Title VI Service Equity Analysis: Commuter Bus Service, COVID-19 Service Changes

Date: May 2022

Prepared with assistance from:
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Introduction

This service equity analysis was conducted in accordance with FTA Circular 4702.1B, *Title VI Requirements and Guidelines for Federal Transit Administration Recipients* (hereafter FTA C 4702.1B or “the Circular”). The Circular requires, under Title VI of the Civil Rights Act of 1964, that the Maryland Department of Transportation’s Maryland Transit Administration (MDOT MTA) undertake an evaluation of any proposed service change to determine whether it has a discriminatory impact on Title VI protected minority populations or on low-income populations. All service changes are evaluated as to whether they meet or exceed thresholds outlined in the operator’s Major Service Change policy. Service changes qualifying as Major Service Changes are subsequently evaluated for potential discriminatory impacts. Any transit operator with at least 50 vehicles in peak service and located in an urbanized area with a population over 200,000 is required to conduct a service equity analysis on Major Service Changes to this end.

An analysis must be completed and then reviewed and approved by MDOT MTA’s Administrator in accordance with MDOT MTA’s Title VI Program before the change is implemented. Final approved analyses are submitted to the FTA as a part of MDOT MTA’s Title VI Program update submission. In summary, the Circular states that the analysis should include:

- A statement of the agency’s “Disparate Impact” and “Disproportionate Burden” policies and how the public was engaged in developing the policies.
- A clear explanation of how the proposed service changes meet or exceed the operator’s Major Service Change policy. Changes that exceed the Major Service Change policy must be analyzed for Disparate Impact and Disproportionate Burden.
- A description of the public engagement process for setting the Major Service Change policy.
- Documentation of MDOT MTA’s Administrator’s review and approval of the analysis, demonstrating the Administrator’s consideration, awareness, and approval of the Major Service Change policy (Figure 1).
- An analysis that takes into account any adverse effects related to a Major Service Change. Demonstration that the operator has analyzed service between the existing and proposed service and has considered the degree of adverse effects when planning service changes.
- Description of the data and methodology used in the Service Equity Analysis.
- Overlay maps and tables showing how the proposed service changes would impact minority and low-income populations.
- If a potential Disparate Impact is found on the basis of race, color, or national origin, the operator must only proceed with the project if a clearly demonstrated substantial legitimate justification for the proposed service change is proposed, and there are no alternative proposals – explored by the agency to avoid, minimize, or mitigate potentially discriminatory impacts – that would have a less Disparate Impact on the basis of race, color, or national origin.
Figure 1 | Title VI Policies Approval Signature Page

Maryland Department of Transportation
Maryland Transit Administration

APPROVAL SIGNATURE PAGE

I hereby acknowledge the receipt of the Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) Title VI Major Service Change Policy Revision, October 2021. I have reviewed and approve this document. I am committed to ensuring that no person is excluded from participation in, or denied the benefits of transit services on the basis of race, color, or national origin, as protected by Title VI according to 49 CFR 21B Title VI requirements and guidelines for Federal Transit Administration recipients.

Holly Arnold
MDOT MTA Administrator

5/31/2022
Date
MDOT MTA Title VI Policies

As part of its overall Program to comply with Title VI, MDOT MTA conducts a Service Equity Analysis whenever the agency proposes a Major Service Change. Equity analyses are conducted regardless of whether proposed changes would consist of service increases or service reductions.

While the definition of “Major Service Change” varies slightly by MDOT MTA mode, the Disparate Impact/Disproportionate Burden (DI/DB) thresholds are the same for each mode. However, the thresholds are applied independently for each market when conducting equity analyses. In other words, the percentage of minorities affected by a change in a particular market are compared to the overall percentage of minorities in that market, rather than to the Maryland minority average for the entire statewide service area. For this analysis, the market is MDOT MTA’s Commuter Bus service area. MDOT MTA’s 2020-2023 Title VI Program identifies the Commuter Bus service area as all stops where morning boardings are permitted, and where it is possible for passengers to board the bus.

Major Service Change

As described in MDOT MTA’s 2020-2023 Title VI Program, MDOT MTA routinely conducts a Title VI analysis when Major Service Changes are proposed. By Maryland State law (COMAR Transportation Article §7-506), MDOT MTA is required to conduct public hearings prior to the implementation of any of the following service changes:

- Establish or abandon any bus or rail route listed on a published timetable.
- Change bus or rail route alignment listed on a published timetable, unless the change is needed because of temporary construction or changes in the road network.
- Reduce the frequency, number of days, or days of service for a commuter bus or commuter rail route without substituting a comparable level of service, unless the reduction is temporary or a result of:
  - A natural disaster.
  - Weather or other emergency conditions.
  - Schedule adjustments required by a third party that operates service on the same right-of-way.
  - Other circumstance beyond the control of the Administration.
- Establish or abandon a rail transit station.

The Code of Maryland does contain one exception: “The Administration may add service on a new alignment branching off of an existing route without holding a public hearing, if the addition of the new alignment does not alter the existing route.”

Because existing statutes already regulate when MDOT MTA must conduct public hearings prior to service change implementation, the Title VI Major Service Change definition was established to incorporate these existing elements, but to also include other elements that are in the spirit of the protections afforded under Title VI.
The following service changes are exempt from the Major Service Change policy:

- Seasonal service changes.
- Creation, modification, or discontinuation of a demonstration route within the first 12 months of operation (however, Code of Maryland requirements will still apply).
- Diversions, frequency changes, or span modifications due to local events, construction, weather, and emergencies.
- Outages due to planned and/or unplanned maintenance, inspections, or repairs.
- Emergency service changes, including changes in routes or service frequencies, which may be necessitated due to a disaster, which severely impairs public health or safety, changes in access to public streets, or the ability of MDOT MTA equipment to travel on public streets. Emergency service changes may be implemented immediately without a public hearing provided that a finding identifying the circumstances under which the change is being taken is made by the Administrator and a subsequent public hearing is held and equity analysis is conducted, if the temporary change is to remain in effect longer than 12 months.

Title VI service equity analyses are only required if Major Service Changes are proposed. MDOT MTA's Title VI Major Service Change policies are defined by fixed route mode. For Commuter Bus service, the definition of a Major Service Change is as follows:

- Alteration of a route’s revenue miles or revenue hours on a given service day by twenty-five percent (25.00%) or more, including establishment or abandonment of a route.
- Change to the span of service on a route by ninety (90) minutes or more on a given service day.
- Elimination of service to a stop, unless there is another stop within three miles of its location.
- Establishment of a new stop.
- Cumulative alteration of at least fifteen percent (15.00%) of total Commuter Bus system revenue miles or revenue hours in a given service change.

Disparate Impact and Disproportionate Burden
MDOT MTA’s policies for Disparate Impact and Disproportionate Burden adhere to FTA standards. When assessing a proposed service change for a potential Disparate Impact or Disproportionate Burden, changes to routes or fares are assessed cumulatively.

Disparate Impact (DI) refers to a facially neutral policy or practice that disproportionately affects members of a group identified by race, color, or national origin. A Disparate Impact occurs when the difference between minority riders and non-minority riders affected by a proposed fare or service change is ten percent (10.00%) or greater.

Disproportionate Burden (DB) refers to a neutral policy or practice that disproportionately affects low-income populations more than non-low-income populations. A Disproportionate Burden occurs when the difference between low-income riders and non-low-income riders affected by a proposed fare or service change is ten percent (10.00%) or greater.
Major Service Change, Disparate Impact, and Disproportionate Burden Policy Outreach

MDOT MTA conducted an extensive public engagement effort to solicit feedback on its policies for evaluation of service and fare changes. Each meeting followed the same format: MDOT MTA provided a presentation discussing an overview of Title VI and evaluation of service and fare changes; a comparison of previous versus proposed Major Service Change policies for each mode; a proposal for Disparate Impact and Disproportionate Burden thresholds, including examples of how each are employed in Equity Analyses; and time for questions, answers, and general feedback. Outreach efforts are summarized below.

Community Based Organizations

MDOT MTA, staff and consultants, held both in-person and virtual (webinar) focus groups with representatives from and constituents of community-based organizations in the agency’s service area. To encourage attendance, MDOT MTA sent an email blast to hundreds of representatives from organizations in the Baltimore region (for the in-person presentation) and from organizations outside the Baltimore region (for the virtual presentation).

In-Person Focus Group

The in-person community-based organization focus group consisted of a breakfast meeting held on October 16, 2019. Representatives from the following organizations were in attendance:

- People Encouraging People
- The League for People with Disabilities
- Laurel Armory Anderson & Murphy Community Center
- Governor’s Office of Community Initiatives (GOCI)
- Bon Secours Hospital
- St. Peter's Adult Learning Center.

Webinar Focus Group

The virtual webinar community-based organization focus group consisted of a webinar presentation held on October 16, 2019. Representatives from the following organizations were in attendance:

- The ARC Central Chesapeake Region
- Accessible Resources for Independence
- The Arc of Frederick County
- The Arc of Prince George’s County
- Athelas Institute
- Howard County Office of Workforce Development
- Anne Arundel Workforce Development Corporation.

MARC Riders Advisory Council

MDOT MTA presented proposed policies to MDOT MTA MARC Riders Advisory Council at their regular meeting on November 14, 2019.
Citizens Advisory Committee
MDOT MTA presented proposed policies to MDOT MTA Citizens Advisory Committee at their regular meeting on November 19, 2019.

Citizens Advisory Committee on Accessible Transportation
MDOT MTA presented proposed policies to MDOT MTA Citizens Advisory Committee on Accessible Transportation at their regular meeting on November 21, 2019.

Online Survey
To obtain final feedback on proposed policies, MDOT MTA conducted an online survey from November 21, 2019 through December 21, 2019. Supplemented by reference material (a PDF) outlining proposed Major Service Change, Disparate Impact, and Disproportionate Burden policies, the survey asked participants to provide the following:

- Insight on whether theoretical service changes should qualify as “major.”
- Insight on whether proposed Disparate Impact and Disproportionate Burden policies were appropriate.
- Any additional feedback.

The survey was sent by email to various community-based organizations and promoted through MDOT MTA’s website and social media. The survey received a total of 14 responses.

Fall 2021 Outreach on Revised Major Service Change Policy
During Fall 2021, MDOT MTA elected to revise its Major Service Change policy to account for systemwide changes, cumulative changes over one year, and changes to bus stops that could trigger a Major Service Change. MDOT MTA presented the proposed policy changes to is citizen advisory committees for their feedback and conducted three virtual public meetings at different times of the day to ensure accessibility for the public. The new Major Service Change policy was approved in October 2021.

The following public outreach efforts occurred for this update to MTA’s Major Service Change Policy, prior to Administrator review, consideration, and approval of a finalized new policy:

- July 8, 2021 - MARC Riders’ Advisory Council Meeting
- July 13, 2021 – Title VI Subcommittee Meeting
  - Joint Subcommittee of MTA’s Citizen’s Advisory Committee and MTA’s Citizen’s Advisory Committee for Accessible Transportation
- July 14, 2021 – Citizens Advisory Committee Meeting
- July 15, 2021 – Citizens Advisory Committee for Accessible Transportation Meeting
- September 20, 2021 – Virtual Public Meeting
- September 21, 2021 – Virtual Public Meeting
- September 22, 2021 – Virtual Public Meeting.
Service Equity Analysis

Data Sources
For this analysis, the primary data source was the U.S. Census Bureau American Community Survey (ACS) five-year estimates from 2015 to 2019, measured at the Census Block Group level. Geographic data provided by MDOT MTA was used to determine the service areas for the current Commuter Bus service area.

For the Disparate Impact (minority) analysis, the ACS table utilized was Table B03002, “Hispanic or Latino Origin by Race.” To determine the percentage of the population that is minority for the service area, total population estimates and minority population estimates (total population minus non-Hispanic White population) for block groups were used along with bus stop point data within R, a software environment for statistical computing.

Using R, a three-quarter mile buffer was placed around each Commuter Bus stop, where morning boardings are permitted. Census Block Groups contained either partially or wholly within the service area were used when calculating Commuter Bus service area.

For the Disproportionate Burden (low-income) analysis, the ACS table utilized was Table B19001, “Household Income in the Past 12 Months (In 2019 Inflation-Adjusted Dollars).” To determine the percent of low-income households for the Commuter Bus service area, the total number of households and the total number of households reporting incomes of $44,999 or less (aggregate of all income categories under $45,000)\(^1\) for block groups were used along with bus stop point data within R, a software environment for statistical computing.

Using R, a three-quarter mile buffer was placed around each Commuter Bus stop, where morning boardings are permitted. Census Block Groups contained either partially or wholly within the service area were used when calculating Commuter Bus service area.

Methodology
All Commuter Bus service changes were evaluated to ascertain which changes met the criteria of MDOT MTA’s Major Service Change definition. MDOT MTA’s Major Service Change Policy was initially developed

\(^1\) During development of the 2020-2023 Title VI Program update, thresholds for “low-income” were set separately for each MDOT MTA mode service area using the U.S. Housing and Urban Development (HUD) FY2019 median family income limits summary as well as American Community Survey 2013-2017 Five-Year estimates. First, the average household size within the service area of each mode was determined and rounded to the nearest whole number. Second, for each mode, the average rounded household size was referenced against area median family income for the “very low (50 percent)” income limits within the Baltimore-Columbia-Towson, MD Metropolitan Statistical area. Third, to match with Census and survey income limit divisions, this figure was rounded to the nearest income division (break point) identified in U.S. Census Table B19001, “Household Income in the Past 12 Months.” For the Commuter Bus service area, the low-income threshold is $44,999.
for the agency’s 2020-2023 Title VI Program and revised in October 2021. Currently, the policy defines Commuter Bus Major Service Changes as follows:

- Alteration of a route’s revenue miles or revenue hours on a given service day by twenty-five percent (25.00%) or more, including establishment or abandonment of a route.
- Change to the span of service on a route by ninety (90) minutes or more on a given service day.
- Elimination of service to a stop, unless there is another stop within three miles of its location.
- Establishment of a new stop.
- Cumulative alteration of at least fifteen percent (15.00%) of total Commuter Bus system revenue miles or revenue hours in a given service change.

MDOT MTA analyzes the potential for a Disparate Impact or Disproportionate Burden through Service Equity Analyses based on cumulative proposed service changes. This service equity analysis first reviewed the proposed service increases and service reductions for each effect, and for each affected Census Block Group. Sums of impacted populations and households were also analyzed (by metric and time period, for all affected Census Block Groups) to determine if proposed Major Service Changes would result in a potential Disparate Impact or Disproportionate Burden.

This service equity analysis employed the following seven-step methodology to assess whether the changes in Commuter Bus service as result of the ongoing COVID-19 pandemic and bus operator shortages result in a potential Disparate Impact on minority populations or Disproportionate Burden on low-income households:

**Step 1: Identify the routes that meet the service equity analysis threshold.** The number of months each route operated at reduced service levels (S Schedule) between November 2020 and March 2022 was calculated. If the route operated at reduced service levels more than 12 months, the route advanced to MDOT MTA Major Service Change threshold test.

**Step 2: Identify the routes that meet MDOT MTA’s Major Service Change threshold.** For each route that operated more than 12 months at reduced service levels, the variance in service levels between regular service levels and the S Schedule was calculated as:

- **Revenue miles** – if the variance was 25.00% or greater, the route advanced to Step 5 and Step 6.
- **Revenue hours** – if the variance was 25.00% or greater, the route advanced to Step 5 and Step 6.
- **Span of service** – if the variance was 90 minutes or greater, the route advanced to Step 5 and Step 6.

**Step 3: Identify the Commuter Bus service area demographics.** For this analysis, the Commuter Bus service area was calculated as all Census Block Groups that intersect wholly or partially within three miles of all stops with morning boardings. Using the intersect tool in GIS, the total population, total households, minority populations, and low-income households were extracted.

- **Minority population percentage** was calculated by dividing the total number of minority residents by the total population.
- **Low-income household percentage** was calculated by dividing by the total number of low-income households by the total households.

**Step 4: Determine the Disparate Impact and Disproportionate Burden thresholds.**

- **Disparate Impact Thresholds.** Apply the DI threshold to the minority population by adding 10 percentage points (service reduction) to the minority population service area average and subtracting 10 percentage points (service increase) from the minority service area average.

- **Disproportionate Burden Thresholds.** Apply the DB threshold to the minority population by adding 10 percentage points (service reduction) to the minority population service area average and subtracting 10 percentage points (service increase) from the minority service area average.

**Step 5. Analyze whether the change in service levels resulted in a potential Disparate Impact on Minority Populations.** For each Commuter Bus route identified in Step 2, it was determined if a potential DI occurred based on a service reduction as follows:

- Calculate the total population, total minority population, and percent of minority populations for all Census Block Groups that intersect a three-mile radius of the bus stops.

- Apply the DI threshold identified in Step 4.

- If the percent of minority populations that intersect the three-mile radius of all bus stops was at or above the combined total of the minority Commuter bus service area average plus 10.00%, thereby exceeding the DI threshold, then the service reduction results in a potential DI on minority populations.

**Step 6. Analyze whether the change in service levels resulted in a potential Disproportionate Burden on Low-Income Households.** For each Commuter Bus route identified in Step 2, it was determined if a potential DB occurred based on a service reduction as follows:

- Calculate the total households, total low-income households, and percent of low-income households for all Census Block Groups that intersect a three-mile radius of the bus stops.

- Apply the DB threshold identified in Step 4.

- If the percent of minority populations that intersect the three-mile radius of all bus stops was at or above the combined total of the minority Commuter bus service area average plus 10.00%, thereby exceeding the DB threshold, then the service reduction results in a DB on low-income households.

**Step 7: Propose alternatives and mitigation.** If a potential Disparate Impact is found on minority populations (Step 5) for any route, MDOT MTA shall identify and examine alternatives, develop a substantial legitimate justification, and pursue the least discriminatory alternative. If a Disproportionate Burden is found on low-income households (Step 6) for any route, MDOT MTA shall identify and examine alternatives, and propose alternatives that avoids, minimizes, and mitigates burdens.
COVID-19 RELATED COMMUTER BUS SERVICE CHANGES

MDOT MTA operates 36 Commuter Bus routes from ten Maryland suburban counties (Anne Arundel, Baltimore, Charles, Calvert, Frederick, Howard, Montgomery, Queen Anne’s, St. Mary’s, and Washington) bound for the Baltimore and Washington, DC central business districts, in addition to various Central Maryland destinations. Except for one route, service operates on weekdays, during peak period travel times, and to peak travel destinations only.

The unprecedented Coronavirus Disease 2019 (COVID-19) pandemic resulted in regionwide stay-at-home orders and strict social distancing guidelines, causing MDOT MTA to temporarily reduce Commuter Bus service levels to meet low customer demands. The following seven bullet points document the Commuter Bus service levels between the onset of the COVID-19 pandemic and when pandemic related restrictions were relaxed.

- **March 17, 2020:** In response to stay-at-home orders, strict social distancing guidelines, and nominal ridership, MDOT MTA reduced Commuter Bus service on all 36 routes to the S Schedule.
- **July 1, 2020:** The state of Maryland entered Stage 2 of the Maryland Strong: Roadmap to Recovery Plan. In anticipation of an increase in Commuter Bus customer demand, MDOT MTA restored all Commuter Bus routes to regular service levels.
- **November 1, 2020:** Due to lower than estimated ridership, four months after restoring service to regular levels, MDOT MTA reimposed the S Schedule on 35 routes. (Route 320 continued to operate at regular service levels).
- **August 30, 2021:** Due to increasing passenger demand, with the exception of five routes, all Commuter Bus routes returned to regular service levels. These five routes remained on S Schedule due to a bus operator shortage, which is occurring nationwide and impacting MDOT MTA. The determination for these five routes to remain on the S Schedule was due to contractors informing MDOT MTA staff that they did not have enough operators available to operate full service on all their routes. Routes were selected to remain on S Schedule based on ridership.
- **September 20, 2021:** In response to the COVID-19 pandemic induced bus operator shortage, three additional routes service was reduced back to the S Schedule. This was due to the fact that the MDOT MTA contractor operating the service missed 98 trips within a five-day span.
- **October 1, 2021:** An additional two routes were reduced to the S Schedule due to the continuing bus operator shortage.
- **December 1, 2021:** An additional two routes were reduced to the S Schedule due to the continuing bus operator shortage.

MDOT MTA anticipated the impacts caused by COVID-19 to be temporary. However, during the past two years the agency has made a series of changes in service levels to Commuter Bus routes. As described in the FTA C 4702.1B, if a temporary change in service last 12 months or more, MDOT MTA is required to conduct a service equity analysis on the impacted route(s) as the FTA considers the change permanent. The FTA released the Frequently Asked Questions (FAQ) from FTA Grantees Regarding Coronavirus Disease 2019 (COVID-19) document providing guidance on service changes related to COVID-19 (updated
March 2, 2022). The FAQ reiterated that if a transit agency chose to make permanent any changes made during the public health emergency, or if changes last longer than 12 months, then the transit agency must perform a service equity analysis. FTA does not require a transit agency to document this process, get board approval prior to implementing changes, or share documentation on the changes with FTA, but FTA recommends that transit agencies document the rationale for specific service reductions, as well as steps taken to ensure equitable reductions in service, in the event someone files a complaint.

MDOT MTA identified November 1, 2020, as the baseline date and March 1, 2022, as the end date to determine which Commuter Bus routes have operated at reduced service levels (S Schedule) for 12 months or more. As shown in Table 1, there are 12 Commuter Bus routes that have operated on the S Schedule 12 months or more during the 17-month time period, triggering the requirement of a service equity analysis. Following the table is a description of the 12 routes change in service levels for the time period identified.

Table 1 | Commuter Bus Service Levels, March 2020 – March 2022

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**Key:**
- Regular Service Levels
- Reduced Service Levels (S Schedule)
Route 220: Annapolis – Washington, D.C.
The route provides weekday service between Anne Arundel County (Annapolis) and the Washington, D.C. central business district. Service operates during the morning between 5:00am-9:40am and in the evenings between 12:15pm-8:23pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. At the end of August 2021, the route was again restored to regular service. Three weeks later (September 20, 2021), due to bus operator shortages the route was reduced back to the S Schedule and continues to operate at reduced service levels. Between November 2020 and March 2022, the route has operated at reduced service levels for 16.25 months, triggering a service equity analysis as required by FTA C 4702.1B.

Route 230: Annapolis – Washington, D.C.
The route provides weekday service between Anne Arundel County (Annapolis) and the Washington, D.C. central business district. Service operates during the morning between 5:00am-7:30am and in the evenings between 12:05pm-7:49pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. At the end of August 2021, the route was again restored to regular service. Three weeks later (September 20, 2021), due to bus operator shortages the route was reduced back to the S Schedule and continues to operate at reduced service levels today. Between November 2020 and March 2022, the route has operated at reduced service levels for 16.25 months, triggering a service equity analysis as required by FTA C 4702.1B.

Route 240: Kent Island – Washington, D.C.
The route provides weekday service between Queen Anne’s County and the Washington, D.C. central business district. Service operates in the morning between 5:00am-9:00am and in the evenings between 3:20pm-7:33pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. At the end of August 2021, the route was again restored to regular service. On October 1, 2021, due to continuing bus operator shortages the route was reduced back to the S Schedule and continues to operate at reduced service levels today. Between November 2020 and March 2022, the route has operated at reduced service levels for 16 months, triggering a service equity analysis as required by FTA C 4702.1B.

Route 325: Columbia – Silver Spring – Washington, D.C.
The route provides weekday service between Howard County and the Washington, D.C. central business district via Montgomery County. Service operates in the morning between 5:35am-9:39am and in the evenings between 3:15pm-6:59pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low
customer demand. Between November 2020 and March 2022, the route has operated at reduced service levels for 17 months, triggering a service equity analysis as required by FTA C 4702.1B.

**Route 335: Clarksville – Columbia – Washington, D.C.**
The route provides weekday service between Howard County and the Washington, D.C. central business district. Service operates during the morning between 5:08am-8:52am and in the evenings between 2:45pm-7:00pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. At the end of August 2020, the route was again restored to regular service. Three weeks later (September 20, 2020), due to bus operator shortages the route was reduced back to the S Schedule and continues to operate at reduced service levels today. Between November 2020 and March 2022, the route has operated at reduced service levels for 16.25 months, triggering a service equity analysis as required by FTA C 4702.1B.

**Route 630: La Plata/Waldorf – Washington, D.C.**
The route provides weekday service between Charles County and the Washington, D.C. central business district. Service operates in the morning between 4:49am-8:37am and in the evenings between 3:00pm-6:58pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. Between November 2020 and March 2022, the route has operated at reduced service levels for 17 months, triggering a service equity analysis as required by FTA C 4702.1B.

**Route 640: Waldorf and Accokeek – Washington, D.C.**
The route provides weekday service between Charles County and Prince George’s County and the Washington, D.C. central business district. Service operates in the morning between 4:40am-9:39am and in the evenings between 3:10pm-7:36pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. Between November 2020 and March 2022, the route has operated at reduced service levels for 17 months, triggering a service equity analysis as required by FTA C 4702.1B.

**Route 705: Charlotte Hall/Waldorf – Washington, D.C.**
The route provides weekday service between St. Mary’s County and the Washington, D.C. central business district. Service operates in the morning between 4:15am-9:19am and in the evenings between 3:10pm-7:36pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. At the end of August 2020, the route was again restored to regular service. On December 1, 2021, due to continuing bus operator shortages the route was reduced back to the S Schedule and continues to operate at reduced...
service levels. Between November 2020 and March 2022, the route has operated at reduced service levels for 14 months, triggering a service equity analysis as required by FTA C 4702.1B.

**Route 725: California/Charlotte Hall – Washington, D.C.**
The route provides weekday service between St. Mary’s County and the Washington, D.C. central business district. Service operates during the morning between 4:00am-9:10am and in the evenings between 2:35pm-7:47pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. At the end of August 2020, the route was again restored to regular service. On October 1, 2021, due to continuing bus operator shortages the route was reduced back to the S Schedule and continues to operate at reduced service levels today. Between November 2020 and March 2022, the route has operated at reduced service levels for 16 months, triggering a service equity analysis as required by FTA C 4702.1B.

**Route 735: Charlotte Hall/Waldorf – Washington, D.C.**
The route provides weekday service between St. Mary’s County and the Washington, D.C. central business district via Prince George’s County. Service operates during the morning between 4:20am-8:51am and in the evenings between 12:15pm-7:29pm. As documented Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. Between November 2020 and March 2022, the route has operated at reduced service levels for 17 months, triggering a service equity analysis as required by FTA C 4702.1B.

**Route 820: North Beach/PG Equestrian Center – Washington, D.C.**
The route provides weekday service between Calvert County and the Washington, D.C. central business district via Anne Arundel County. Service operates during the morning between 5:14am-10:57am and in the evenings between 12:15pm-7:22pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low customer demand. At the end of August 2020, the route was again restored to regular service. On December 1, 2021, due to continuing bus operator shortages the route was reduced back to the S Schedule and continues to operate at reduced service levels. Between November 2020 and March 2022, the route has operated at reduced service levels for 14 months, triggering a service equity analysis as required by FTA C 4702.1B.

**Route 850: Frederick/Dunkirk – Suitland/Washington, D.C.**
The route provides weekday service between Calvert County and the Washington, D.C. central business district via Anne Arundel County. Service operates during the morning between 4:30am-8:17am and in the evenings between 3:00pm-6:45pm. As documented in Error! Reference source not found., due to the COVID-19 pandemic, the route operated on the S Schedule between March 2020 and June 2020. In July 2020, service was restored to regular levels and returned to the S Schedule in November 2020 due to low
customer demand. Between November 2020 and March 2022, the route has operated at reduced service levels for 17 months, triggering a service equity analysis as required by FTA C 4702.1B.

MAJOR SERVICE CHANGE THRESHOLD

In accordance with the MTA Title VI Program, for each route, the variance between the March 2020 schedule and S Schedule was calculated for 1) alteration of a route’s revenue miles or revenue hours on a given service day by twenty-five percent (25.00%) or more, including establishment or abandonment of a route, 2) change to the span of service on a route by ninety (90) minutes or more on a given service day, and 3) cumulative alteration of at least fifteen percent (15.00%) of total Commuter Bus system revenue miles or revenue hours in a given service change. Table 2 compares and identifies variances for the March 2020 and March 2022 revenue miles, revenue hours, and span of service showing that all 12 routes meet the Major Service Change threshold requiring MDOT MTA to conduct a Service Equity Analysis to determine if the change in service results in a potential Disparate Impact on minority populations or a potential Disproportionate Burden on low-income households.

Table 2 | Major Service Change Test

<table>
<thead>
<tr>
<th>Route</th>
<th>Pre-COVID-19 (February 2020)</th>
<th>Current (February 2022)</th>
<th>Major Service Change Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weekday Revenue Miles</td>
<td>Weekday Revenue Hours</td>
<td>Weekday Service Span (Hours)</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------</td>
<td>------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>220</td>
<td>991.40</td>
<td>41.27</td>
<td>12:51</td>
</tr>
<tr>
<td>230</td>
<td>864.40</td>
<td>36.63</td>
<td>11:33</td>
</tr>
<tr>
<td>240</td>
<td>568.70</td>
<td>20.20</td>
<td>8:13</td>
</tr>
<tr>
<td>325</td>
<td>476.00</td>
<td>23.12</td>
<td>7:48</td>
</tr>
<tr>
<td>335</td>
<td>637.00</td>
<td>21.42</td>
<td>7:59</td>
</tr>
<tr>
<td>630</td>
<td>617.16</td>
<td>27.75</td>
<td>7:36</td>
</tr>
<tr>
<td>640</td>
<td>550.79</td>
<td>30.93</td>
<td>9:25</td>
</tr>
<tr>
<td>705</td>
<td>1,213.21</td>
<td>48.52</td>
<td>10:23</td>
</tr>
<tr>
<td>725</td>
<td>708.00</td>
<td>27.93</td>
<td>10:22</td>
</tr>
<tr>
<td>735</td>
<td>959.50</td>
<td>34.82</td>
<td>11:45</td>
</tr>
<tr>
<td>820</td>
<td>841.11</td>
<td>44.08</td>
<td>12:50</td>
</tr>
<tr>
<td>850</td>
<td>460.00</td>
<td>16.63</td>
<td>7:32</td>
</tr>
</tbody>
</table>

Note: Timepoints are when MDOT MTA change in service took effect.
SERVICE AREA DEMOGRAPHICS AND THRESHOLDS

Minority Populations and Disparate Impact Thresholds
In the Commuter Bus service area, there are 2.65 million people who live within three miles of MDOT MTA Commuter Bus morning bus stops. Minorities make up approximately fifty-three percent (53.72%) of the overall population within three miles of MDOT MTA Commuter Bus morning stops. After applying MDOT MTA Disparate Impact Policy, the threshold for a Disparate Impact is approximately sixty-three percent (63.72%) (approximately fifty-three percent (53.72%) system-wide, plus ten percent (10.00%)) for the service reductions.

Low-Income Households and Disproportionate Burden Thresholds
In the Commuter Bus service area, there are 978,631 households within three miles of MDOT MTA Commuter Bus morning bus stops. Low-income households make up approximately twenty-six percent (26.09%) of the total households within three miles of MDOT MTA Commuter Bus morning stops. After applying MDOT MTA’s Disproportionate Burden Policy, the threshold for a Disproportionate Burden is approximately thirty-six percent (36.09%) (approximately twenty-six percent (26.09%) plus ten percent (10.0%)) for service reductions.

MDOT MTA thresholds for Disparate Impact and Disproportionate Burden are summarized in Table 3. Service levels on all routes were reduced. Only the Service Reduction: Disparate Impact Threshold will be applied to the routes; there were no instances where the Service Increase: Disparate Impact Threshold was used.

Table 3 | Disparate Impact and Disproportionate Burden Thresholds

<table>
<thead>
<tr>
<th></th>
<th>Disparate Impact</th>
<th></th>
<th>Service Reduction: Disparate Impact Threshold</th>
<th>Service Increase: Disparate Impact Threshold (Not Used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>Minority Population</td>
<td>Percent of Minority Populations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,650,563</td>
<td>1,423,994</td>
<td>53.72%</td>
<td>63.72%</td>
<td>43.72%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>Service Reduction: Disproportionate Burden Threshold</th>
<th>Service Increase: Disproportionate Burden Threshold (Not Used)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Households</td>
<td>Low-income Households</td>
<td>Percent of Low-income Households</td>
<td></td>
<td></td>
</tr>
<tr>
<td>978,631</td>
<td>255,287</td>
<td>26.09%</td>
<td>36.09%</td>
<td>16.09%</td>
</tr>
</tbody>
</table>
DISPARATE IMPACT ANALYSIS

Table 4 presents the findings from the Disparate Impact Analysis for all 12 Commuter Bus routes. For each route, the total impacted population, the total impacted minority population, and the percent of impacted minority populations living in Census Block Groups that are within a three-mile radius of morning bus stops are first presented. Then MDOT MTA’s Disparate Impact Threshold is applied, and where the percent of minority populations is equal to or greater than the threshold approximately sixty-three percent (63.72%), there is a potential Disparate Impact finding. There are four impacted Commuter Bus routes in which the reduction in service levels ensuing from the ongoing COVID-19 pandemic and bus operator shortage have resulted in a potential Disparate Impact on minority populations that live in Census Block Groups that are within a three-mile radius of the morning bus stops. The impacted routes are as follows:

- Route 630: La Plata/Waldorf – Washington, D.C.
- Route 640: Waldorf and Accokeek – Washington, D.C.
- Route 735: Charlotte Hall/Waldorf – Washington, D.C.
- Route 850: Frederick/Dunkirk – Suitland/Washington, D.C.

The next section will discuss the mitigation efforts.

### Table 4 | Disparate Impact Analysis Findings

<table>
<thead>
<tr>
<th>Impacted Route</th>
<th>Total Population</th>
<th>Minority Population</th>
<th>Non-Minority</th>
<th>Minority Population Percent</th>
<th>MDOT MTA’s DI Threshold for Service Change Type</th>
<th>Meets MDOT MTA's DI Threshold? (Potential DI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>220</td>
<td>152,358</td>
<td>39,953</td>
<td>112,405</td>
<td>26.22%</td>
<td>Equal to or Greater than 63.72%</td>
<td>No</td>
</tr>
<tr>
<td>230</td>
<td>173,088</td>
<td>42,299</td>
<td>130,789</td>
<td>24.44%</td>
<td>Equal to or Greater than 63.72%</td>
<td>No</td>
</tr>
<tr>
<td>240</td>
<td>20,790</td>
<td>3,234</td>
<td>17,556</td>
<td>15.56%</td>
<td>Equal to or Greater than 63.72%</td>
<td>No</td>
</tr>
<tr>
<td>325</td>
<td>399,259</td>
<td>242,502</td>
<td>256,094</td>
<td>60.74%</td>
<td>Equal to or Greater than 63.72%</td>
<td>No</td>
</tr>
<tr>
<td>335</td>
<td>128,020</td>
<td>64,416</td>
<td>81,114</td>
<td>50.32%</td>
<td>Equal to or Greater than 63.72%</td>
<td>No</td>
</tr>
<tr>
<td>630</td>
<td>93,274</td>
<td>64,898</td>
<td>28,376</td>
<td>69.58%</td>
<td>Equal to or Greater than 63.72%</td>
<td>Yes</td>
</tr>
<tr>
<td>640</td>
<td>101,886</td>
<td>75,137</td>
<td>26,749</td>
<td>73.75%</td>
<td>Equal to or Greater than 63.72%</td>
<td>Yes</td>
</tr>
<tr>
<td>705</td>
<td>78,828</td>
<td>47,705</td>
<td>31,123</td>
<td>60.52%</td>
<td>Equal to or Greater than 63.72%</td>
<td>No</td>
</tr>
<tr>
<td>725</td>
<td>41,071</td>
<td>7,782</td>
<td>33,289</td>
<td>18.95%</td>
<td>Equal to or Greater than 63.72%</td>
<td>No</td>
</tr>
<tr>
<td>735</td>
<td>232,382</td>
<td>199,720</td>
<td>32,662</td>
<td>85.94%</td>
<td>Equal to or Greater than 63.72%</td>
<td>Yes</td>
</tr>
</tbody>
</table>
DISPROPORTIONATE BURDEN ANALYSIS

Table 5 presents the findings from the Disproportionate Burden Analysis for all 12 Commuter Bus routes. For each route, the total impacted households, the total impacted low-income households, and the percent of impacted low-income households living in Census Block Groups that are within a three-mile radius of morning bus stops are first presented. Then MDOT MTA Disproportionate Burden Threshold is applied, and where the percent of low-income households is equal to or greater than the threshold approximately twenty-six percent (26.09%), there is a potential Disproportionate Burden finding.

There are zero impacted Commuter Bus routes in which the reduction in service levels as a result of the ongoing COVID-19 pandemic and bus operator shortage have resulted in a potential Disproportionate Burden on low-income households that live in Census Blocks within a three-mile radius of the morning bus stops.

Table 5 | Disproportionate Burden Analysis Findings
### Finding of Potential Disparate Impact

This service equity analysis found that based on the reduction in service levels as a result of the ongoing COVID-19 pandemic and bus operator shortage, there is a potential Disparate Impact finding for Commuter Bus Routes 630, 640, 735, and 850, where the change in revenue hours and miles exceeds a 25.00% reduction, and the change in span exceeds 90 minutes.

If a potential Disparate Impact is found, FTA C 4702.1B (Chap. IV-16) requires public transit operators to do the following if they determine that a service change will have a disparate impact:

"...the transit provider shall analyze the alternatives ... to determine whether alternatives exist that would serve the same legitimate objectives but with less of a disparate effect on the basis of race, color, or national origin. The existence of such an alternative method of accomplishing the transit provider’s substantial and legitimate interests demonstrates that the disparate effects can be avoided by adoption of the alternative methods without harming such interests. In addition, if evidence undermines the legitimacy of the transit provider’s asserted justification - that is, that the justification is not supported by demonstrable evidence - the disparate effects will violate Title VI, as the lack of factual support will indicate that there is not a substantial legitimate justification for the disparate effects. At that point, the transit provider must revisit the service changes and make adjustments that will eliminate unnecessary disparate effects on populations defined by race, color, or national origin. Where disparate impacts are identified, the transit provider shall provide a meaningful opportunity for public comment on any proposed mitigation measures, including the less discriminatory alternatives that may be available."

Transit providers are required to re-analyze the proposed alternatives to the service changes that result in a disparate impact. If, upon re-analyzing the alternatives, no less discriminatory alternative is available then transit providers can implement service changes only if there is a “substantial legitimate justification”

<table>
<thead>
<tr>
<th>Impacted Route</th>
<th>Total Households</th>
<th>Low-Income Households</th>
<th>Non-Low-Income Households</th>
<th>Low-Income Household Percent</th>
<th>MDOT MTA’s DI Threshold for Service Change Type</th>
<th>Meets MDOT MTA’s DB Threshold? (Potential DB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>705</td>
<td>27,553</td>
<td>5,259</td>
<td>22,294</td>
<td>19.09%</td>
<td>Equal to or Greater than 36.09%</td>
<td>No</td>
</tr>
<tr>
<td>725</td>
<td>13,683</td>
<td>2,338</td>
<td>11,345</td>
<td>17.09%</td>
<td>Equal to or Greater than 36.09%</td>
<td>No</td>
</tr>
<tr>
<td>735</td>
<td>87,711</td>
<td>30,644</td>
<td>57,067</td>
<td>34.94%</td>
<td>Equal to or Greater than 36.09%</td>
<td>No</td>
</tr>
<tr>
<td>820</td>
<td>27,340</td>
<td>3,978</td>
<td>23,362</td>
<td>14.55%</td>
<td>Equal to or Greater than 36.09%</td>
<td>No</td>
</tr>
<tr>
<td>850</td>
<td>87,603</td>
<td>30,050</td>
<td>57,553</td>
<td>34.30%</td>
<td>Equal to or Greater than 36.09%</td>
<td>No</td>
</tr>
</tbody>
</table>
and they can “show that there are no alternatives that would have a less disparate impact on minority riders but would still accomplish the transit provider’s legitimate program goals.” Transit providers are required to implement the “least discriminatory alternative,” per FTA C 4702.1B.

The COVID-19 pandemic is a situation that caused unprecedented changes in service levels to the Commuter Bus routes. At the time this service equity analysis was prepared, MDOT MTA plans to restore all routes to regular service in June 2022. If this action is taken, no further mitigation efforts are warranted.

If the COVID-19 pandemic and bus operator shortages continue to require MDOT MTA to supply less service, alternatives to the service reductions on Commuter Bus routes 630, 640, 735, and 850 will be analyzed as required by FTA C 4702.1B.

**Service Change Map**

*Figure 2* overlays the four Commuter Bus routes (630, 640, 735, and 850) that have operated at reduced service levels for more than 12 months and there is a potential Disparate Impact on minority populations living within the morning bus stop catchment area. The figure also shows the Census Block groups where the percent of minority populations is at or greater than the Service Reduction: Disparate Impact Threshold approximately sixty-three percent (63.72%).
Conclusion

The COVID-19 pandemic caused MDOT MTA to temporarily reduce service levels on Commuter Bus routes. Between November 2020 and March 2022, there were 12 routes where the reduction in service lasted more than 12 months. As noted in FTA C 4702.1B, temporary modifications that last longer than 12 months are considered permanent and MDOT MTA was required to conduct a service equity analysis on the 12 routes to determine if the reduction in service levels could result in a potential Disparate Impact on minority populations and/or potential Disproportionate Burden on low-income households. Findings from the two analyses found a potential Disparate Impact on four routes (see Table 6) and no potential Disproportionate Burden on any routes.

Table 6 | Routes with a Disparate Impact on Minority Populations

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>630</td>
<td>93,274</td>
<td>64,898</td>
<td>28,376</td>
<td>69.58%</td>
<td>Equal to or Greater than</td>
<td>Yes</td>
</tr>
<tr>
<td>640</td>
<td>101,886</td>
<td>75,137</td>
<td>26,749</td>
<td>73.75%</td>
<td>Equal to or Greater than</td>
<td>Yes</td>
</tr>
<tr>
<td>735</td>
<td>232,382</td>
<td>199,720</td>
<td>32,662</td>
<td>85.94%</td>
<td>Equal to or Greater than</td>
<td>Yes</td>
</tr>
<tr>
<td>850</td>
<td>234,347</td>
<td>194,287</td>
<td>40,060</td>
<td>82.91%</td>
<td>Equal to or Greater than</td>
<td>Yes</td>
</tr>
</tbody>
</table>

At the time this service equity analysis was prepared, MDOT MTA was planning to restore all routes to regular service in June 2022. If this action is taken, no further mitigation efforts are warranted. If this does not happen, MDOT MTA will analyze the alternatives to determine whether alternatives exist that would serve the same legitimate objectives but with less of a disparate effect on the basis of race, color, or national origin for the four routes were service reductions have resulted in a potential Disparate Impact.