

# EQUITY ANALYSIS

September 2017

January 2018 Service Change

Equitable distribution of transit service is a core principle of the Regional Transportation District. This document details the measures taken to ensure major service changes do not result in a disparity in impacts absorbed by populations protected under Title VI of the Civil Rights Act of 1964 and Executive Order 12898 (Environmental Justice).



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# Equity Analysis

JANUARY 2018 SERVICE CHANGE

## INTRODUCTION

### Title VI and Environmental Justice

Equity is a core principle of the Regional Transportation District's (RTD) mission to provide mass transit service in the Denver Metro Area. An equitable mass transit system fairly distributes the benefits and adverse effects of transit service without regard for race, color, national origin, or low-income status. This principle is detailed and reinforced by Title VI of the Civil Rights Act of 1964 and Executive Order 12898 pertaining to environmental justice.

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs receiving federal financial assistance. Specifically, Title VI states, "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."

In 1994, President Clinton issued Executive Order 12898, which states that each federal agency "shall make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

The Federal Transit Administration's (FTA) Circular 4702.1B provides its recipients of FTA financial assistance with instructions for achieving compliance with Title VI and Environmental Justice. In this circular, the FTA requires RTD to evaluate, prior to implementation, any and all service changes that exceed the established major service change threshold, to determine whether those changes will have a disproportionately negative impact on minority or low-income populations.

## SERVICE CHANGE PHILOSOPHY

An equity analysis is triggered by proposed changes to the services provided by RTD. These changes include the addition of new routes, the elimination of existing routes, and changes to the alignment and trip frequency within existing routes. RTD has established policies to identify the service changes needed to meet the diverse travel needs of the citizens of the District and maintain a high-performance, sustainable transit system.

RTD services are divided into various service classes depending on service type, route alignment, and frequency. Each service class has its own service standards derived from the performance of all routes within each class. RTD continually adjusts services in response to changes in ridership and operational performance of the transit system as a whole. It is also the District's responsibility to identify services that are underperforming and recommend modifications, curtailment, or cancellation of service as warranted. In keeping with Colorado Revised Statutes, RTD utilizes official service standards to establish performance metrics used to identify underperforming services on a class-of-service basis. The District used these metrics to identify a series of service changes. Equity analyses examine the impact of the proposed changes on minority populations and low-income households at or below 150 percent of the Department of Health and Human Services Poverty Guidelines.

*...The general assembly further finds that the district should be organized efficiently, economically, and on a demand-responsive basis and that the district should consider least-cost alternatives in discharging its responsibilities. The general assembly further finds that the farebox recovery ratio of the district must be improved so that resources once allocated for mass transportation can be made available for other surface transportation needs.*

**Colorado Revised Statutes 32-9-119.7 Farebox Recovery Ratios -- Plans**

## ANALYSIS

The FTA requires RTD to establish policies that will guide the analysis to determine whether major service changes will have a disproportionately negative impact on minority or low-income populations. Accordingly, RTD established equity analysis policies and a service evaluation process to meet this requirement.

### Equity Analysis Policies

Per FTA Circular 4702.1B Chapter IV.7, RTD must establish a Major Service Change Policy, a Disparate Impact Policy, and a Disproportionate Burden Policy. Collectively, these policies provide foundational requirements for evaluating service change proposals for equity. These policies and their applicable thresholds are listed below:

1. **Major Service Change Policy:** A major service change is defined as a 25 percent addition or reduction in the service hours of any route that would remain in effect for twelve (12) or more months. All major service changes will be subject to an equity analysis that includes an analysis of adverse effects.
  - a. Adverse Effect is defined as a geographical or temporal reduction in service that includes, but is not limited to: eliminating a route, shortening a route by eliminating segments, rerouting an existing route, and increasing headways. RTD shall consider the degree of adverse effects and analyze those effects when planning major service changes.

2. **Disparate Impact Policy:** A major service change should not adversely affect a minority population 10 percent more than non-minority populations; this level of impact is considered a disparate impact.
3. **Disproportionate Burden Policy:** A major service change should not adversely affect a low-income population 10 percent more than non-low-income populations; this level of impact is considered a disproportionate burden. A low-income population is a group of households who are at or below 150 percent of the Department of Health and Human Services Poverty Guidelines.

If a proposed major service change results in a disparate impact or a disproportionate burden, RTD will consider modifying the proposed service change. RTD will then analyze the modification and make sure it removed the potential disparate impact or disproportionate burden. If a less discriminatory option cannot be identified and RTD can demonstrate a substantial legitimate justification for the proposed service change, the FTA may allow RTD to proceed with the proposed change.

## Service Change Overview

The equity analysis in this report examined the impact to minority and low-income populations caused by adding new routes, eliminating routes, rerouting and changes to trip frequency. The proposed trip changes are summarized below:

### Route 89 and Route 34

The route 89 is proposed to be discontinued and merged with the route 34 due to very low ridership. Currently ridership averages 115 boardings per day, 3 boardings/trip, and 9.7 boardings/in-service hour.

As a mitigation to the route 89 discontinuance, the Route 34 alignment will be extended from Central Park Station to the Eastbridge area in the Stapleton neighborhood. The new routing would extend the route from Central Park Station via Central Park Blvd and Martin Luther King Blvd as far east as Lola Street (one block east of Havana Street). This offsets the discontinuance of the Route 89 by maintaining service to the Mercy Housing Development (affordable housing) and access to grocers and the greater transit network. Peak hour service would be improved to 30-minute service, with midday service remaining hourly. The cumulative changes result in an estimated cost savings of \$312,000 annualized.

### C, D, and L Line Proposal

Previous efforts to improve on time performance on the D Line involved both signal and station changes along the Welton Street segment, resulting in a 3% improvement in on-time performance. However, the on-time performance standard for rail remains higher than that currently achieved by the D Line service. As a part of further efforts to improve the on-time performance of the Southwest and Central corridors and as a means of optimizing passenger capacity on both corridors, the following changes are proposed:

#### L LINE

It is proposed to separate the operation of the D Line into two lines. The D Line would operate as it does today between Mineral Station and downtown, with all trains turning at 19th Street. The Welton Street segment would operate as its own service, the L Line, as proposed in the Central Rail Extension Mobility Study. The L Line would operate between downtown and 30th & Downing Station, with all trains turning at 14th Street. This allows service to be better tailored to the two different segments, including vehicle assignments and will increase reliability of service along Welton Street, especially in the northbound direction.

#### C LINE

It is proposed to increase the weekday peak service frequency from 30 minutes to 15 minutes and also run later at night, similar to the E Line. This would serve the growing demand for service during special events in the Central Platte Valley Corridor. Vehicle consists will be a mix of 2- and 3-car trains, similar to the W Line. It is also proposed to operate the C Line on weekend and holiday evenings and late nights instead of the D Line; frequencies and span of service on the C Line would be similar to the existing D Line.

## **D LINE**

It is proposed to reduce weekday peak service frequency from an average of 10 minutes to 15 minutes and increase vehicle consist lengths from three cars to four cars. The lower frequency during the weekday peak periods would be replaced by the increase in C Line and new L Line service. It is proposed to reduce weekday midday service from 15 minutes to 30 minutes. Weekday midday service on the Southwest would have a combined 15-minute frequency between the C and D, similar to the E and F on the Southeast. It is also proposed to reduce evening and late-night service and cover this service with C Line and L Line trips. This proposal responds to ridership trends, especially on evenings and weekends, for service to the Union Station area, including airport connections, and helps with event service in the Central Platte Valley. This keeps service on the Southwest Corridor at the same frequencies as now at all times of the day. This proposal has savings in both operating hours and vehicle miles. Total annual car hours saved: 5,100 (approximately 1,800 annual operator hours); total annual car miles saved: 493,400.

Cost savings are anticipated to be an estimated \$333,000 annualized

## **Equity Analysis Methodology**

The basic framework for analyzing service changes for equity involved comparing affected populations. Identify the proposed changes by routes.

1. Collect and examine latest ridership survey data for statistical validity and ridership demographics at the route level.
2. If statistically valid ridership data is unavailable, obtain applicable demographic data for the study area and spatially allocate the data within a buffer around routes (0.25-mile buffer for bus, 0.50-mile buffer for rail) based on American Community Survey block group population data.
3. Examine the percentage change in service provided to minority and non-minority populations and to low-income and non-low-income households.

The analysis in this report used detailed demographic information from the RTD 2015 On-Board Transit Survey, US Census and/or American Community Survey data. The On-Board Transit Survey data was used to analyze the C, D, and L Line.

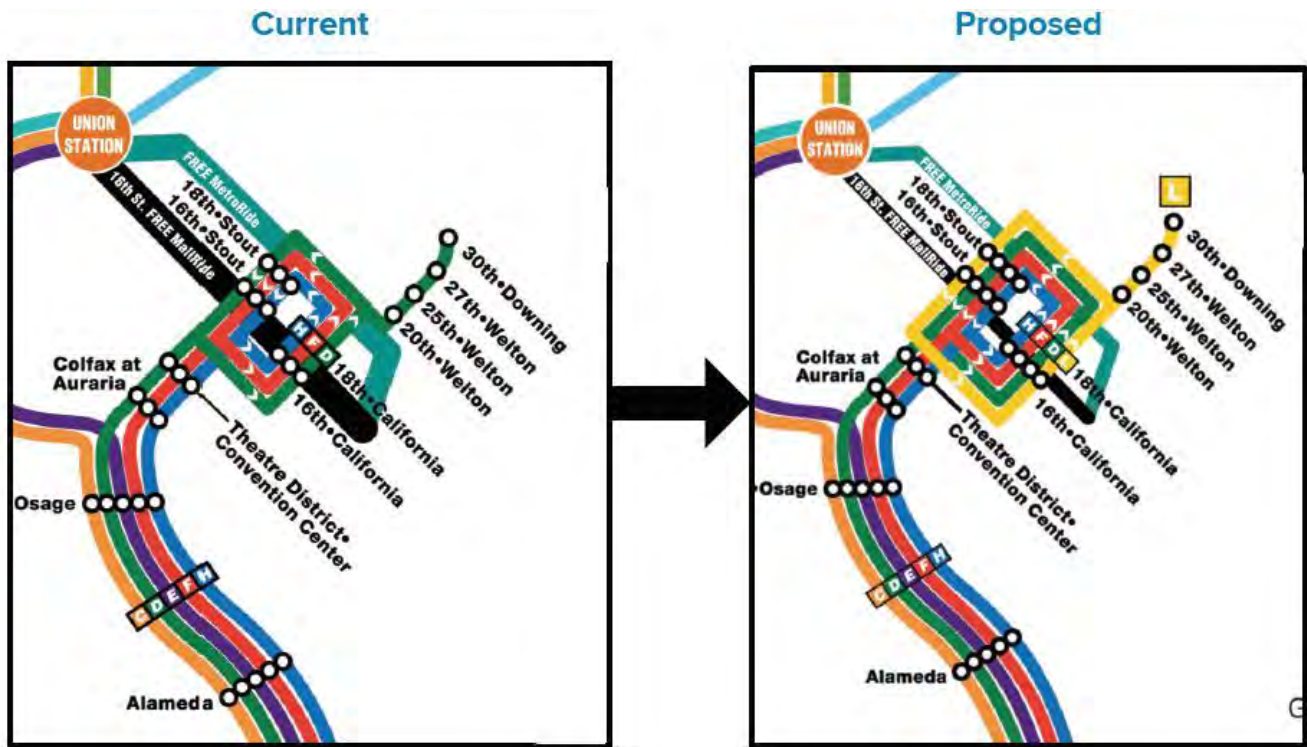
Unfortunately, the ridership data sample for the Route 89 is below the threshold for statistical validity (32 survey responses are not representative of 115 average weekday boardings). Alternatively, we must rely on population data from the US Census and American Community Survey to examine the Route 89.

Using the 2015 On-Board Survey income categories, along with average household size from the survey, this analysis has defined “low-income” riders as those with incomes up to \$30,630 (150% of 2017 Federal Poverty Guidelines, Family Size of 3).

## C, D, and L Line Analysis

As previously mentioned, the proposal to change the existing C and D Line service and adding the L Line is an attempt to meet shifting demand throughout the lines and improve upon poor on-time performance. Though this change does not result in a significant reduction or increase in service hours, RTD considers the change to be major due to the change in the delivery of the service.

Figure 1



In the development phase of this proposal, staff engaged riders through public meetings and at stations along the rail lines. During the meetings and outreach at stations, customers generally responded to the proposal with indifference. The primary concern from most riders was the preservation of peak service to downtown. Others responded favorably to the attempt to improve on-time performance. Few customers commented about the concern of losing a one seat ride for trips continuing north or south of the downtown loop. Among those traveling north or south of downtown, some expressed concern for their safety as they wait to transfer to the D or L line downtown. Overall the change

RTD's Disparate Impact and Disproportionate Burden Policies establish 10% +/- difference in the distribution of adverse effects to be considered a disproportionate. An examination of the ridership demographics of the C and D/L line ridership didn't reveal a disproportionate distribution of harm. Table 1 displays the systemwide ridership demographics. Table 2 displays the demographics and proportion of impact for the C and D/L Line ridership.



**Table 1 - RTD Ridership Demographic Profile<sup>1</sup>**

Systemwide Ridership			
Minority Ridership	Non-Minority Ridership	Low- Income Ridership	Non-Low-Income Ridership
47%	53%	31%	69%

**Table 2 – C/D/L Line Ridership Demographics**

Routes	Change Type	Minority Ridership	+/- Systemwide Minority Ridership	Low-Income Ridership	+/- Systemwide Low-Income Ridership
D/L Line	Added Capacity New Route	41%	-6%	25%	-6%
C Line	Added Frequency Increased Span of Service	35%	-12%	23%	-8%

### **Route 34 and Route 89 Analysis**

The Route 89 is a short route that has failed to meet minimum route productivity standards. The minimum standard for suburban routes is 11.9 boardings per hour. The average weekday boardings of the route 89 are 9.7 boardings per hour. Originally staff considered eliminating the entire route. However, community members expressed great concern regarding the elimination of a specific segment of the route 89.

Community members indicated that the Mercy Housing Development, an affordable housing development, relied on a segment of the route 89 to access grocery stores and the greater transit network. As a less impactful alternative, staff proposes to merge this segment of the Route 89 with the route 34.

The Route 34 alignment will be extended from Central Park Station to the Eastbridge area in the Stapleton neighborhood. The new routing would extend the route from Central Park Station via Central Park Blvd and Martin Luther King Blvd as far east as Iola Street (one block east of Havana Street). This offsets the discontinuance of the Route 89 by maintaining service to the Mercy Housing Development and access to grocers and the greater transit network including a one seat ride downtown (see Figure 2).

Further, the combination of the routes allows for higher frequency service in the peaks and a longer span of service compared to the existing route 89 and route 34 schedules.

<sup>1</sup> RTD 2015 On-Board Transit Survey

**Figure 2 – Route 34 Overview Map**



Unfortunately, the ridership data sample from the RTD 2015 On-Board Transit Survey for the Route 89 is below the threshold for statistical validity (32 survey responses are not representative of 115 average weekday boardings). Alternatively, population data from the US Census and American Community Survey and public engagement were relied upon to examine the Route 89. The new routing, increased frequency and service span expansion provide a net benefit to the customers living alongside the new route 34. Table 3 shows the demographic profile of the RTD service area and Table 4 shows the route 34 population demographics within 0.25 mile of the route. The population to benefit from these changes are disproportionately minority (+33%) and disproportionately low-income (+17%)

**Table 3 - RTD Service Area Demographic Profile**

Percent Minority <sup>2</sup>	Percent Low-income <sup>3</sup>
29%	21%

**Table 4 – Route 34 Population Demographics**

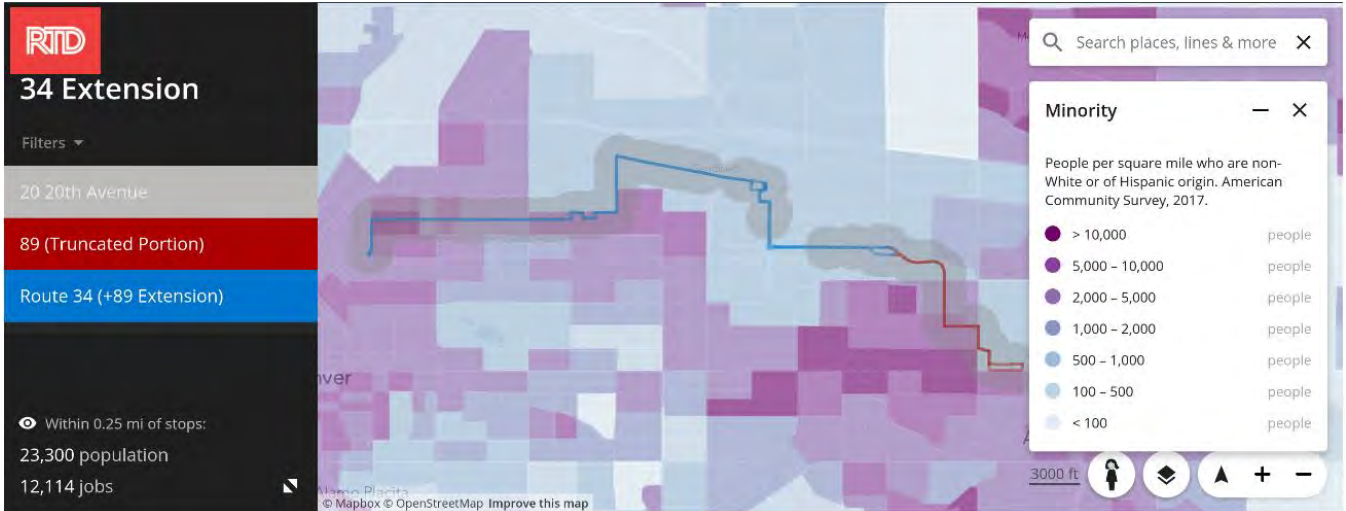
Route	Change Type	Minority Population	+/- Systemwide Minority Population	Low-Income Population	+/- Systemwide Low-income Population
New Route 34 (Combined w/89)	Increased Peak Frequency Route Alignment Change Service Span Increase	62%	+33%	38%	+17%

<sup>2</sup> 2010 US Census

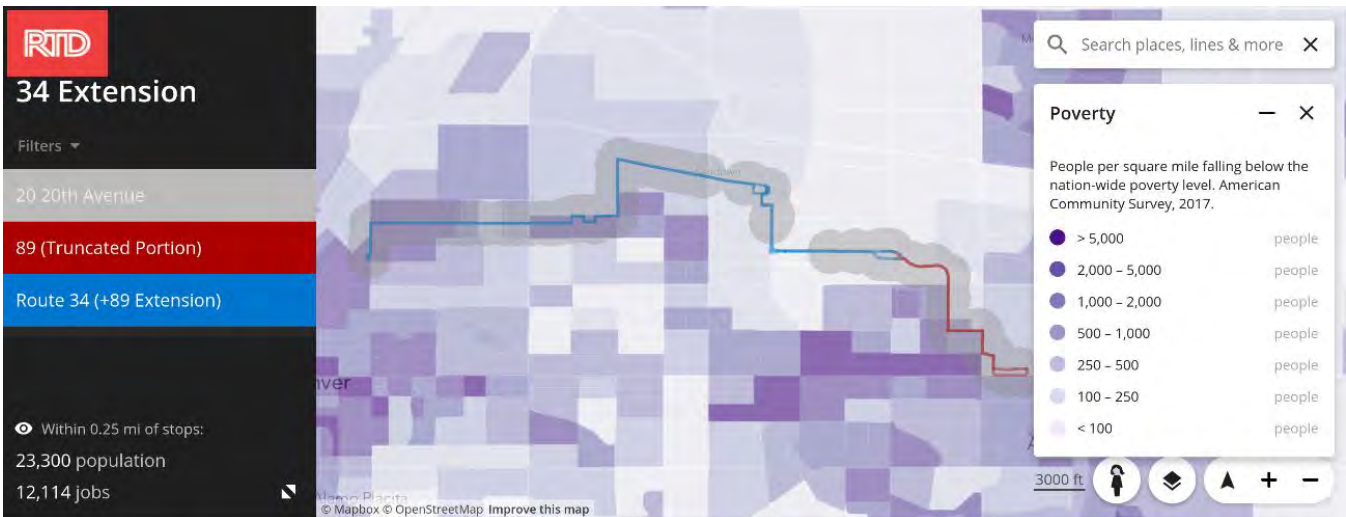
<sup>3</sup> 2013 American Community Survey (2013)

Figure 3 and Figure 4 are a sample of the multiple maps used to visually assess the populations effected by the proposed changes.

**Figure 3 – Route 34 Minority Map**



**Figure 4 – Route 34 Income Map**



## Conclusion

The primary objective for this analysis was to examine proposed service changes to ensure minority and low-income populations would not be more adversely affected than non-minority and non-low-income populations. The proposed changes would result in benefits for those using and living in proximity to the routes of this analysis. Outreach, ridership survey data, and U.S. Census demographic data have shown minority and low-income populations would both benefit from the changes in service.

For the C, D and L Line changes, minority riders appear to experience a proportional benefit. Low-Income riders of the D and L Line also appear to proportionately benefit from the changes. Low-income riders use the C Line at disproportionately lower rate compared to the systemwide rate of use (-12%).

Analysis of the new route 34 benefits shows that the percentage of the minority and low-income populations within proximity to the route are disproportionately high, +33% for minorities and +17% for low-income populations.

Therefore, based on the nature of the changes and proportion of protected populations benefiting, no disparate impact or disproportionate burden was identified, and the proposed major service changes do not require revision.