer service get prompt response” survey question comparing Title VI and non-Title VI designations

“Calls to GRTC customer service get prompt response”	
Rating	1 to 3
Minority	47%
Non-Minority	36%
Difference	11%
Low-Income	47%
Non-Low-Income	37%
Difference	10%
LEP	47%
Non-LEP	41%
Difference	6%

**Table 43:** Rider responses between 1 and 3 to “Call center representatives are courteous and professional” comparing Title VI and non-Title VI designations

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## CONCLUSION

This analysis showed that overall there is very little disparity in applying GRTC's service standards across minority, low-income, and LEP routes and their counterparts. For the most part, the standards were met. The standards that were not met for the system included:

- Service span (system average of 16.3, instead of 16.5 hours)
- On time performance (local route average is 66%, instead of 80%)
- Directness of routing (local routes is 1.8, instead of 1.7)

Staff will also investigate whether configuring the service standards to include factors that better reflect the demand for service would be a more appropriate way to measure compliance and disparities.

The on-board survey results showed very close similarity between the Minority, low-Income, and LEP Routes and their counterparts. The lowest-rated factor all around was on-time performance.

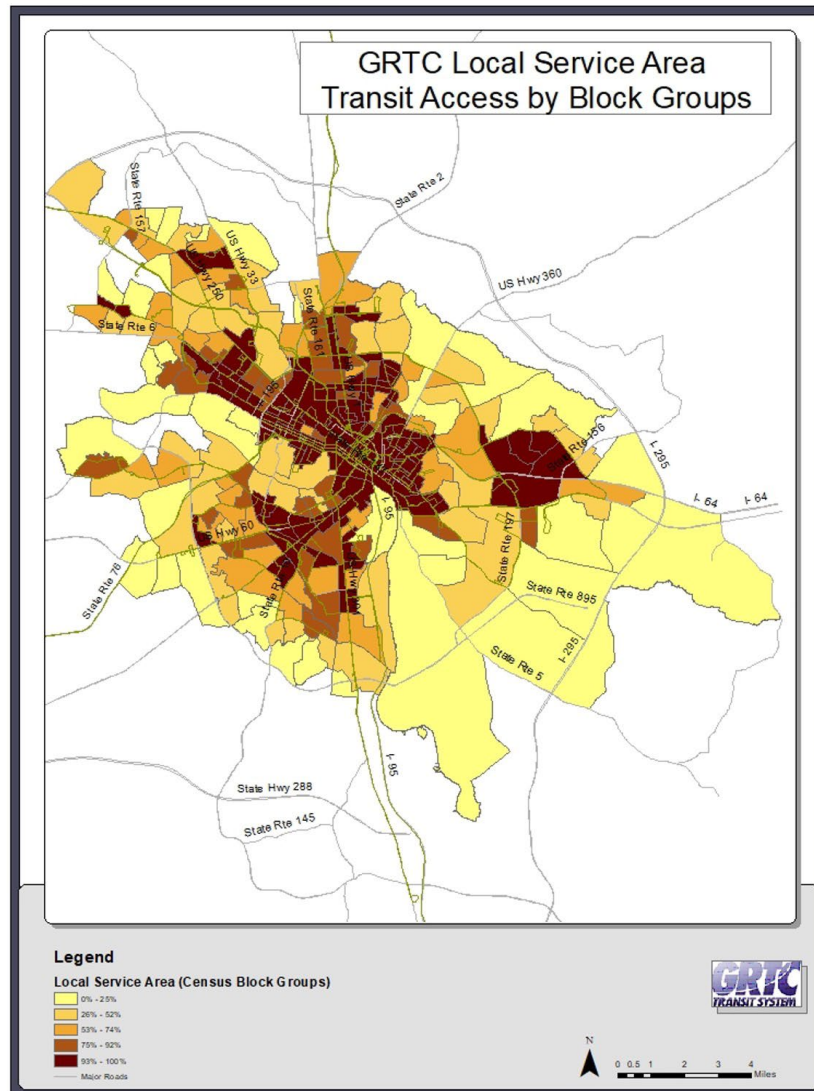
Title VI issues that need be investigated further are vehicle headway, stop spacing, and on time adherence.

# Sub-Appendices

## Sub-Appendix A

Minority, Low-Income, and LEP Areas. See **Appendix E**.

## Sub-Appendix B



**Figure 8:** Transit Access by Census Block Group

## Sub-Appendix C

Weekday			
Route	Overall Average	Peak Average	Off-Peak Average
1B	60	60	41
1C	60	60	41
18	62	62	41
86	60	60	41
87	60	60	41
88	59	58.5	41
1A	34	30	41
12	31	30	41
13	30	30	41
20	41	30	41
78	46	45	41
91	60	60	41
93	60	60	41
1A	35	30	41
2A	60	60	41
2B	60	60	41
2C	35	30	41
3A	30	30	41
3B	30	30	41

Weekday			
Route	Overall Average	Peak Average	Off-Peak Average
3C	38	0	41
4A	60	60	41
4B	60	60	41
5	30	30	41
7A	60	60	41
7B	60	60	41
56	60	30	41
50	40	40	41
19	30	30	41
79	45	45.5	41
14	31	30	41
29x	29	27.5	41
64x	80	70	41
76	45	45	41
77	45	45	41
82x	45	22.5	41
95x	28	29	41
Pulse	11	10	41

**Table 44:** Average Headways by Route — Weekday (May 2022 Service Booking)

	Saturday	Sunday
Route	Overall Average	Overall Average
13	30	30
78	60	60
91	60	60
93	0	0
2A	60	60
2B	60	60
4A	60	60
4B	60	60
5	30	31
7A	60	60
7B	60	60
12	30	30
56	0	0
50	40	40
19	30	31
79	0	0
29x	0	0
64x	0	0
76	61	61

	Saturday	Sunday
Route	Overall Average	Overall Average
77	60	60
82x	0	0
Pulse	16	16
1B	60	0
1C	60	45
18	0	0
86	60	60
87	60	60
88	60	0
1	0	30
1A	32	60
20	40	60
2C	36	60
3A	30	0
3B	30	0
3C	34	31
14	30	33
95x	0	0

**Table 45:** Average Headways by Route – Weekend (May 2022 Service Booking)

## Sub-Appendix D

Route	Weekday		Saturday		Sunday	
	Max Load	Load Duration	Max Load	Load Duration	Max Load	Load Duration
	Seats		Seats		Seats	
1					87.0%	0.3%
12	94.5%	0.1%	48.8%		48.2%	
13	41.5%		31.7%		33.3%	
14	42.1%		48.3%		35.1%	
18	34.5%					
19	60.5%		60.9%		82.5%	
1A	83.9%	0.4%	78.2%	0.2%	49.3%	0.5%
1B	70.9%	0.2%	62.0%	0.2%		
1C	81.5%	0.2%	70.2%	0.1%	29.9%	
20	61.2%	0.1%	38.3%		38.4%	
29x	54.1%	0.1%				
2A	59.5%		44.8%		41.8%	
2B	69.3%		49.3%		40.6%	
2C	49.1%		40.6%		36.9%	
3A	55.7%		48.1%			
3B	59.5%		48.5%			
3C	54.5%		53.5%		53.4%	
4A	28.8%	0.1%	37.2%		30.6%	
4B	33.5%		30.4%		39.0%	
5	68.2%		54.5%	0.1%	42.8%	
50	53.8%		43.6%		29.9%	
56	39.9%					
64x	53.5%	0.1%				
76	23.0%		19.1%		19.3%	
77	32.6%		27.3%		32.8%	
78	34.6%		43.9%		32.5%	
79	30.0%					
7A	71.3%	0.2%	62.6%		62.8%	0.1%
7B	67.4%	0.1%	62.1%	0.3%	55.4%	
82x	54.6%	0.1%				
86	28.7%		37.4%	0.2%	31.8%	0.4%
87	47.4%		42.3%		39.5%	
88	36.3%		23.1%	0.1%		
91	62.4%	0.1%	46.3%	0.0%	41.4%	

Route	Weekday		Saturday		Sunday	
	Max Load	Load Duration	Max Load	Load Duration	Max Load	Load Duration
	Seats		Seats		Seats	
93	31.8%					
95x	40.7%	0.1%				
Pulse	95.4%	1.5%	117.1%	2.8%	90.5%	0.8%

Table 46: Average Vehicle Load by Route (May 2022 Service Booking)

## Sub-Appendix E

Route	Weekday	Saturday	Sunday
	Service Hours	Service Hours	Service Hours
1A	05:00 AM to 12:55 AM	06:15 AM to 12:57 AM	06:15 AM to 11:34 PM
1B	05:15 AM to 07:36 PM	06:30 AM to 07:41 PM	No Service
1C	04:45 AM to 01:01 AM	06:00 AM to 01:01 AM	06:00 AM to 12:03 AM
2A	05:00 AM to 01:07 AM	05:59 AM to 12:09 AM	06:15 AM to 12:35 AM
2B	05:30 AM to 12:53 AM	06:19 AM to 12:52 AM	06:05 AM to 12:51 AM
2C	05:05 AM to 01:51 AM	05:45 AM to 12:41 AM	06:15 AM to 12:58 AM
3A	05:00 AM to 07:19 PM	06:00 AM to 07:15 PM	No Service
3B	05:11 AM to 08:02 PM	06:13 AM to 08:02 PM	No Service
3C	07:00 PM to 01:28 AM	07:00 PM to 12:28 AM	06:00 AM to 12:27 AM
4A	06:00 AM to 11:23 PM	06:00 AM to 11:23 PM	06:00 AM to 11:22 PM
4B	05:25 AM to 11:49 PM	05:25 AM to 11:49 PM	05:25 AM to 11:49 PM
5	04:55 AM to 12:50 AM	05:30 AM to 11:48 PM	05:44 AM to 11:50 PM
7A	05:45 AM to 11:40 PM	07:00 AM to 11:47 PM	10:00 AM to 10:55 PM
7B	05:11 AM to 11:04 PM	07:26 AM to 11:12 PM	10:26 AM to 10:19 PM
12	05:00 AM to 12:19 AM	05:50 AM to 12:23 AM	05:55 AM to 12:32 AM
13	06:00 AM to 11:20 PM	06:00 AM to 11:20 PM	06:00 AM to 11:20 PM
14	05:05 AM to 12:55 AM	05:40 AM to 12:55 AM	05:40 AM to 11:55 PM
18	06:30 AM to 07:58 PM	No Service	
19	06:00 AM to 11:54 PM	06:00 AM to 12:11 AM	10:00 AM to 11:12 PM
20	04:40 AM to 11:20 PM	05:40 AM to 10:29 PM	06:00 AM to 10:50 PM
29x	06:25 AM to 06:10 PM	No Service	
50	05:10 AM to 11:37 PM	06:00 AM to 11:10 PM	06:00 AM to 11:10 PM
56	06:00 AM to 04:04 PM	No Service	
64x	06:10 AM to 05:54 PM	No Service	
76	05:25 AM to 06:43 PM	07:05 AM to 07:42 PM	07:05 AM to 07:42 PM
77	05:40 AM to 06:56 PM	07:00 AM to 07:30 PM	07:00 AM to 07:30 PM

Route	Weekday	Saturday	Sunday
	Service Hours	Service Hours	Service Hours
78	05:10 AM to 10:38 PM	07:05 AM to 07:32 PM	07:03 AM to 07:28 PM
79	06:00 AM to 07:36 PM	No Service	
82x	06:30 AM to 05:55 PM	No Service	
86	05:05 AM to 11:28 PM	07:05 AM to 11:24 PM	07:05 AM to 11:24 PM
87	05:30 AM to 12:22 AM	07:30 AM to 07:33 PM	07:30 AM to 07:32 PM
88	05:55 AM to 11:14 PM	06:00 AM to 07:17 PM	No Service
91	06:25 AM to 11:25 PM	07:00 AM to 10:55 PM	10:00 AM to 10:55 PM
93	06:00 AM to 07:58 PM	No Service	
95x	05:42 AM to 06:13 PM	No Service	
Pulse	05:00 AM to 01:37 AM	05:55 AM to 01:35 AM	05:55 AM to 01:35 AM
1	No Service		6:00 AM to 12:25 AM

Table 47: Service Span by Route (May 2022 Service Booking)

## Sub-Appendix F

Route	On-time Performance			
	Weekday	Saturday	Sunday	May 2022 Booking Average
1			52.3%	52.3%
12	71.3%	76.8%	73.7%	73.9%
13	84.8%	91.8%	85.1%	87.2%
14	69.9%	57.0%	54.9%	60.6%
18	78.8%			78.8%
19	66.2%	62.4%	64.4%	64.3%
1A	58.0%	63.2%	86.8%	69.3%
1B	64.0%	59.1%		61.6%
1C	58.3%	58.7%	64.8%	60.6%
20	66.9%	66.0%	69.0%	67.3%
29x	67.3%			67.3%
2A	56.9%	53.9%	59.7%	56.8%
2B	56.5%	51.3%	51.0%	52.9%
2C	61.5%	56.4%	59.4%	59.1%
3A	72.0%	74.3%		73.2%
3B	66.0%	59.5%		62.8%
3C	61.3%	50.5%	60.2%	57.3%
4A	90.4%	94.9%	83.9%	89.7%
4B	84.2%	91.2%	83.6%	86.3%



Route	On-time Performance			
	Weekday	Saturday	Sunday	May 2022 Booking Average
5	67.6%	70.5%	70.0%	69.4%
50	77.3%	77.9%	79.4%	78.2%
56	60.7%			60.7%
64x	53.5%			53.5%
76	66.5%	65.1%	87.4%	73.0%
77	80.4%	59.4%	62.3%	67.4%
78	76.0%	60.0%	62.5%	66.2%
79	67.6%			67.6%
7A	54.3%	65.3%	66.4%	62.0%
7B	54.4%	60.5%	65.1%	60.0%
82x	65.8%			65.8%
86	76.8%	72.8%	72.1%	73.9%
87	63.8%	59.7%	65.9%	63.1%
88	76.7%	60.7%		68.7%
91	71.5%	63.9%	57.0%	64.1%
93	68.3%			68.3%
95x	46.8%			46.8%
Pulse	71.0%	69.5%	69.0%	69.8%

**Table 48:** On-time Performance by Route (May 2022 Service Booking)

## Sub-Appendix G

May 2022 Sample		
Route	Trips Counted	Average Vehicle Age (years)
1A	28032	5.37
1B	11403	5.98
1C	18822	5.78
2A	21948	5.49
2B	28753	5.48
2C	35801	5.59
3A	18365	5.56
3B	32549	5.78
3C	10990	5.96
4A	6225	5.34
4B	8403	5.29
5	35973	6.19

May 2022 Sample		
Route	Trips Counted	Average Vehicle Age (years)
7A	15858	5.12
7B	15222	5.82
12	34472	5.77
13	12552	4.51
14	35008	5.87
18	6741	5.89
19	25900	5.40
20	36369	5.50
29x	2008	8.09
50	16540	6.10
56	1594	12.30
64x	1678	7.01
76	7856	5.53
77	8320	6.19
78	12092	6.13
79	8670	5.57
82x	783	6.95
86	9472	5.71
87	18767	5.41
88	2595	7.94
91	12910	5.83
93	5538	4.77
95x	1487	5.30
Pulse	71505	6.40
1	4746	5.48

**Table 48:** Vehicle Assignment Data by Route (May 2022 Service Booking)

# Sub-Appendix H

## Transit Amenities in the Local Service Area (May 2022 Service Booking)

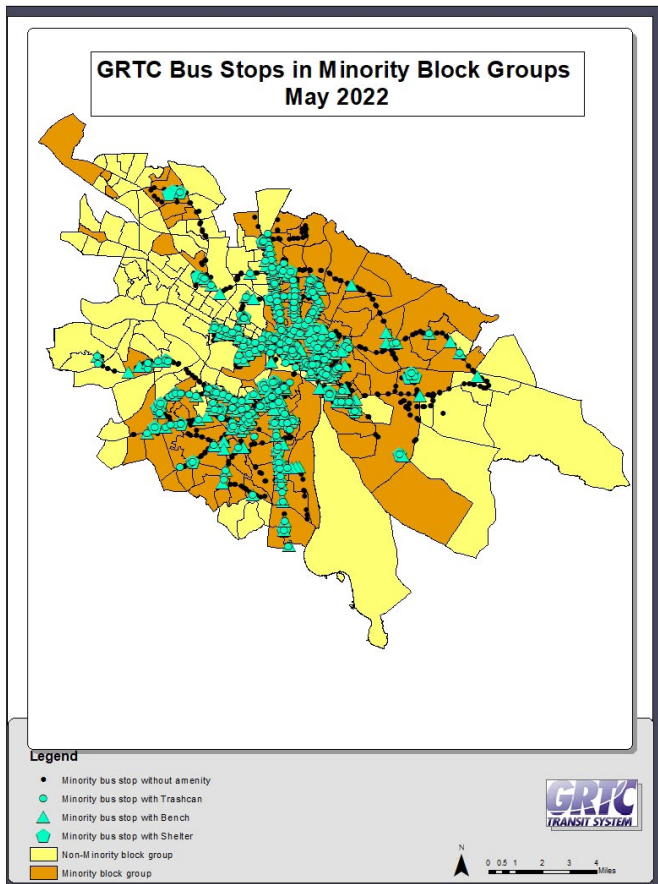


Figure 9: Amenities in Minority Areas

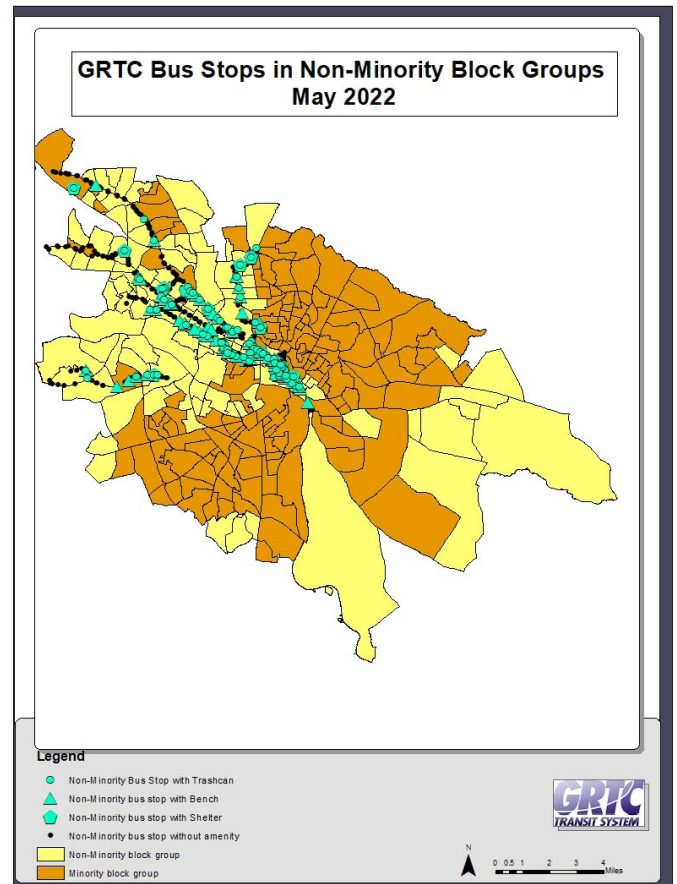
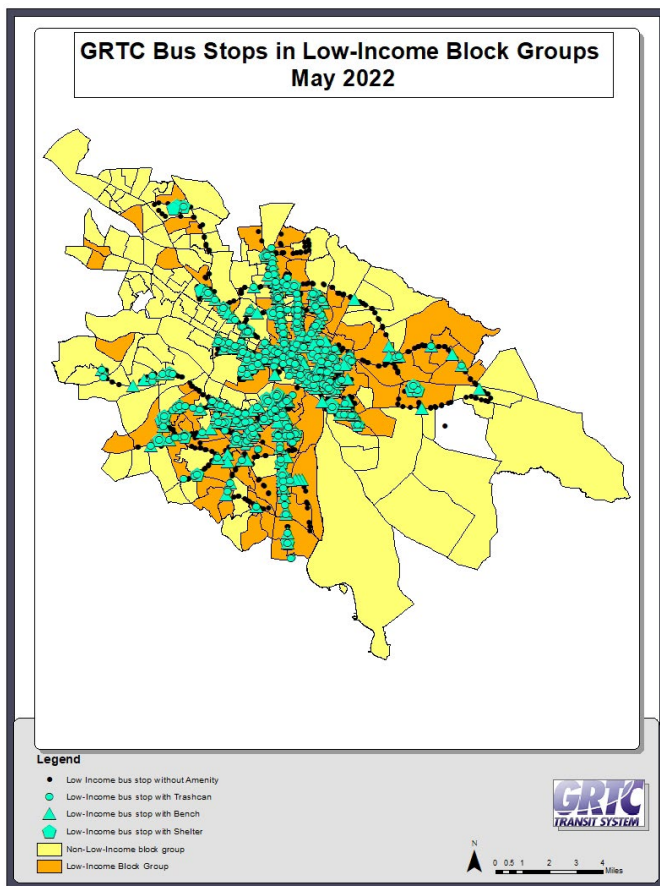
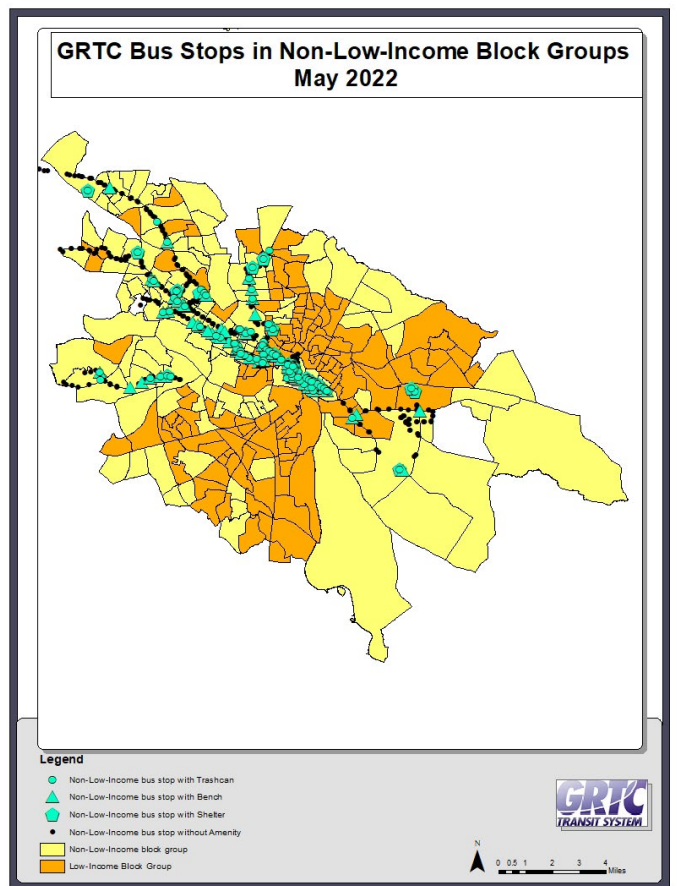


Figure 10: Amenities in Non-Minority Areas



**Figure 11: Amenities in Low-Income Areas**



**Figure 12: Amenities in Non-Low-Income Areas**

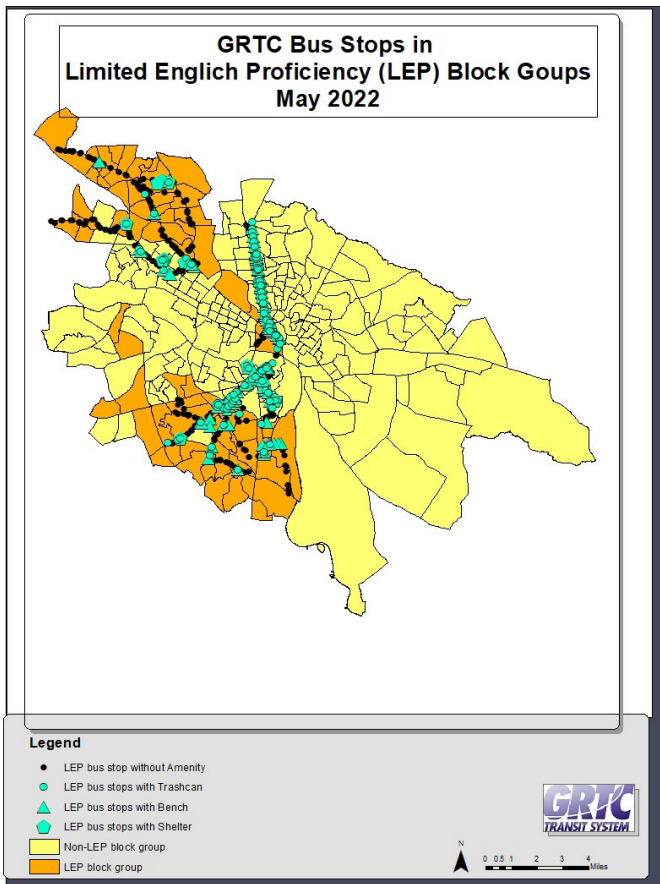


Figure 13: Amenities in LEP Areas

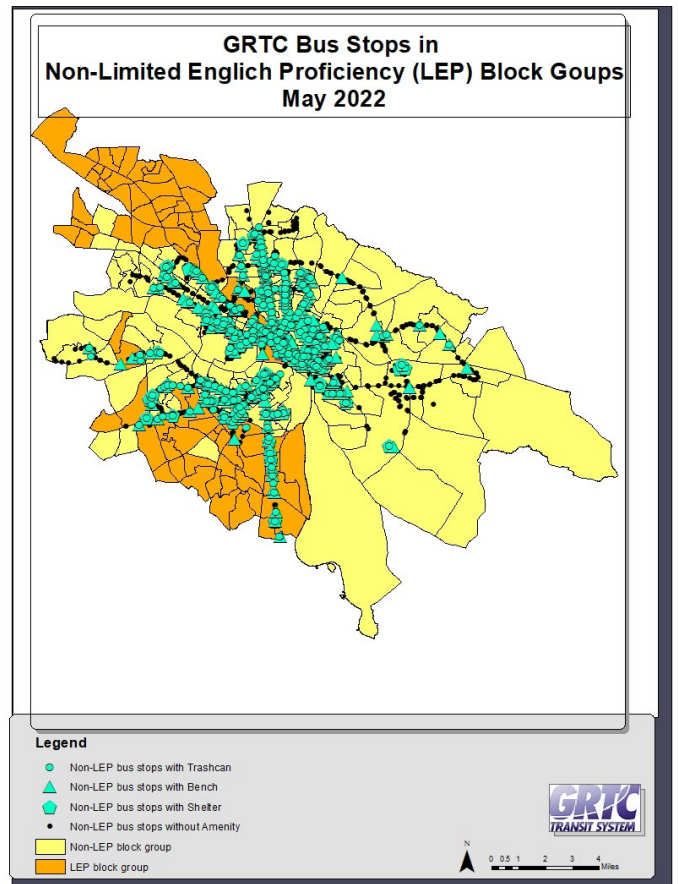


Figure 14: Amenities in Non-LEP Areas

## Sub-Appendix I

Route	Average Spacing (ft)
1	950
5	1008
12	986
13	784
14	1012
18	2002
19	1498
20	1254
29x	6673
50	1023
56	1682
64x	2256
76	1031
77	1038
78	863
79	1262
82x	10826
86	1183
87	1192

Route	Average Spacing (ft)
88	1470
91	1382
93	1542
95x	12768
1A	991
1B	932
1C	927
2A	1064
2B	1050
2C	980
3A	1005
3B	1416
3C	966
4A	1169
4B	1221
7A	1419
7B	1431
Pulse	2694

**Table 49:** Average Bus Stop Spacing by Route (May 2022 Service Booking)

## Sub-Appendix J

Route	Transfer trip	No transfer trip
1A	57%	43%
1B	64%	36%
1C	60%	40%
2A	52%	48%
2B	44%	56%
2C	56%	44%
3A	80%	20%
3B	72%	28%
4A	65%	35%
4B	91%	9%
5	45%	55%
7A	56%	44%
7B	54%	46%
12	62%	38%
13	91%	9%
14	72%	28%
18	82%	18%
19	83%	17%
20	71%	29%
39	50%	50%
50	85%	15%
56	68%	32%
75	72%	28%
76	46%	54%
77	89%	11%
78	65%	35%
79	82%	18%
86	83%	17%
87	76%	24%
88	88%	12%
91	56%	44%
93	65%	35%
Pulse	57%	43%

**Table 50:** Transfer Frequency by Route (October 2019 On-board Survey)

## Sub-Appendix K

Route	Travel Distance (mi)	Direct Distance (mi)	Directness Ratio
1	9.55	7.25	1.32
1A	13.48	8.31	1.62
1B	12.69	7.49	1.69
1C	12.36	9.22	1.34
2A	13.83	7.77	1.78
2B	12.83	8.14	1.58
2C	9.5	6.25	1.52
3A	7.99	5.32	1.50
3B	11.2	16.18	0.69
3C	13.8	9.37	1.47
4A	3.44	1.66	2.07
4B	2.78	2.17	1.28
5	5.32	4.13	1.29
7A	9.5	5.91	1.61
7B	12.42	5.89	2.11
12	6.4	1.32	4.85
13	2.28	1.4	1.63
14	8.23	5.38	1.53
18	8.1	3.21	2.52
19	11.77	9.77	1.20
20	11.83	5.38	2.20
50	3.42	4.16	0.82
56	12.67	4.48	2.83
76	5.24	2.43	2.16
77	9.1	5.23	1.74
78	5.64	3.14	1.80
79	7.12	5.51	1.29
86	5.21	2.81	1.85
87	10.78	3.67	2.94
88	6.65	4.36	1.53
91	13.2	8.44	1.56
93	10.9	1.74	6.26
29x	13.46	9.92	1.36
64x	10.65	8.52	1.25
82x	18.18	13.28	1.37



Route	Travel Distance (mi)	Direct Distance (mi)	Directness Ratio
95x	24.82	21.94	1.13
Pulse	6.92	6.46	1.07

**Table 51:** Directness of Routing — Average by Variant (May 2022 On-board Survey)

## March 2020 Zero Fare Impact

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	March 2020 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.	N/A
b. Change in service span	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.	N/A
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).	N/A
d. Change in total miles serviced by the route	25% change in total miles on a route's path	Extending or shortening a line.	N/A
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).	N/A

**Table 52:** Major Change Analysis - Route Level Metrics

System Level Metric	Level of Change Required to be Classified as a Major Change	Example	March 2020 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.	N/A

**Table 53:** Major Change Analysis - System Level Metrics

## 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 53% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, minorities must receive at least 33% of the benefit.
- If service decreases, minorities cannot bear more than 73% 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 route 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 disparate impact for the system is 0% because there is no change to service trips, total population, or minority population in this scenario.

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## 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 within one-quarter of a mile of the GRTC service area. 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 group 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 disproportionate burden for the system is 0% because there is no change to service trips, total population, or low-income population in this scenario.

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## **CONCLUSION**

The proposed system wide fare change starting March 19th, 2020, will remove a transit barrier for all GRTC riders and reduce the interaction time between passengers and operators in an effort to keep everyone safe. The results of the analysis determined that the proposed alternative is within the acceptable change limits resulting in a sustained equitable distribution of service.

# Major Change & Service Equity Analysis

## April 2020 Schedule Changes

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	April 2020 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.	<p>Route 23x – Above 25% Change</p> <p>Route 26x – Above 25% Change</p> <p>Route 27x – Above 25% Change</p> <p>Route 29x – Above 25% Change</p> <p>Route 64x – Above 25% Change</p> <p>Route 82x – Below 25% Change</p> <p>Route 4A – Below 25% Change</p> <p>Route 4B – Below 25% Change</p> <p>Route 78 – Below 25 % Change</p>
b. Change in service span	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.	<p>Route 23x – Above 25% Change</p> <p>Route 26x – Below 25% Change</p> <p>Route 27x – Below 25% Change</p> <p>Route 64x – Below 25% Change</p>
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).	N/A
d. Change in total miles serviced by the route	25% change in total miles on a route's path	Extending or shortening a line.	N/A

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	April 2020 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).	Routes 28x, 39, 75, and 102x.

Table 54: Major Change Analysis - Route Level Metrics

System Level Metric	Level of Change Required to be Classified as a Major Change	Example	April 2020 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.	N/A

Table 55: Major Change Analysis - System Level Metrics

## A. CHANGE IN NUMBER OF TRIPS – MAJOR CHANGE

Express Routes 23x, 26x, 27x, and 29x are above the 25% threshold for Weekday.

Change in Number of Trips – Weekday						
Jurisdiction	Route	Change	Current	New	% Change	Change Category
Richmond	64x	-10	17	7	-59%	Major
Henrico	23x	-1	2	1	-50%	Major
Henrico	26x	-7	15	8	-47%	Major
Henrico	29x	-20	28	8	-71%	Major

Change in Number of Trips — Weekday						
Jurisdiction	Route	Change	Current	New	% Change	Change Category
Richmond	78	-5	46	41	-11%	Minor
Richmond	4B	-22	100	78	-22%	Minor
Richmond	4A	-22	100	78	-22%	Minor
Henrico	27x	-11	19	8	-58%	Major
Chesterfield	82x	-5	9	4	-56%	Minor

Table 56: Change in number of weekday trips (April 2020 Schedule Changes)

## B. CHANGE IN SERVICE SPAN – MAJOR CHANGE

Express Route 23x is above the 25% threshold for Weekday.

Change in Service Span — Weekday								
Jurisdiction	Route	Change	Current	Hours	New	Hours	% Change	Change Category
Henrico	23x	-0.29	5:28 pm-6:25 pm	0.95	5:28 pm-6:08 pm	0.66	-31%	Major
Henrico	26x	-0.41	6:30 am-5:50 pm	11.33	6:55 am-5:50 pm	10.92	-4%	Minor
Henrico	27x	-0.33	6:55 am-5:45 pm	10.83	6:55 am-5:25 pm	10.5	-3%	Minor
Richmond	64x	-0.5	6:10 am-6:25 pm	12.25	6:10 am-5:55 pm	11.75	-4%	Minor

Table 57: Change in weekday service span (April 2020 Schedule Changes)

## F. ELIMINATING ROUTE(S) (ROUTE LEVEL) – MAJOR CHANGE

Underutilized Routes 28x, 39, 75, and 102x are proposed to be suspended.

### 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 56% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, minorities must receive at least 36% of the benefit.
- If service decreases, minorities cannot bear more than 76% 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 group 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 route 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 disparate impact for each route is below 20%.

Route	Minority Population	Minority Burden/ Benefit of Change	Disparate Impact	Disparate Impact Threshold
System	55.7%	50.4%	5.3%	20%

**Table 58:** Disparate impact analysis results (April 2020 Schedule Changes)

## 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 31% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, low-income populations must receive at least 11% of the benefit.
- If service decreases, low-income populations cannot bear more than 51% 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 group 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 disproportionate burden for each route is below 20%.

Route	Low-income Population	Low-income Burden/Benefit of Change	Disproportionate Burden	Disproportionate Burden Threshold
System	31%	31.8%	0.8%	20%

**Table 59:** Disproportionate burden analysis results (April 2020 Schedule Changes)

## CONCLUSION

The proposed changes to the weekday schedule for the routes 23x, 26x, 27x, 29x and 62x and the suspension of the routes 28x, 39, 79, and 102x for April 2020 were identified as major changes, triggering three of the six route 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 changes are within the acceptable change limits resulting in a sustained equitable distribution of service.

# Major Change & Service Equity Analysis

## September 2020 Schedule Changes

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	September 2020 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.	<p>Route 1C – Above 25% Change</p> <p>Route 77 – Above 25% Change</p> <p>Route 78 – Above 25% Change</p> <p>Route 1A – Below 25% Change</p> <p>Route 50 – Below 25% Change</p> <p>Route 87 – Below 25% Change</p>
b. Change in service span	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.	<p>Route 50 – Below 25% Change</p>
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).	<p>Route 50 – Above 25% Change</p> <p>Route 76 – Above 25% Change</p> <p>Route 77 – Above 25% Change</p> <p>Route 2B – Below 25% Change</p> <p>Route 7A – Below 25% Change</p> <p>Route 7B – Below 25% Change</p> <p>Route 79 – Below 25% Change</p>

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	September 2020 Proposed Changes
d. Change in total miles serviced by the route	25% change in total miles on a route's path	Extending or shortening a line.	<p>Route 1C – Above 25% Change</p> <p>Route 50 – Above 25% Change</p> <p>Route 76 – Above 25% Change</p> <p>Route 77 – Above 25% Change</p> <p>Route 1A – Below 25% Change</p> <p>Route 7A – Below 25% Change</p> <p>Route 79 – Below 25% Change</p>
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).	N/A

**Table 60:** Major Change Analysis - Route Level Metrics

System Level Metric	Level of Change Required to be Classified as a Major Change	Example	September 2020 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.	Route 1 – Sunday
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.	N/A

**Table 61:** Major Change Analysis - System Level Metrics

## A. CHANGE IN NUMBER OF TRIPS – MAJOR CHANGE

Routes 1C, 77, and 78 are above the 25% threshold.

Change in Number of Trips											
Jurisdiction	Route	Weekday			Saturday			Sunday			Change Category
		Current	New	% Change	Current	New	% Change	Current	New	% Change	
Richmond	1A	67	67	0%	62	65	5%	36	35	-3%	Minor
Richmond	1C	38	38	0%	37	38	3%	36	52	44%	Major
Richmond	50	74	64	-14%	68	58	-15%	68	58	-15%	Minor
Richmond	77	37	51	38%	25	23	-8%	25	23	-8%	Major
Richmond	78	41	53	29%	25	25	0%	25	25	0%	Major
Richmond	87	36	38	6%	24	24	0%	24	24	0%	Minor

Table 62: Change in number of weekly trips (September 2020 Schedule Changes)

## B. CHANGE IN SERVICE SPAN – MINOR CHANGE

Route 50 is below the 25% threshold.

Change in Service Span								
Jurisdiction	Route	Change	Weekday				Change Category	
			Current	Hours	New	Hours		% Change
Henrico	23x	-0.29	5:28 pm-6:25 pm	0.95	5:28 pm-6:08 pm	0.66	-31%	Major
Henrico	26x	-0.41	6:30 am-5:50 pm	11.33	6:55 am-5:50 pm	10.92	-4%	Minor
Henrico	27x	-0.33	6:55 am-5:45 pm	10.83	6:55 am-5:25 pm	10.50	-3%	Minor
Richmond	64x	-0.50	6:10 am-6:25 pm	12.25	6:10 am-5:55 pm	11.75	-4%	Minor

Table 63: Change in weekday service span (September 2020 Schedule Changes)

### C. REDIRECTING A ROUTE (ROUTE LEVEL) – MAJOR CHANGE

Routes 50, 76, and 77 were realigned and above the 25% threshold.

Re-directing a Route										
		North/West				South/East				Change Category
Jurisdiction	Route	Change	Current	New	% Change	Change	Current	New	% Change	
Richmond	77	-3.61	9.48	5.87	-38%	-2.63	9.1	6.47	-29%	Major
Richmond	50	2.08	3.21	5.29	65%	0.96	3.42	4.38	28%	Major
Richmond	2B	0.13	12.83	12.96	1%	0.12	15.06	15.18	1%	Minor
Richmond	7A	0.00	9.52	9.52	0%	0.14	12.73	12.87	1%	Minor
Richmond	7B	0.00	12.42	12.42	0%	0.14	11.03	11.17	1%	Minor
Henrico	79	0.78	8.78	9.56	9%	0.77	7.12	7.89	11%	Minor
Richmond	76	2.74	3.83	6.57	72%	0.87	5.24	6.11	17%	Major

Table 64: Re-directing routes and changes in general cardinal direction (September 2020 Schedule Changes)

### D. CHANGE IN TOTAL MILES SERVICED BY THE ROUTE (ROUTE LEVEL) – MAJOR CHANGE

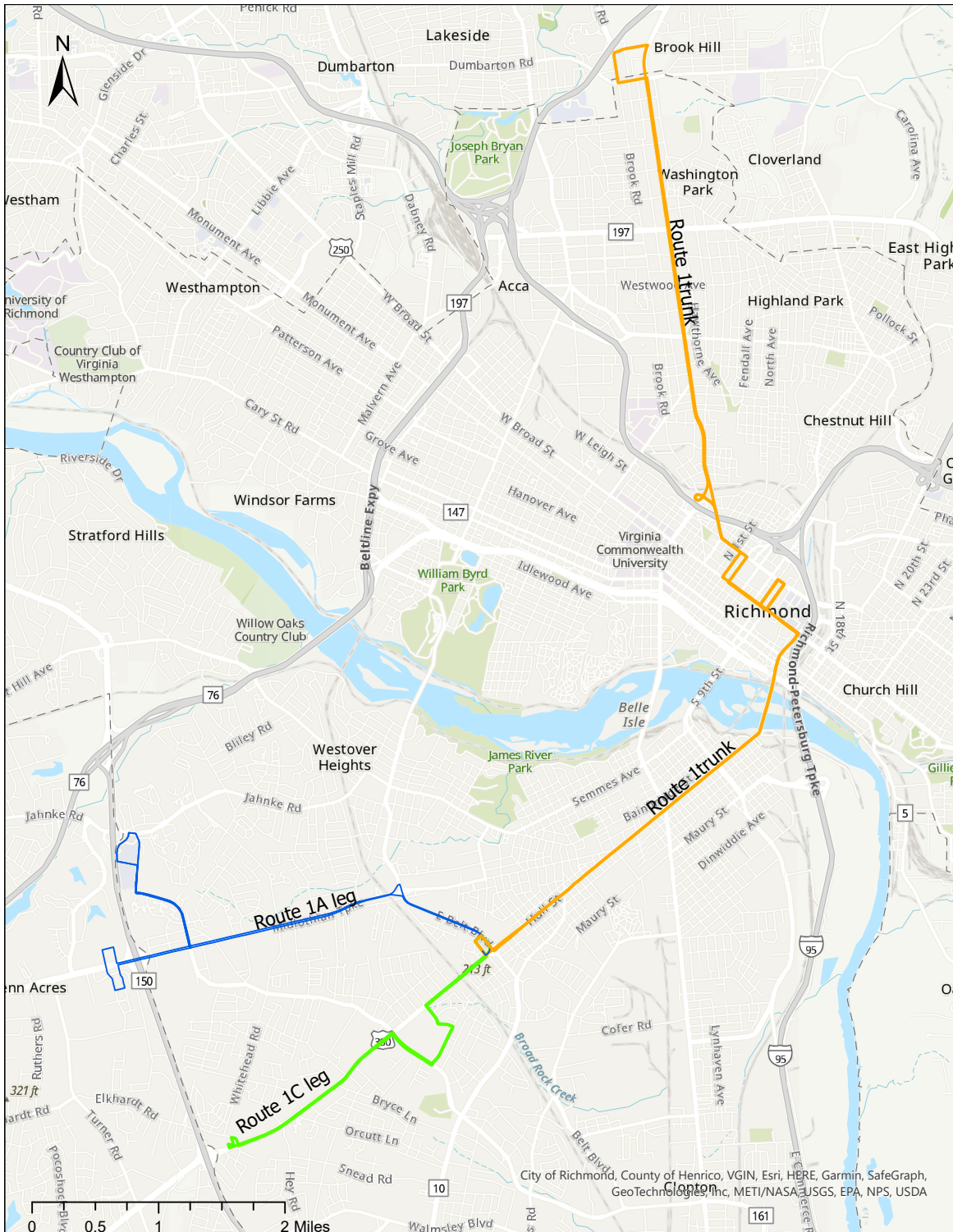
Routes 1C, 50, 76, and 77 are above the 25 percent threshold.

Change in Total Miles Serviced by the Route										
		North/West				South/East				Change Category
Jurisdiction	Route	Change	Current	New	% Change	Change	Current	New	% Change	
Richmond	1A	-0.29	16.68	16.39	-2%	-0.13	15.47	15.34	-1%	Minor
Richmond	7A	0.00	9.55	9.55	0%	0.28	12.29	12.57	2%	Minor
Richmond	79	0.75	8.81	9.56	9%	0.78	7.12	7.9	11%	Minor
Richmond	77	-6.90	13.1	6.2	-53%	-2.50	9	6.5	-28%	Major
Richmond	76	2.76	3.84	6.6	72%	0.86	5.24	6.1	16%	Major
Richmond	50	2.10	3.2	5.3	66%	1.00	3.4	4.4	29%	Major
Richmond	1C	-10.13	13.49	3.36	-75%	-9.54	12.81	3.27	-74%	Major

Table 65: Change in total miles served by routes in general cardinal direction (September 2020 Schedule Changes)

## G. ADDING NEW ROUTE(S) (SYSTEM LEVEL) – MAJOR CHANGE

One new route is being added to the system – Route 1 will operate on Sundays only consolidating the Sunday service of Routes 1A and 1C.



**Figure 15:** Consolidation of Routes 1A and 1C into one trunk with shorter legs in South Richmond (September 2020 Schedule Changes)

## 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 55.7% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, minorities must receive at least 35.7% of the benefit.
- If service decreases, minorities cannot bear more than 75.7% 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 route 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 disparate impact for each route is below 20%.

Route	Minority Population	Minority Burden/ Benefit of Change	Disparate Impact	Disparate Impact Threshold
System	55.7%	47.5%	8.2%	20%

Table 66: Disparate impact analysis results (September 2020 Schedule Changes)

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## 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 31% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, low-income populations must receive at least 11% of the benefit.
- If service decreases, low-income populations cannot bear more than 51% 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 group 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 disproportionate burden for each route is below 20%.

Route	Low-income Population	Low-income Burden/Benefit of Change	Disproportionate Burden	Disproportionate Burden Threshold
System	31%	34.8%	3.8%	20%

**Table 67:** Disproportionate burden analysis results (September 2020 Schedule Changes)

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## CONCLUSION

The proposed re-alignment of Routes 50, 76, 77 and the creation of the Route 1 Sunday service were identified as major changes, triggering three of the six route level major change thresholds, and one 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 changes are within the acceptable change limits resulting in a sustained equitable distribution of service.

# Major Change & Service Equity Analysis

## January 2021 Schedule Changes

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	January 2021 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.	Route 4A – Above 25% Change Route 4B – Above 25% Change Route 50 – Below 25% Change Route 77 – Below 25% Change
b. Change in service span	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.	N/A
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).	N/A
d. Change in total miles serviced by the route	25% change in total miles on a route's path	Extending or shortening a line.	Route 5 – Below 25% Change
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).	N/A
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**Table 68:** Major Change Analysis - Route Level Metrics

System Level Metric	Level of Change Required to be Classified as a Major Change	Example	January 2021 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.	N/A

**Table 69:** Major Change Analysis - System Level Metrics

## A. CHANGE IN NUMBER OF TRIPS (ROUTE LEVEL) – MAJOR CHANGE

Routes 4A and 4B are above the threshold of 25%.

Change in Number of Trips											
Jurisdiction	Route	Weekday			Saturday			Sunday			Change Category
		Current	New	% Change	Current	New	% Change	Current	New	% Change	
Richmond	4A	78	56	-28%	78	36	-54%	68	36	-47%	Major
Richmond	4B	78	56	-28%	78	38	-51%	70	38	-46%	Major
Richmond	50	64	56	-13%	58	52	-10%	58	52	-10%	Minor
Richmond	77	51	39	-24%	23	25	9%	23	25	9%	Minor

**Table 70:** Change in number of weekly trips (January 2021 Schedule Changes)

## B. CHANGE IN TOTAL MILES SERVICED BY THE ROUTE (ROUTE LEVEL) – MAJOR CHANGE

Route 5 is above the 25% threshold.

Change in Total Miles Serviced by the Route								Change Category
Jurisdiction	Route	Weekday			Saturday			
		Current	New	% Change	Current	New	% Change	
Richmond	5	7.64	6.39	-16%	5.34	6.4	20%	Minor

Table 71: Change in total miles serviced by the route (January 2021 Schedule Changes)

## 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 55.7% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, minorities must receive at least 35.7% of the benefit.
- If service decreases, minorities cannot bear more than 75.7% 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 route 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 disparate impact for each route is above 20%.

Route	Minority Population	Minority Burden/ Benefit of Change	Disparate Impact	Disparate Impact Threshold
System	55.7	35.1	20.6	20

**Table 72:** Disparate impact analysis results (January 2021 Schedule Changes)

## 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 31% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, low-income populations must receive at least 11% of the benefit.
- If service decreases, low-income populations cannot bear more than 51% 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 group 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 disparate impact for each route is below 20%.

Route	Low-income Population	Low-income Burden/Benefit of Change	Disproportionate Burden	Disproportionate Burden Threshold
System	31	30.7	0.3	20

**Table 73:** Disproportionate burden analysis results (January 2021 Schedule Changes)

## CONCLUSION

The proposed changes to the number of trips for the routes 4A and 4B for January 2021 were identified as major changes, triggering one of the six route 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 temporary reduction in service is necessary until the operator shortage is resolved and normal service can resume.

# Major Change & Service Equity Analysis

## September 2021 Schedule Changes

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	September 2021 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.	Route 29x – Above 25% Change
b. Change in service span	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.	N/A
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).	Route 20 – Below 25% Change Route 77 – 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.	Route 3B – Above 25% Change
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).	23x 26x 27x 111

Table 74: Major Change Analysis - Route Level Metrics

System Level Metric	Level of Change Required to be Classified as a Major Change	Example	September 2021 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.	N/A

Table 75: Major Change Analysis - Route Level Metrics

### A. CHANGE IN NUMBER OF TRIPS (ROUTE LEVEL) – MAJOR CHANGE

Route 29x is above the threshold of 25% because additional trips were added to weekday service.

Change in Number of Trips							Change Category
		Weekday					
Jurisdiction	Route	Change	Current	New	% Change		
Richmond	29x	11	4	15	275%	Major	

Table 76: Change in number of weekday trips (September 2021 Schedule Changes)

### C. RE-DIRECTING A ROUTE – MINOR CHANGE

Routes 20 and 77 are below the 25% threshold.

Re-directing a Route								Change Category
		North/West			South/East			
Jurisdiction	Route	Current	New	% Change	Current	New	% Change	
Richmond	20	11.83	11.47	3%	12.6	12.28	3%	Minor
Richmond	77	5.87	5.94	1%	6.47	7.06	8%	Minor

Table 77: Re-direction of routes (September 2021 Schedule Changes)





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## F. ELIMINATING ROUTES (ROUTE LEVEL) – MAJOR CHANGE

Express Routes 23x, 26x, and 27x are proposed to be eliminated. However, the service it currently provides will be partially absorbed by the Route 29x which will have an increased number of trips. Route 111 is also proposed to be eliminated but the service will be fully absorbed with Route 3B.

### 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 55.7% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, minorities must receive at least 35.7% of the benefit.
- If service decreases, minorities cannot bear more than 75.7% 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 route 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 disparate impact for each route is below 20%.

Route	Minority Population	Minority Burden/ Benefit of Change	Disparate Impact	Disparate Impact Threshold
System	55.7	41.2	14.5	20

**Table 78:** Disparate impact analysis results (September 2021 Schedule Changes)

## 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 31% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, low-income populations must receive at least 11% of the benefit.
- If service decreases, low-income populations cannot bear more than 51% 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 group 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 disparate impact for each route is below 20%.

Route	Low-income Population	Low-income Burden/Benefit of Change	Disproportionate Burden	Disproportionate Burden Threshold
System	31	33.7	2.8	20

**Table 79:** Disproportionate burden analysis results (September 2021 Schedule Changes)

## CONCLUSION

The proposed changes to increase the number of trips for the Route 29x in line with the express route consolidation and merging of Route 111 with Route 3B for September 2021 were identified as major changes, triggering three of the six route 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.

# Major Change & Service Equity Analysis

## December 2021 Schedule Changes

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	December 2021 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.	<p>Route 4A – Above 25% Change</p> <p>Route 4B – Above 25% Change</p> <p>Route 5 – Above 25% Change</p> <p>Route 76 – Above 25% Change</p> <p>Route Pulse – Above 25% Change</p> <p>Route 13 – Below 25% Change</p>
b. Change in service span	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.	<p>Route 1A – Below 25% Change</p> <p>Route 4A – Below 25% Change</p> <p>Route 12 – Below 25% Change</p> <p>Route 13 – Below 25% Change</p> <p>Route 14 – Below 25% Change</p> <p>Route 77 – Below 25% Change</p>
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).	N/A
d. Change in total miles serviced by the route	25% change in total miles on a route's path	Extending or shortening a line.	N/A

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).	N/A

**Table 80:** Major Change Analysis - Route Level Metrics

System Level Metric	Level of Change Required to be Classified as a Major Change	Example	December 2021 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.	N/A

**Table 81:** Major Change Analysis - System Level Metrics

## A. CHANGE IN NUMBER OF TRIPS (ROUTE LEVEL) – MAJOR CHANGE

Routes 4A, 4B, 5, 76 and the Pulse are above the threshold of 25%.

Change in Number of Trips											
Jurisdiction	Route	Weekday			Saturday			Sunday			Change Category
		Current	New	% Change	Current	New	% Change	Current	New	% Change	
Richmond	4A	56	36	-36%	36	36	0%	36	36	0%	Major
Richmond	4B	56	38	-32%	38	8	-79%	38	38	0%	Major
Richmond	5	134	78	-42%	121	71	-41%	68	68	0%	Major
Richmond	13	80	62	-23%	70	62	-11%	70	62	-11%	Minor
Richmond	76	42	28	-33%	25	25	0%	25	25	0%	Major
Richmond	Pulse	212	148	-30%	148	148	0%	148	148	0%	Major

Table 82: Change in number of weekly trips (December 2021 Schedule Changes)

## B. CHANGE IN SERVICE SPAN – MINOR CHANGE

Routes 1A, 4A, 12, 13, 14, and 77 are below the 25% threshold.

Change in Service Span												
Jurisdiction	Route	Weekday					Saturday					Change Category
		Current	Hours	New	Hours	% Change	Current	Hours	New	Hours	% Change	
Richmond	1A	5 am-1 am	20	5 am-12 am	19	5%	5 am-1 am	20	5 am-12 am	19	5%	Minor
Richmond	4A	5 am-1 am	20	6 am-1 am	19	5%	5 am-1 am	20	6 am-1 am	19	5%	Minor
Richmond	12	5 am-1 am	20	5 am-12 am	19	5%	5 am-1 am	20	5 am-12 am	19	5%	Minor
Richmond	13	5 am-12:30 am	19.5	6 am-11:30 pm	17.5	10%	5 am-12:30 am	19.5	6 am-11:30 pm	17.5	10%	Minor
Richmond	14	5 am-12 am	19	6 am-12 am	18	5%	5 am-12 am	19	6 am-12 am	18	5%	Minor
Richmond	77	5 am-7 pm	14	6 am-7 pm	13	7%	5 am-7 pm	14	6 am-7 pm	13	7%	Minor

Table 83: Change in service span (December 2021 Schedule Changes)

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## 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 55.7% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, minorities must receive at least 35.7% of the benefit.
- If service decreases, minorities cannot bear more than 75.7% 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 route 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 disparate impact for each route is below 20%.

Route	Minority Population	Minority Burden/ Benefit of Change	Disparate Impact	Disparate Impact Threshold
System	55.7	41.2	14.5	20

**Table 84:** Disparate impact analysis results (December 2021 Schedule Changes)

## 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 31% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, low-income populations must receive at least 11% of the benefit.
- If service decreases, low-income populations cannot bear more than 51% 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 group 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 disparate impact for each route is below 20%.

Route	Low-income Population	Low-income Burden/Benefit of Change	Disproportionate Burden	Disproportionate Burden Threshold
System	31	33.7	2.8	20

**Table 84:** Disparate impact analysis results (December 2021 Schedule Changes)

**CONCLUSION**

The proposed changes to decrease the number of fixed-route early morning and late evening trips and have the service supplemented by the pilot on-demand service for September 2021 was identified as major changes, triggering one of the six route 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.

# Major Change & Service Equity Analysis

## May 2022 Schedule Changes

Route Level Metric	Level of Change Required to be Classified as a Major Change	Example	May 2022 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.	<p>Route 19 – Above 25% Change</p> <p>Route 20 – Above 25% Change</p> <p>Route 76 – Above 25% Change</p> <p>Route 77 – Above 25% Change</p> <p>Route 78 – Above 25% Change</p> <p>Route Pulse – Above 25% Change</p> <p>Route 12 – Below 25% Change</p> <p>Route 13 – Below 25% Change</p>
b. Change in service span	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.	Route 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).	N/A
d. Change in total miles serviced by the route	25% change in total miles on a route's path	Extending or shortening a line.	N/A

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).	N/A

**Table 85:** Major Change Analysis - Route Level Metrics

System Level Metric	Level of Change Required to be Classified as a Major Change	Example	May 2022 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.	N/A

**Table 86:** Major Change Analysis - System Level Metrics

## A. CHANGE IN NUMBER OF TRIPS (ROUTE LEVEL) – MAJOR CHANGE

Routes 19, 20, 76, 77, 78, 88 and the Pulse are above the threshold of 25%.

Change in Number of Trips											
Jurisdiction	Route	Weekday			Saturday			Sunday			Change Category
		Current	New	% Change	Current	New	% Change	Current	New	% Change	
Richmond/ Henrico	Pulse	148	188	27%	148	106	-28%	148	106	-28%	Major
Richmond	12	76	75	-1%	71	72	1%				Minor
Richmond	13	62	70	13%	62	70	13%	62	70	13%	Minor
Henrico	19	70	69	-1%				37	50	35%	Major
Richmond	20	52	53	2%	65	49	-25%	46	33	-28%	Major
Richmond	76	28	36	29%							Major
Richmond	77	27	34	26%							Major
Richmond	78	36	46	28%							Major
Richmond	88	31	19	-39%							Major

Table 87: Change in number of weekly trips (May 2022 Schedule Changes)

## B. CHANGE IN SERVICE SPAN – MINOR CHANGE

The Pulse is above the 25% threshold.

Change in Service Span							
Jurisdiction	Route	Current	Hours	New	Hours	% Change	Change Category

Table 88: Change in service span (May 2022 Schedule Changes)

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## DISPARATE IMPACT ANALYSIS

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

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2. The percentage of minority populations in GRTC’s service area.

Given that minorities are approximately 55.7% of the population within one-quarter of a mile of the GRTC service area. This means that:

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- If service decreases, minorities cannot bear more than 75.7% of the burden.

## METHODOLOGY

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## RESULTS

The disparate impact for each route is above 20%.

Route	Minority Population	Minority Burden/ Benefit of Change	Disparate Impact	Disparate Impact Threshold
System	55.7	19.5	36.2	20

**Table 89:** Disparate impact analysis results (May 2022 Schedule Changes)

## DISPROPORTIONATE BURDEN ANALYSIS

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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 31% of the population within one-quarter of a mile of the GRTC service area. This means that:

- If service increases, low-income populations must receive at least 11% of the benefit.
- If service decreases, low-income populations cannot bear more than 51% 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 disparate impact for each route is below 20%.

Route	Low-income Population	Low-income Burden/Benefit of Change	Disproportionate Burden	Disproportionate Burden Threshold
System	31	26.3	4.6	20

**Table 89:** Disproportionate burden analysis results (May 2022 Schedule Changes)

## CONCLUSION

The proposed services changes are the reduction in weekday trips on Route 88 in correlation to ridership, adjusted weekend trips to allow for an increase on weekday trips on Route 20 and Pulse, increased trips on routes 12, 13, 19, 76, 77, and 78 for May 2022 were identified as major changes, triggering one of the six route 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 temporary reduction in service is necessary until the operator shortage is resolved and normal service can resume.