



Equity Analysis: Weekend Frequent Service Restoration

FINAL

Department of Diversity & Transit Equity

March 3, 2015

I. Background

Continuing an agency commitment made in 2009, TriMet plans to complete the final two phases of Frequent Service restoration in March, June, and September of 2015. This would bring all MAX light rail and Frequent Service bus lines to 15-minute frequencies (or better) throughout the day, seven days a week.

As a recipient of Federal financial assistance, TriMet must ensure that service changes – both increases and reductions – comply with Title VI of the Civil Rights Act of 1964, which 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.”

The FTA has provided specific implementing guidelines and regulations for complying with Title VI in Circular 4702.1B (“Circular”). Due to the interrelated nature of race/ethnicity and income, the Circular instructs transit agencies to consider impacts on low-income populations as well as minority populations; the assessment of potential Title VI issues related to service changes is completed through a service equity analysis. Figure 1 below shows the sequence of steps and considerations in the equity analysis process.

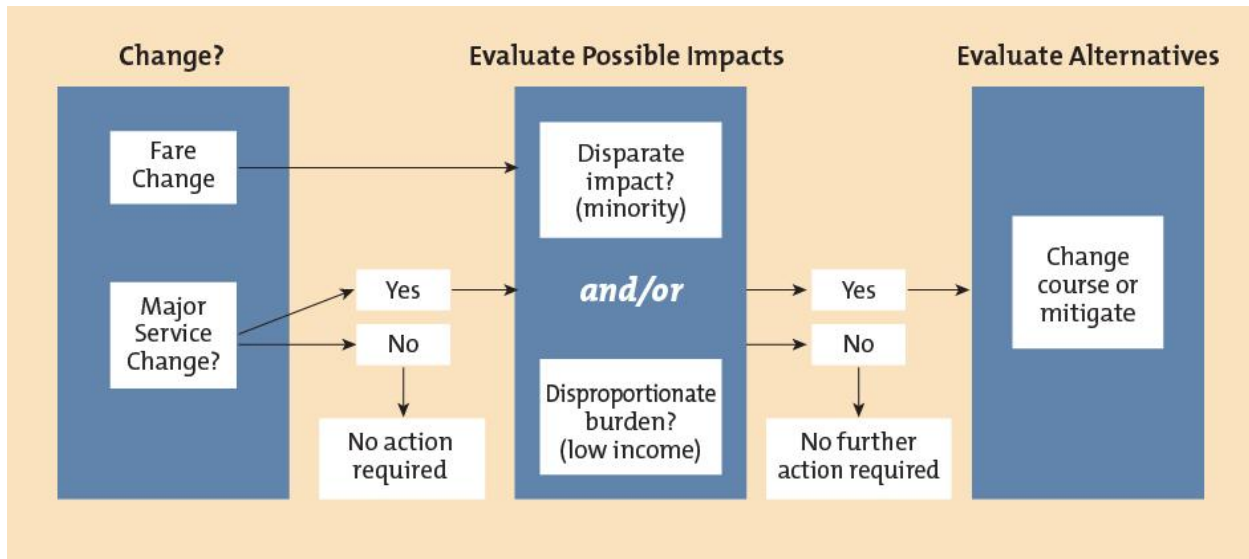


Figure 1: Overview of Title VI Equity Analysis

II. TriMet Title VI Compliance

In the fall of 2013, TriMet updated its Title VI Program, which received concurrence by the FTA in January 2014. The program outlines agency policies, definitions and procedures for complying with Title VI and performing equity analyses. This includes the agency's Major Service Change, Disparate Impact, and Disproportionate Burden policies.

A. Major Service Change Policy

All changes in service meeting the definition of Major Service Change are subject to a Title VI Equity Analysis prior to Board approval of the service change. A Title VI Equity Analysis will be completed for all Major Service Changes and will be presented to the TriMet Board of Directors for its consideration and included in the subsequent TriMet Title VI Program report with a record of action taken by the Board.

A Major Service Change is defined as:

1. A change in service of:
 - a. 25 percent or more of the number of route miles, or;
 - b. 25 percent or more of the number of revenue vehicle hours of service on a daily basis for the day of the week for which a change is made, or;
2. A new transit route is established as defined in the Introduction of TriMet's Title VI Program.
3. If changes in service on a route to be effective at more than one date within any fiscal year would equal or exceed 1(a) and/or 1(b) above, the changes in total will be considered a Major Service Change, and an equity analysis will be completed in advance of action on the proposed change.

B. Disparate Impact Policy

Testing for Disparate Impact evaluates effects on minority riders or populations as compared to non-minority riders or populations. "Minority" is defined as all persons who identify as being part of racial/ethnic groups besides white, non-Hispanic.

Major Service Changes – One Line

A Major Service Change to a line will be considered to have a Disparate Impact if condition 1 and either condition 2(a) or 2(b) below is found to be true:

1. The percentage of impacted minority population in the service area of the line exceeds the percentage of minority population of the TriMet District as a whole, and;
- 2.(a) In the event of service reductions, the service change has an adverse effect on the minority population in the service area of the line.

2.(b) In the event of service additions, the addition is linked to other service changes that have adverse effects on the minority population in the service area of the line, or; the service addition on the subject line is linked with a service change(s) on other line(s) that have adverse effects on the minority population in the service area of that line or lines.

For lines with Major Service Changes, if the percentage of minority population in block groups¹ served by the impacted portion of the line (sum of minority population in all impacted block groups divided by the total population in all impacted block groups) exceeds the percentage of minority population in the TriMet District as a whole, the impacts of changes to the line will be considered disparate.

Major Service Changes – System Level

To determine the system-wide impacts of service changes on more than one line, the percentage of impacted minority population (sum of minority population in all impacted block groups divided by the minority population of the TriMet District as a whole) is compared to the percentage of impacted non-minority population (sum of non-minority population in all impacted block groups divided by the non-minority population of the TriMet District as a whole). Comparisons of impacts between minority and non-minority populations will be made for all changes for each respective day of service — weekday, Saturday, and Sunday.

If the percentage of impacted minority population differs from the percentage of impacted non-minority population by more than 20 percent, the overall impact of changes will be considered disparate.

C. Disproportionate Burden Policy

Testing for Disproportionate Burden evaluates potential effects on low-income riders or populations, defined as at or below 150% of the federal poverty level. The line and system level evaluations are identical to those used to determine potential Disparate Impacts, but comparing low-income and higher income populations rather than minority and non-minority populations.

III. Proposed Service Changes

A. Description of Changes

The Frequent Service Network includes the following routes:

4-Division/Fessenden

6-Martin Luther King Jr Blvd

8-Jackson Park/NE 15th

9-Powell Blvd

¹ TriMet's 2013 Title VI Program states that the geographic unit of measurement will be tracts instead of block groups, but FTA C 4702.1B instructs transit agencies to evaluate impacts at the block or block group level.

12-Barbur/Sandy Blvd
14-Hawthorne
15-Belmont/NW 23rd
33-McLoughlin
54/56-Beaverton-Hillsdale Hwy/Scholls Ferry Rd
57-TV Hwy/Forest Grove
72-Killingsworth/82nd
75-Cesar Chavez/Lombard
MAX Blue Line
MAX Green Line
MAX Red Line
MAX Yellow Line

All of these routes, with the exception of the Line 72-Killingsworth/82nd, are proposed to receive additional service on Saturdays (beginning March 2015 for bus, June 2015 for MAX) and Sundays (beginning June 2015 for MAX, September 2015 for bus) to meet the Frequent Service standard of 15-minute headways for most of the day, seven days a week. The Line 72 already meets this standard. This additional service builds upon the steps taken to restore Frequent Service thus far, including adding service on weekday mid-days in spring 2014 and weekday evenings in fall 2014.

B. Major Service Change Test

To determine whether individual service changes meet the definition of Major Service Change, current and proposed service are compared. Revenue vehicle hours, or the number of hours buses are serving riders, are used to determine changes in service by route; results are shown in Tables 1 and 2.

To summarize, a total of five lines meet TriMet's adopted Title VI Major Service Change definition, with service increases of over 25% compared to current service:

8-Jackson Park/NE 15th (Sundays)
9-Powell Blvd (Saturdays and Sundays)
15-Belmont/NW 23rd (Sundays)
33-McLoughlin (Sundays)
54/56-Beaverton-Hillsdale Hwy/Scholls Ferry Rd (Saturdays)

Table 1: Change in service hours by line (Saturdays)

Line	Current Saturday Revenue Vehicle Hours	Proposed Saturday Revenue Vehicle Hours*	Change in Daily Revenue Hours From Current Quarter	Major Service Change?
4-Division/Fessendent	221	225	2%	
6-Martin Luther King Jr Blvd	80	95	18%	
8-Jackson Park/NE 15 th	74	90	21%	
9-Powell Blvd	106	135	27%	✓
12-Barbur/Sandy Blvd	129	157	22%	
14-Hawthorne	64	75	17%	
15-Belmont/NW 23 rd	94	113	20%	
33-McLoughlin	85	101	18%	
54/56-Beaverton-Hillsdale Hwy/Scholls Ferry Rd	59	76	28%	✓
57-TV Hwy/Forest Grove	103	123	20%	
72-Killingsworth/82 nd	199	199	0%	
75-Cesar Chavez/Lombard	148	178	21%	
MAX Blue Line	238	267	12%	
MAX Green Line	78	88	13%	
MAX Red Line	114	129	13%	
MAX Yellow Line	70	79	13%	
*Estimated for MAX lines based on estimated number of trips being added. Projected revenue hours unavailable for MAX when analysis conducted.				

Table 2: Change in service hours by line (Sundays)

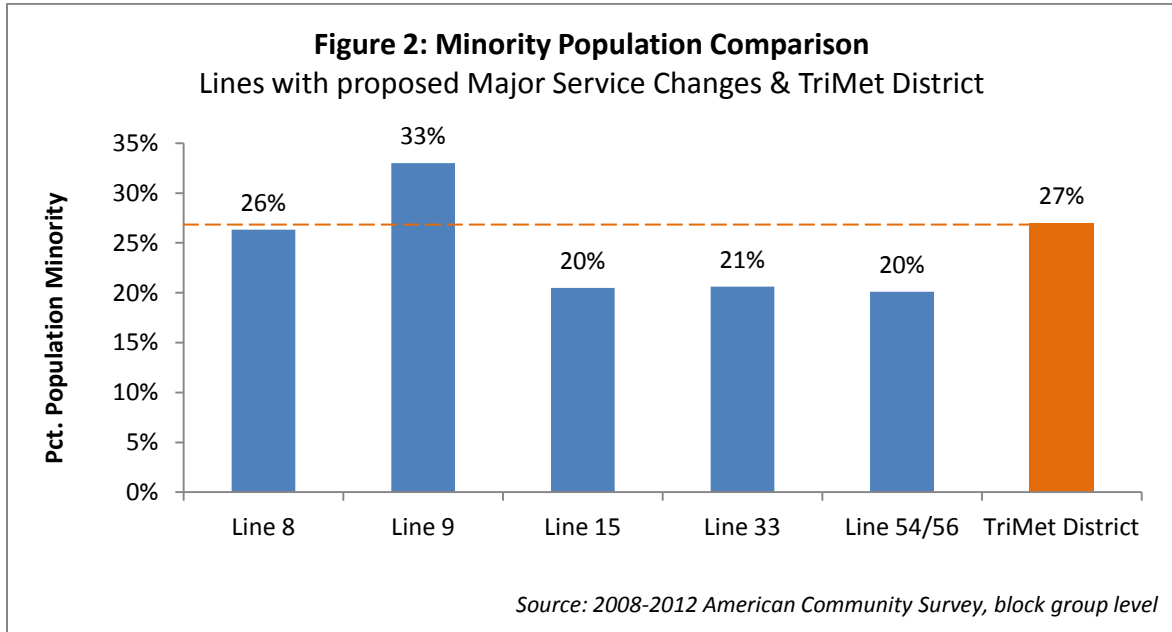
Line	Current Sunday Revenue Vehicle Hours	Proposed Sunday Revenue Vehicle Hours*	Change in Daily Revenue Hours From Current Quarter (%)	Major Service Change?
4-Division/Fessendent	189	203	8%	
6-Martin Luther King Jr Blvd	80	93	16%	
8-Jackson Park/NE 15 th	63	80	27%	✓
9-Powell Blvd	106	134	26%	✓
12-Barbur/Sandy Blvd	127	152	20%	
14-Hawthorne	58	68	17%	
15-Belmont/NW 23 rd	84	109	30%	✓
33-McLoughlin	76	97	28%	✓
54/56-Beaverton-Hillsdale Hwy/Scholls Ferry Rd	61	70	14%	
57-TV Hwy/Forest Grove	103	122	19%	
72-Killingsworth/82 nd	167	167	0%	
75-Cesar Chavez/Lombard	148	177	20%	
MAX Blue Line	205	232	13%	
MAX Green Line	73	85	16%	
MAX Red Line	105	120	15%	
MAX Yellow Line	63	72	14%	
<i>*Estimated for MAX lines based on estimated number of trips being added. Projected revenue hours unavailable for MAX when analysis conducted.</i>				

C. Line-level Analyses

Having identified the proposed changes on lines that meet the definition of Major Service Change, the next step in the equity analysis is to look at each line individually to determine how equitable the potential impacts would be across racial/ethnic and economic lines. In the event of service reductions, TriMet analyzes whether minority and low-income populations stand to be disproportionately and adversely affected by the proposed changes. In this case, the proposal includes only service *increases*, and therefore the analysis examines the extent to which the benefits of the improvements are inclusive of minority and low-income populations.

Disparate Impact Analysis

The line-level Disparate Impact analysis compares minority populations for the service area of each line to the minority population of the TriMet District as a whole. Figure 2 displays this comparison.



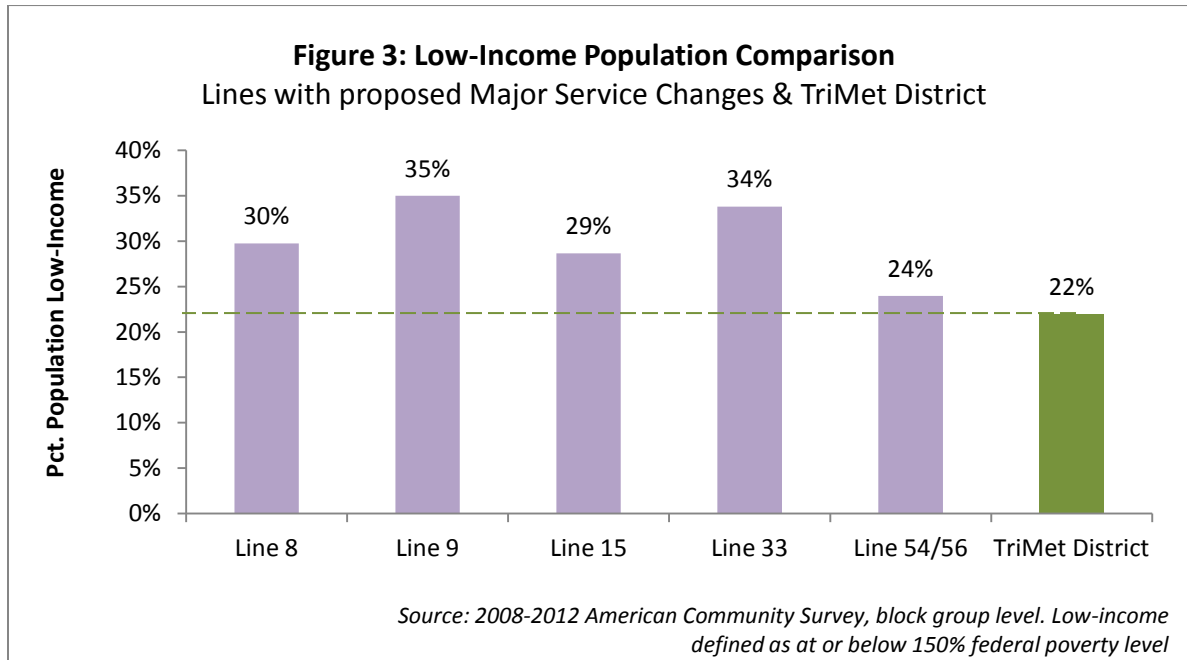
At 33% people of color, the service area of the Line 9 has a minority population that is higher than average for the TriMet District. In other words, increasing the Line 9 to Frequent Service on the weekends appears to benefit minorities to a greater extent than non-minorities. At the line level, this leads to a finding of no Disparate Impact.

On the other hand, each of the remaining four lines has a lower-than-average minority population compared to the TriMet district. That is, the Major Service Change improvements in each of these four cases stand to disproportionately serve non-minority populations, indicating a potential Disparate Impact at the line level, and calling for further examination to ensure that the change would not have discriminatory effects. The results of the system-level analysis and the context of the service change are part of this further examination, and are provided later in this report..

Disproportionate Burden Analysis

The line-level Disproportionate Burden analysis compares low-income populations for the service area of each line proposed for a Major Service Change to the low-income population of the TriMet District as a whole. As established in TriMet’s adopted Title VI Program, low-income is defined as a household with annual income at or below 150% of the Federal Poverty Level. Figure 3 displays this comparison.

As shown, the service area of each individual line has a higher-than-average low-income population for the TriMet District, which is 22% low-income as a whole. The highest proportions are along the Line 9 (35%) and Line 33 (34%). This indicates that the service improvements have the potential to benefit low-income populations to a greater extent than higher-income populations. Thus, no Disproportionate Burden exists at the line level.



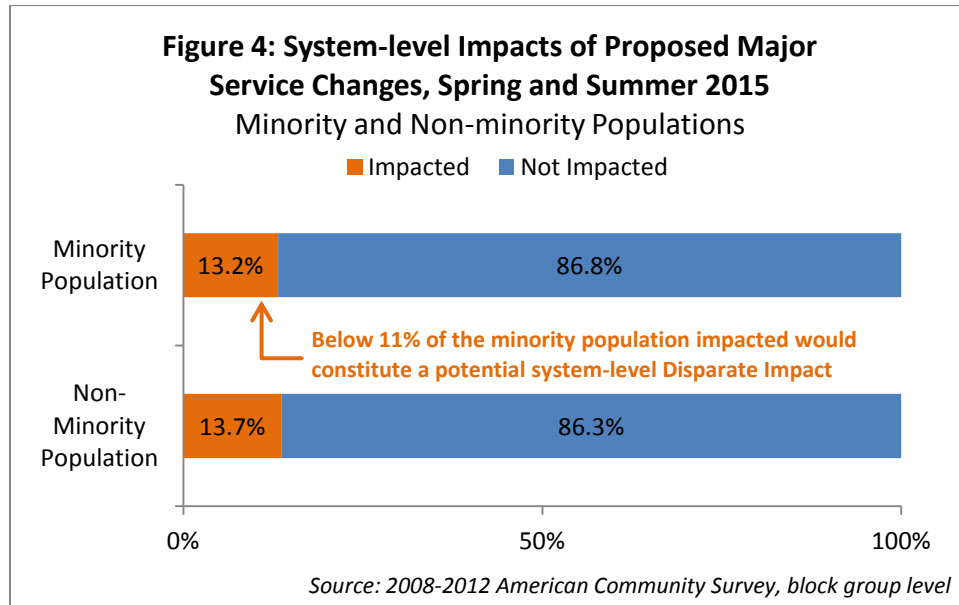
D. System-level Analysis

Because multiple lines are proposed for Major Service Changes, a system-level analysis is required in addition to the line-level analysis. The system-level analysis aims to measure impacts of all Major Service Changes combined to determine how equitable the impacts would be across racial/ethnic and economic lines. Once again, the relative potential *benefits* of the service increases are compared between populations (minority vs. non-minority, and low-income vs. higher income) since the proposal includes only service increases.

Disparate Impact Analysis

The system-level Disparate Impact analysis is completed by determining what proportion of the TriMet District’s minority population is positively impacted by the Major Service Changes, and comparing that to the District’s non-minority population that is positively impacted. A potential Disparate Impact would exist if 20% less of the District’s minority than non-minority population (or 4/5) stood to benefit from the Major Service Changes, per TriMet’s adopted Title VI policies.

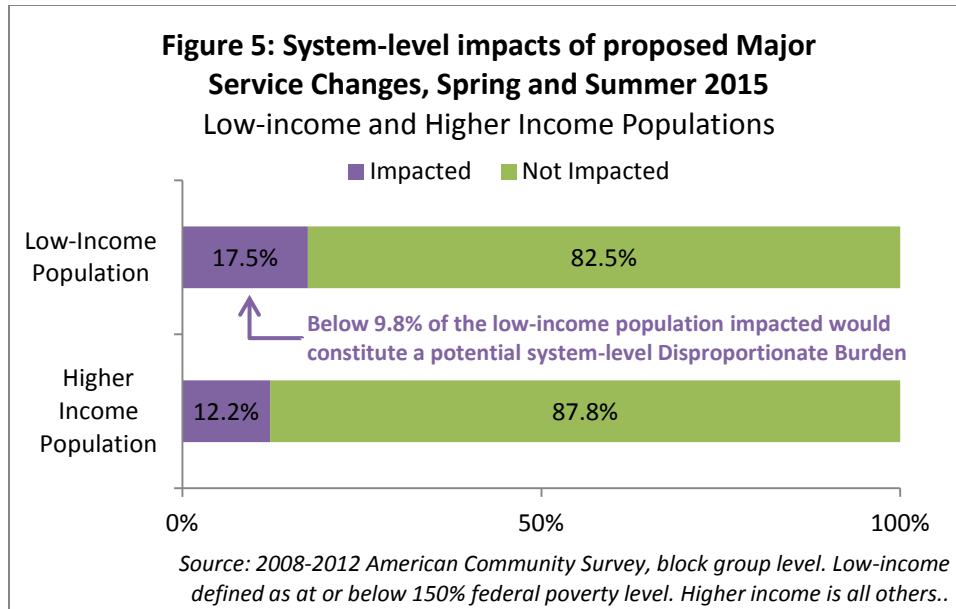
Figure 4 compares the impacted minority and non-minority populations. As shown, percentages are very close between impacted minority and non-minority populations (13.2% vs. 13.7%, respectively). Given the 13.7% of non-minorities positively impacted by the set of Major Service Changes, the percentage of minorities impacted would have to be below 4/5 of that figure (or 11%) to meet the definition of a system-level Disparate Impact. Therefore, no system-level Disparate Impact is found.



Disproportionate Burden Analysis

The system-level Disproportionate Burden analysis is completed by determining what proportion of the TriMet District’s low-income population is positively impacted by the Major Service Changes, and comparing that to the District’s higher income population that is positively impacted. “Higher income” includes all persons above the low-income threshold of 150% federal poverty. A potential Disproportionate Burden would exist if 20% less of the District’s low-income than higher income population (or 4/5) stood to benefit from the Major Service Changes, per TriMet’s adopted Title VI policies.

Figure 5 compares the impacted low-income and higher income populations. A greater percentage of the District’s low-income population stands to benefit from the proposed Major Service Changes as compared to the higher income population (17.5% vs. 12.2%, respectively). Given the 12.2% of higher income persons positively impacted by the set of Major Service Changes, the percentage of minorities impacted would have to be below 4/5 of that figure (or 9.8%) to meet the definition of a system-level Disproportionate Burden. Therefore, no system-level Disproportionate Burden is found.



E. Summary & Discussion

Table 3 summarizes the results of the line-level and system-level Disparate Impact and Disproportionate Burden analyses. None of the analyses indicated a potential Disproportionate Burden, meaning the proposed Major Service Changes (all service increases) are equally-or-more beneficial to low-income populations, compared to higher income populations.

Improvements to the Line 9 have the potential to be more beneficial to minority populations as compared to non-minority populations due to the demographics of its service area. On the other hand, the service areas of the other four Major Service Change lines have below-average minority populations. Looking at all Major Service Changes combined, however, shows that the changes actually serve a similar proportion of the district’s minority population as compared to the non-minority population. Thus, the combined (system-level) analysis found no potential Disparate Impact.

Further context provides a “substantial legitimate justification”² for TriMet to move forward with the service proposal as planned, despite flagging four of the Major Service Change lines as having below-average minority populations in their service areas, and therefore potential Disparate Impacts at the line level:

²See FTA C 4702.1B Ch. IV-16 and CFR 49 part 2.

Table 3: Summary of Disparate Impact and Disproportionate Burden analysis results

	Potential Disparate Impact?	Potential Disproportionate Burden?
8-Jackson Park/NE 15th	Yes	No
9-Powell Blvd	No	No
15-Belmont/NW 23rd	Yes	No
33-McLoughlin	Yes	No
54/56-Beaverton-Hillsdale Hwy/Scholls Ferry Rd	Yes	No
Combined (System-level)	No	No

First, the objective of the Frequent Service Network is to allow TriMet customers to make trips throughout the day, the evening, and on weekends, with confidence that there will be a bus or train to get them home. It is meant to operate as a network, and its effectiveness is reflected in the fact that the network carries 58% of bus system rides, while only using 48% of the bus system’s service hours. In other words, Frequent Service lines are the most heavily utilized lines in the TriMet system, and provide a healthy return on investment for TriMet riders.

The context of TriMet’s efforts to restore Frequent Service provides further justification of moving forward with the service investments as planned. When the agency was facing budget shortfalls due to the Great Recession, it was forced to make service cuts and increase fares. These cuts reduced the Frequent Service Network from its standard of service every 15 minutes, most of the day and seven days a week. With input and support from community stakeholders, TriMet committed to restore Frequent Service as soon as resources were available. The four lines with relatively low minority populations in their service areas have been an established part of this network since its inception, and omitting them from the service restoration would not support the goals of the Frequent Service Network.

Another point to note is that the Major Service Change definition measures the degree of *change*, which depends on the level of service prior to the changes. In this case, certain lines required adding more service hours than others to achieve 15-minute frequencies. This was more common on lines with lower-than-average minority populations because the lines with higher-than-average minority populations had better service to begin with. In fact, Frequent Service lines with higher-than-average minority populations currently provide 64% of Frequent Service on weekends³. Under the proposal, 67% of weekend Frequent Service hours would be on lines with higher-than-average minority populations.

³ Measured by revenue hours of service.

Thus, given the available data and established methodology, implementing these changes appears to benefit protected populations equitably. TriMet therefore finds no Disparate Impact or Disproportionate Burden associated with restoring Frequent Service on weekends.