TRI☉MET

Title VI Service Monitoring Report
Spring 2019

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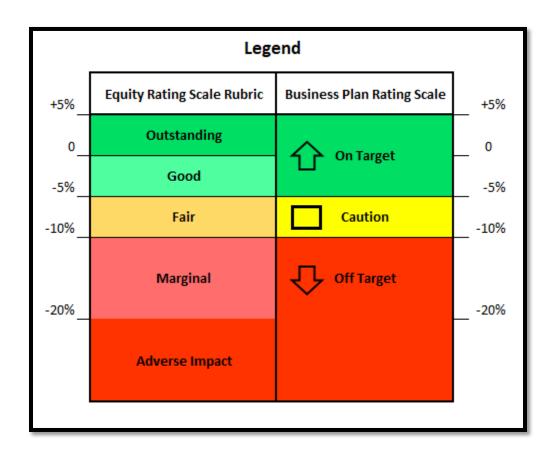Department of Transit Equity, Inclusion, and Community Affairs
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Staff Summary

Part of TriMet's compliance with FTA Circular 4702.1B *Title VI Requirements and Guidelines for Federal Transit Administration Recipients (Title VI Circular)* is ongoing performance monitoring across all service modes (bus, MAX, and WES). The Title VI Circular does not require monoriting for demand response service. Aligned with TriMet's Business Plan, staff will conduct an annual review of resource and service distribution. The objective is to ensure there is an equitable distribution across TriMet's system. The analysis in this report compared minority and/or low-income access to that of non-minority and/or higher income access across six service performance metrics for date compiled during Spring 2019:

1. **Service frequency and span** (revenue hours): TriMet evaluates the amount and distribution of revenue hours of service provided. The hours while in service include trip start to finish.

2. **On-time performance**: TriMet defines "on-time" as no more than five minutes late or one minute early. Measured at time points.

3. **Vehicle loads**: TriMet evaluates whether fixed-route buses or light rail vehicles are overcrowded by comparing the load/seat ratio to the maximum load factor for each vehicle type: bus (1.3), MAX (2.1), and WES (1.0).

4. **Service availability**: TriMet considers persons residing within one-half mile of bus stops and/or rail stations as having service available. Service availability is expressed as number and percentage of District-wide population and is determined by vehicle mode.

5. **Stop amenities**: TriMet analyzes the distribution of stop amenities in the TriMet system (shelters, seating, lighting, waste receptacles, etc.) in order to identify any potential disparities.

6. **Vehicle assignment**: TriMet assesses the vehicle assignment practices for fixed-route buses and light rail vehicles. The expectation is that the average age of vehicles on minority and/or low-income lines should be no more than the average age of vehicles on non-minority and/or higher income lines.

Title VI Service Performance Measure Rating Scale Rubric

The Title VI rating scale rubric ranges from "outstanding", "good", "fair", "marginal" to "adverse impact". To receive an "outstanding" score, access or service distribution for minority and low-income must be as good or better than non-minority and higher income for each measure. A performance finding within the 5% threshold is considered "good". The target for TriMet's Business Plan objective is within 5% or better. A greater than 5% but less than 10% difference equates to "fair". Above the 10% threshold but within 20% would result in a "marginal" score. A marginal score would be flagged as a caution and area for improvement. Any measure that exceeds 20% would indicate "adverse impact" and would result in a system-wide disparate impact[1]/disproportionate burden[2] finding per the Federal Transit Administration. TriMet will work to improve service and access on an on-going basis to ensure TriMet's equity targets are achieved and for compliance with TriMet's board adopted Title VI Program.

Legend

	Equity Rating Scale Rubric	Business Plan Rating Scale	
+5%	Outstanding	⬆ On Target	+5%
0			0
-5%	Good		-5%
-10%	Fair	☐ Caution	-10%
	Marginal	⬇ Off Target	
-20%			-20%
	Adverse Impact		

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[1] A facially neutral policy or practice that disproportionately affects members of a group identified by race, color, or national origin.
[2] A facially neutral policy or practice that disproportionately affects low-income populations more than non-low-income populations.

Minority vs. Non-minority Lines[3]

Equity Metric: Distribution of Amenities Spring 2019				
Metric % of stops with amenity on minority vs. non-minority lines	<= 20% Difference	<=10% Difference	<=5% Difference	As good or better on minority lines
Seating	✓	✓	✓	✓
Lighting	✓	✓	✓	✗
Elevators	✓	✓	✓	✓
Digital Displays	✓	✓	✓	✗
Shelters	✓	✓	✓	✓
Signs, Maps and/or Schedules	✓	✓	✓	✓
Waste Receptacles	✓	✓	✓	✓

Equity Metric: Service Standards Spring 2019												
Metric Minority and non-minority comparison by mode and for the system as a whole	<=20% Difference			<=10% Difference			<=5% Difference			As good or better on minority lines		
	Bus	MAX	Sys	Bus	MAX	Sys	Bus	MAX	Sys	Bus	MAX	Sys
Vehicle Loads If the average load of minority lines is above the maximum load factor, comparison to average load of non-minority lines.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Frequency & Span Revenue hours of service provided on minority vs. non-minority lines.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
On-Time Performance Average percent on-time for minority vs. non-minority lines.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗
Vehicle Assignment Average age of vehicles serving minority vs. non-minority lines.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Availability Percentage of minority vs. non-minority population within ½ mile of service.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

WES (a minority line) is the only commuter rail line, so it cannot be compared to other commuter rail lines. It is included as part of the overall system analysis.

✓ = Performance meets metric at level indicated

✗ = Performance does not meet level indicated

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[3] A minority line is defined by the FTA as having at least one-third of its revenue vehicle hours in census block groups with above-average minority populations.

MINORITY vs. NON-MINORITY LINES PERFORMANCE RESULTS

Distribution of Amenities (See Exhibit A for full details)
- The percentage of stops containing each amenity on minority lines exceeds the percentage for non-minority lines in all categories examined with the exception of lighting, which is higher for non-minority lines (63 percent compared to 59 percent of stops), digital displays (2.7 percent compared to 2.3 percent of stops) and signs, maps and/or schedules (99 percent compared to 97 percent of stops).

Vehicle Loads (See Exhibit B for full details)
- Average load/seat ratios range from a low of 0.34 to a high of 1.15.
- All average loads by mode are below the maximum load factor for every time period.

Service Frequency & Span (See Exhibit C for full details)
- A slightly higher percentage of revenue hours of service are provided on minority bus lines than non-minority lines (51% vs. 49%, respectively).
- A greater percentage of revenue hours of service are provided on minority MAX lines than non-minority lines (79% vs. 21%, respectively).

On-time performance (OTP) (See Exhibit D for full details)
- Average OTP for minority bus lines is 1 percent higher than OTP for non-minority bus lines on Weekdays and Saturday. The Sunday average OTP is 1 percent lower for minority bus lines compared to non-minority bus lines.
- Average OTP for minority MAX lines is 4 percent lower than the OTP for the two non-minority MAX lines (Yellow and Orange) for Weekdays, Saturdays, and Sundays.

Vehicle Assignment (See Exhibit E for full details)
- The average age of vehicles on minority bus lines (6.6 years) is about 2% newer than the average age of vehicles on non-minority bus lines (6.7 years).
- The average age of vehicles on minority MAX lines (16.6 years) is about 10% newer than the average age of vehicles on non-minority MAX lines (18.2 years).
- For WES, TriMet does not maintain a detailed database of specific vehicles used for specific trips. The four main vehicles used for WES service were all built in 2007; the remaining two were built in 1952 and 1953, though they have been substantially refurbished, and are typically used as spares. WES is a minority line. Because it is the only commuter rail line in the region, there is no other line to compare with.

Service Availability (See Exhibit F for full details)
- A higher percentage of the TriMet district's minority population lives within ½ mile of bus, MAX, and WES service compared to the district's non-minority population.

Note:

See Exhibit G for a breakdown of Minority and Non-Minority Lines

Low-income vs. Higher Income Lines[4]

Equity Metric: Distribution of Amenities Spring 2019				
Metric % of stops with amenity on low-income vs. non-low-income lines	**<= 20% Difference**	**<=10% Difference**	**<=5% Difference**	**As good or better on low-income lines**
Seating	✓	✓	✓	✓
Lighting	✓	✓	✓	✗
Elevators	✓	✓	✓	✓
Digital Displays	✓	✓	✓	✓
Shelters	✓	✓	✓	✓
Signs, Maps and/or Schedules	✓	✓	✓	✗
Waste Receptacles	✓	✓	✓	✓

Equity Metric: Service Standards Spring 2019												
Metric Low-income and non-low-income comparison by mode and for the system as a whole	**<=20% Difference**			**<=10% Difference**			**<=5% Difference**			**As good or better**		
	Bus	MAX	Sys	Bus	MAX	Sys	Bus	MAX	Sys	Bus	MAX	Sys
Vehicle Loads If the average load of low-income lines is above the maximum load factor, comparison to average load of non-low-income lines.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Frequency & Span Revenue hours of service provided on low-income vs. non-low-income lines.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
On-Time Performance Average percent on-time for low-income vs. non-low-income lines.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vehicle Assignment Average age of vehicles serving low-income vs. non-low-income lines.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Availability Percentage of low-income vs. non-low-income population within ½ mile of service.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

WES (a low-income line) is the only commuter rail line, so it cannot be compared to other commuter rail lines. It is included as part of the overall system analysis. All MAX lines are low-income lines.

✓ = Performance meets metric at level indicated
✗ = Performance does not meet level indicated

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[4] Low-income is defined as households at or below 150% federal poverty. A low-income line is defined as having at least one-half of its revenue vehicle hours in census block groups with above-average low-income populations.

LOW-INCOME vs. HIGHER INCOME LINES PERFORMANCE RESULTS

Distribution of Amenities (See Exhibit A for full details)
- The percentage of stops containing each amenity on low-income lines exceeds the percentage for higher income lines in all categories examined with the exception of lighting, which is higher for higher income lines (64 percent compared to 59 percent of stops) and signs, maps, and/or schedules (99 percent compared to 97 percent of stops).

Vehicle Loads (See Exhibit B for full details)
- Average load/seat ratios range from a low of 0.39 to a high of 1.00.
- All average loads by mode are below the maximum load factor for every time period.

Service Frequency & Span (See Exhibit C for full details)
- A greater percentage of revenue hours of service are provided on low-income bus lines than higher income bus lines (76% vs. 24%, respectively).
- All MAX lines are considered low income.

On-time performance (See Exhibit D for full details)
- The average OTP for Weekdays and Saturday is comparable for both bus lines. Average OTP for low-income bus lines is 1% lower than the OTP for higher income bus lines for Sunday.
- All MAX lines are considered low income.

Vehicle Assignment (See Exhibit E for full details)
- The average age of vehicles on low-income bus lines (6.5 years) is about 6% newer than the average age of vehicles on higher income bus lines (6.8 years).
- All MAX lines are considered low-income. The average age is 17.4 years.
- For WES, TriMet does not maintain a detailed database of specific vehicles used for specific trips. The four main vehicles used for WES service were all built in 2007; the remaining two were built in 1952 and 1953, though they have been substantially refurbished, and are typically used as spares. WES is a low-income line.

Service Availability (See Exhibit F for full details)
- A higher percentage of the TriMet district's low-income population lives within ½ mile of bus, MAX, and WES service compared to the district's higher income population. Because it is the only commuter rail line in the region, there is no other line to compare with.

Note:

See Exhibit G for a breakdown of Low-Income and Higher Income Lines

Exhibit A: Stop Amenities Tables

Category of Amenity	Pct. of Stops on Minority Lines	Pct. of Stops on Non-Minority Lines
Seating	38%	31%
Lighting	59%	63%
Elevators	<1%	<1%
Digital Displays	2%	3%
Shelters	20%	17%
Signs, Maps and/or Schedules	97%	99%
Waste Receptacles	16%	14%

Category of Amenity	Pct. of Stops on Low-Income Lines	Pct. of Stops on Higher Income Lines
Seating	38%	29%
Lighting	59%	64%
Elevators	<1%	<1%
Digital Displays	3%	2%
Shelters	23%	12%
Signs, Maps and/or Schedules	97%	99%
Waste Receptacles	17%	12%

Exhibit B: Vehicle Loads Tables

Vehicle Type	Time Period	Minority Lines		Non-Minority Lines	
		Load/Seat Ratio	Mean Load	Load/Seat Ratio	Mean Load
Bus (28 or 39 seats)	AM Peak	0.34	14.81	0.40	17.25
	Midday	0.37	13.65	0.38	13.91
	PM Peak	0.47	16.48	0.49	17.92
MAX Light Rail (128 seats)	AM Peak	0.95	121.46	0.98	125.53
	Midday	0.68	87.83	0.50	67.75
	PM Peak	1.15	134.59	0.76	103.91
WES Commuter Rail (146 seats)	AM Peak	0.41	39.00	n/a	n/a
	PM Peak	0.51	55.00	n/a	n/a

Vehicle Type	Time Period	Low-Income Lines		Higher Income Lines	
		Load/Seat Ratio	Mean Load	Load/Seat Ratio	Mean Load
Bus (28 or 39 seats)	AM Peak	0.39	16.70	0.34	15.35
	Midday	0.39	14.63	0.35	12.31
	PM Peak	0.5	17.94	0.45	16.07
MAX Light Rail (128 seats)	AM Peak	0.96	123.09	n/a	n/a
	Midday	0.61	79.80	n/a	n/a
	PM Peak	1.00	122.32	n/a	n/a
WES Commuter Rail (146 seats)	AM Peak	0.41	39.00	n/a	n/a
	PM Peak	0.51	55.00	n/a	n/a

Exhibit C: Revenue Hours Tables

Mode of Service	Minority Lines	Non-Minority Lines	Difference; Minority to Non-Minority +/(-)
Bus	51%	49%	2
MAX Light Rail	79%	21%	58
WES Commuter Rail	100%	n/a	n/a

Mode of Service	Low Income Lines	Higher Income Lines	Difference; Low Income to Higher Income +/(-)
Bus	76%	24%	52
MAX Light Rail	100%	n/a	n/a
WES Commuter Rail	100%	n/a	n/a

Exhibit D: On-Time Performance Tables

		Avg. % On-Time (weighted)		
Mode of Service	Day	Minority Lines	Non-Minority Lines	Difference; Minority to Non-Minority +/(-)
Bus	Weekday	90%	89%	1
	Saturday	90%	89%	1
	Sunday	92%	93%	(1)
MAX Light Rail	Weekday	91%	93%	(2)
	Saturday	88%	94%	(6)
	Sunday	92%	94%	(2)
WES Commuter Rail	Weekday	96%	n/a	n/a

		Avg. % On-Time (weighted)		
Mode of Service	Day	Low Income Lines	Higher Income Lines	Difference; Low Income to Higher Income +/(-)
Bus	Weekday	89%	89%	0
	Saturday	89%	89%	0
	Sunday	92%	93%	(1)
MAX Light Rail	Weekday	92%	n/a	n/a
	Saturday	90%	n/a	n/a
	Sunday	93%	n/a	n/a
WES Commuter Rail	Weekday	96%	n/a	n/a

Exhibit E: Vehicle Assignment Tables

Mode of Service	Avg. Age of Vehicles (Years)		
	Minority Lines	Non-Minority Lines	Difference; Minority to Non-Minority +/(-)
Bus	6.6	6.7	(0.12)
MAX Light Rail	16.6	18.2	(1.58)
WES Commuter Rail	Primary: 13.0 Spares: 67.5	n/a	n/a

Mode of Service	Avg. Age of Vehicles (Years)		
	Low Income Lines	Higher Income Lines	Difference; Low Income to Higher Income +/(-)
Bus	6.5	6.8	(0.37)
MAX Light Rail	17.4	n/a	n/a
WES Commuter Rail	Primary: 13.0 Spares: 67.5	n/a	n/a

Exhibit F: Service Availability Table

Demographic Analysis of Proximity to TriMet Service (Percent)		TM District Totals (Raw Num)	Totals (Pct.)	Percent within 1/2* Mile of…			Frequent Service	
				Bus	MAX	WES	Bus	Bus & MAX
Population	Total (ACS 5 year estimate, 2013-2017)	1,590,996	100.0%	88.2%	16.4%	0.9%	45.8%	62.3%
Minority	All Minorities**	463,940	29.2%	90.1%	20.7%	1.2%	48.0%	68.7%
Non-Minority	White (Non-Hispanic)	1,127,057	70.8%	87.4%	14.7%	0.7%	45.0%	59.6%
Population	Total population with known income (ACS 5 year estimate, 2013-2017)***	1,568,502	100.0%	88.1%	16.3%	0.9%	45.6%	61.9%
Income	Below 150% of Poverty Level	324,718	20.7%	93.6%	23.6%	1.5%	57.7%	81.3%
Income	Above 150% of Poverty Level	1,243,784	79.0%	86.7%	14.4%	0.7%	42.5%	56.9%

Sources: TriMet GIS, Metro Regional Land Information System, and US Census American Community Survey Tables: 2013 - 2017 (5-Year Estimates), Table B03002. Hispanic or Latino Origin By Race, and Table C17002. Ratio Of Income To Poverty Level In The Past 12 Months (Block Group Level Data)

To adjust for the fact that some census block groups are only partially within the TriMet Transit District, staff estimated the fraction of each block group's population within the transit district by calculating the percentage of residential address points that fell within the district. Staff then multiplied this address fraction by the Census counts to get the estimated TriMet District population. Staff used Oregon Metro's Master Address File (with non-residential and vacant addresses removed) as the address points for this analysis.

* Distance calculations based on March 2018 stop and station locations. Similar to the TriMet District level population estimates, we multiplied each block group's counts by the fraction of addresses within it that also fell within a half-mile buffer of a transit stop of the specified type.

** All Minorities include Black (non-Hispanic), Hispanic, Asian (non-Hispanic), Native American (non-Hispanic), Hawaiian Native and Pacific Islander (non-Hispanic), and Other (Including Mixed Race, non-Hispanic).

*** Population totals for the TriMet district vary between statistics for race and income/poverty in part due to the fact that the Census is a full count and the ACS is an extrapolation based on a sample, and in part because the ACS total excludes those whom poverty status is not determined.

Exhibit G: Minority and Non-Minority Lines

Minority Lines	Non-Minority Lines
10-Harold St	1-Vermont
11-Rivergate/Marine Dr	12-Barbur/Sandy Blvd
155-Sunnyside	14-Hawthorne
19-Woodstock/Glisan	152-Milwaukie
20-Burnside/Stark	154-Willamette/Clackamas Heights
21-Sandy Blvd/223rd	156-Mather Rd
22-Parkrose	15-Belmont/NW 23rd
23-San Rafael	16-Front Ave/St Helens Rd
25-Glisan/Rockwood	17-Holgate/Broadway
272-PDX Night Bus	18-Hillside
2-Division	24-Fremont/NW 18th
42-Denney/Hall	291-Orange Night Bus
45-Garden Home	29-Lake/Webster Rd
46-North Hillsboro	30-Estacada
47-Main/Evergreen	31-Webster Rd
48-Cornell	32-Oatfield
4-Fessenden	33-McLoughlin/King Rd
52-Farmington/185th	34-Linwood/River Rd
53-Arctic/Allen	35-Macadam/Greeley
57-TV Hwy/Forest Grove	36-South Shore
59-Walker/Park Way	37-Lake Grove
62-Murray Blvd	38-Boones Ferry Rd
67-Bethany/158th	39-Lewis & Clark
6-Martin Luther King Jr Blvd	43-Taylors Ferry Rd
72-Killingsworth/82nd Ave	44-Capitol Hwy/Mocks Crest
73-122nd Ave	50-Cedar Mill
74-162nd Ave	51-Vista
76-Beaverton/Tualatin	54-Beaverton-Hillsdale Hwy
78-Beaverton/Lake Oswego	55-Hamilton
79-Clackamas/Oregon City	56-Scholls Ferry Rd
80-Kane/Troutdale Rd	58-Canyon Rd
81-Kane/257th	61-Marquam Hill/Beaverton
82-South Gresham	63-Washington Park/Arlington Hts
84-Powell Valley/Orient Dr	64-Marquam Hill/Tigard
87-Airport Way/181st	65-Marquam Hill/Barbur Blvd
88-Hart/198th	66-Marquam Hill/Hollywood
92-South Beaverton Express	68-Marquam Hill/Collins Circle
96-Tualatin/I-5	70-12th/NE 33rd Ave
97-Tualatin-Sherwood Rd	71-60th Ave
9-Powell Blvd	75-Cesar Chavez/Lombard
MAX Blue Line	77-Broadway/Halsey
MAX Green Line	85-Swan Island
MAX Red Line	8-Jackson Park/NE 15th
WES Commuter Rail	93-Tigard/Sherwood
	94-Pacific Hwy/Sherwood
	99-Macadam/McLoughlin
	MAX Orange Line
	MAX Yellow Line

Exhibit H: Low-Income and Higher Income Lines

Low Income Lines	Higher Income Lines
1-Vermont	11-Rivergate/Marine Dr
16-Front Ave/St Helens Rd	14-Hawthorne
19-Woodstock/Glisan	154-Willamette/Clackamas Heights
2-Division	156-Mather Rd
47-Main/Evergreen	18-Hillside
51-Vista	23-San Rafael
56-Scholls Ferry Rd	272-PDX Night Bus
66-Marquam Hill/Hollywood	291-Orange Night Bus
70-12th/NE 33rd Ave	32-Oatfield
71-60th Ave	34-Linwood/River Rd
85-Swan Island	37-Lake Grove
93-Tigard/Sherwood	39-Lewis & Clark
99-Macadam/McLoughlin	43-Taylors Ferry Rd
10-Harold St	46-North Hillsboro
12-Barbur/Sandy Blvd	50-Cedar Mill
15-Belmont/NW 23rd	53-Arctic/Allen
155-Sunnyside	55-Hamilton
17-Holgate/Broadway	59-Walker/Park Way
20-Burnside/Stark	61-Marquam Hill/Beaverton
24-Fremont/NW 18th	63-Washington Park/Arlington Hts
29-Lake/Webster Rd	65-Marquam Hill/Barbur Blvd
30-Estacada	68-Marquam Hill/Collins Circle
33-McLoughlin/King Rd	74-162nd Ave
35-Macadam/Greeley	76-Beaverton/Tualatin
38-Boones Ferry Rd	79-Clackamas/Oregon City
4-Fessenden	80-Kane/Troutdale Rd
44-Capitol Hwy/Mocks Crest	84-Powell Valley/Orient Dr
48-Cornell	88-Hart/198th
52-Farmington/185th	92-South Beaverton Express
54-Beaverton-Hillsdale Hwy	97-Tualatin-Sherwood Rd
57-TV Hwy/Forest Grove	152-Milwaukie
6-Martin Luther King Jr Blvd	21-Sandy Blvd/223rd
62-Murray Blvd	22-Parkrose
64-Marquam Hill/Tigard	25-Glisan/Rockwood
67-Bethany/158th	31-Webster Rd
72-Killingsworth/82nd Ave	36-South Shore
75-Cesar Chavez/Lombard	42-Denney/Hall
77-Broadway/Halsey	45-Garden Home
8-Jackson Park/NE 15th	58-Canyon Rd
81-Kane/257th	73-122nd Ave
87-Airport Way/181st	78-Beaverton/Lake Oswego
9-Powell Blvd	82-South Gresham
94-Pacific Hwy/Sherwood	96-Tualatin/I-5
MAX Blue Line	MAX Green Line
MAX Red Line	MAX Yellow Line
	MAX Orange Line
	WES Commuter Rail