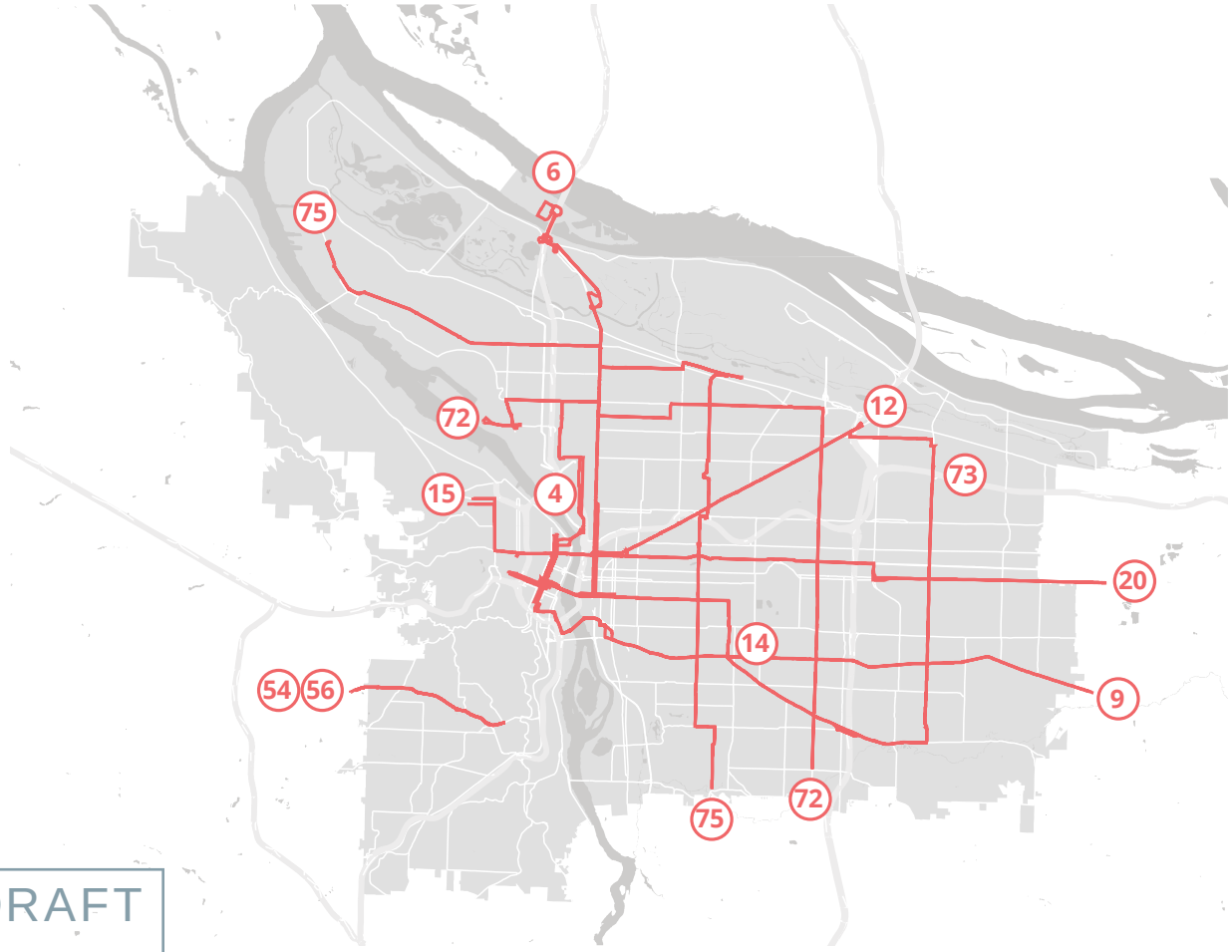
Enhanced Transit Corridors Plan
Existing Conditions and Methodology Memorandum



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PBOT PORTLAND BUREAU OF TRANSPORTATION TRIMET
ch2m: HDR

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1. Introduction

The purpose of this memorandum is to summarize existing conditions along the candidate Enhanced Transit Corridors (ETC) selected for further study in the development of the Enhanced Transit Corridors Plan, led by the Portland Bureau of Transportation in partnership with TriMet. In addition, this memorandum defines Phase 1 of a two-phase methodology to identify and prioritize the initial list of Candidate Corridors for further study and implementation of ETC improvements.

The contents of this memorandum will inform the subsequent evaluation and identification of priority Enhanced Transit Corridors.

- **Section 2** of this memorandum presents the candidate corridors selected for further study and summarizes the initial selection process.
- **Section 3** summarizes existing conditions for the candidate corridors.
- **Section 4** presents the Phase 1 methodology for prioritizing corridors or segments for further study and ETC implementation.

TriMet Frequent Service

TriMet's Frequent Service buses and trains run every 15 minutes or better most of the day, every day. Service is less frequent in the early morning and late evening. Frequent Service lines connect regional housing and employment hubs, and comprise the majority of all bus trips in TriMet's service area. In addition to providing more frequency, some Frequent Service lines are more likely to have features that improve transit performance, access, and comfort, including: traffic signal priority and bus-only lanes; bus stop re-spacing and curb extensions; bus shelters; and ADA-compliant landings and curb ramps.

2. Candidate Corridors

During the fall of 2016, PBOT and TriMet conducted an initial screening process to select candidate corridors for further study as part of the Enhanced Transit Corridors Plan. In January 2017, these candidate corridors were recommended by PBOT staff and endorsed by the ETC Plan Technical Advisory Committee (TAC).

Starting from the 14 Frequent Service bus lines (15 minute service or better most of the day, every day) currently operating in the TriMet network, plus two additional lines slated for near-term increase to Frequent Service, staff from PBOT and TriMet used a set of quantitative and qualitative evaluation measures to select eleven candidate corridors or segments for additional analysis as part of the ETC planning process.

The PBOT and TriMet Team used the following criteria and measures to evaluate the universe of candidates:

Reliability

Measure: *"Percentage difference between 90th and 10th percentile revenue speed."* This was used to identify segments along bus routes where the difference between the transit travel speed (inclusive of all activity while in revenue service) varied greatly throughout the course of a day between free flow traffic conditions and more congested/delayed times of day.

This was the primary measure used in the initial screening process. Lines containing two or more segments with the highest speed variability were recommended as Candidate Corridors.

The following measures supplemented the analysis and helped "tip the balance" in deciding which of the candidates to include.

Ridership Passenger Loads
Measure: "90th percentile maximum load." This measure was used to identify segments where the passenger loads were greater.

Transit Speeds
Measure: "50th percentile revenue speed" divided by "posted speed limit." This measure was used to identify segments where buses were on average relatively slower than the posted speed, even off-peak.

Forecasted Future Growth (2010 - 2035)
The following measures were used to help gauge corridors the City deems important in the Comprehensive Plan Update and forecasted for future higher densities.

- Does the line serve a Center, Civic Corridor or Neighborhood Corridor?
- Does the line serve higher levels of 2035 forecasted household or employment density?

The transit-related measures were based on TriMet data collected in Spring 2016. Initial screening resulted in sections of the following nine TriMet bus lines and two sub-segments of bus lines as ETC candidate corridors for further evaluation (see map on page 4):

Line 4 **Fessenden** (central segment only): Portland city center to N Albina Avenue/N Killingsworth Street via N Williams Avenue & N Mississippi Avenue

Line 6 **Martin Luther King Jr Blvd:** Portland city center to Jantzen Beach via Martin Luther King Boulevard

Line 9 **SE Powell Blvd:** Portland city center to Portland city limits via SE Powell Blvd

Line 12 **Sandy Blvd:** Portland city center to Parkrose Transit Center via NE Sandy Boulevard

Line 14 **Hawthorne**: Portland city center to Lents Town Center via SE Hawthorne and SE Foster Rd. For future analysis purposes, the study area terminates at SE Foster Road/SE Powell Boulevard/SE 50th Avenue, since significant changes are already being implemented along SE Foster Rd.

Line 15 **NW 23rd (west segment only)**: Portland city center to NW Portland via W Burnside Street and NW 23rd Avenue

Line 20 **Burnside/Stark (east section)**: Portland city center to Portland city limits via E Burnside Street & SE Stark Street

Line 54/56 **Beaverton Hillsdale Hwy/Scholls Ferry Rd (Beaverton Hillsdale Hwy segment only)**: SW Barbur Boulevard to Portland city limits via SW Beaverton Hillsdale Highway

Line 72 **Killingsworth/82nd**: Swan Island to Portland city limits via Killingsworth Street & 82nd Avenue

Line 73 **122nd**: Parkrose Transit Center to SE Foster Road/SE 94th Avenue via 122nd Avenue

Line 75 **Cesar Chavez/Lombard**: St. Johns to Portland city limits via N Lombard Street & NE 42nd Avenue/Cesar Chavez Boulevard

The Candidate Corridor screening process is described in greater detail in **Appendix A**, PBOT Staff recommendation on ten candidate corridors for Enhanced Transit and selection process (*January 18, 2017*).

Appendix B contains the PBOT and TriMet maps used for the initial screening.

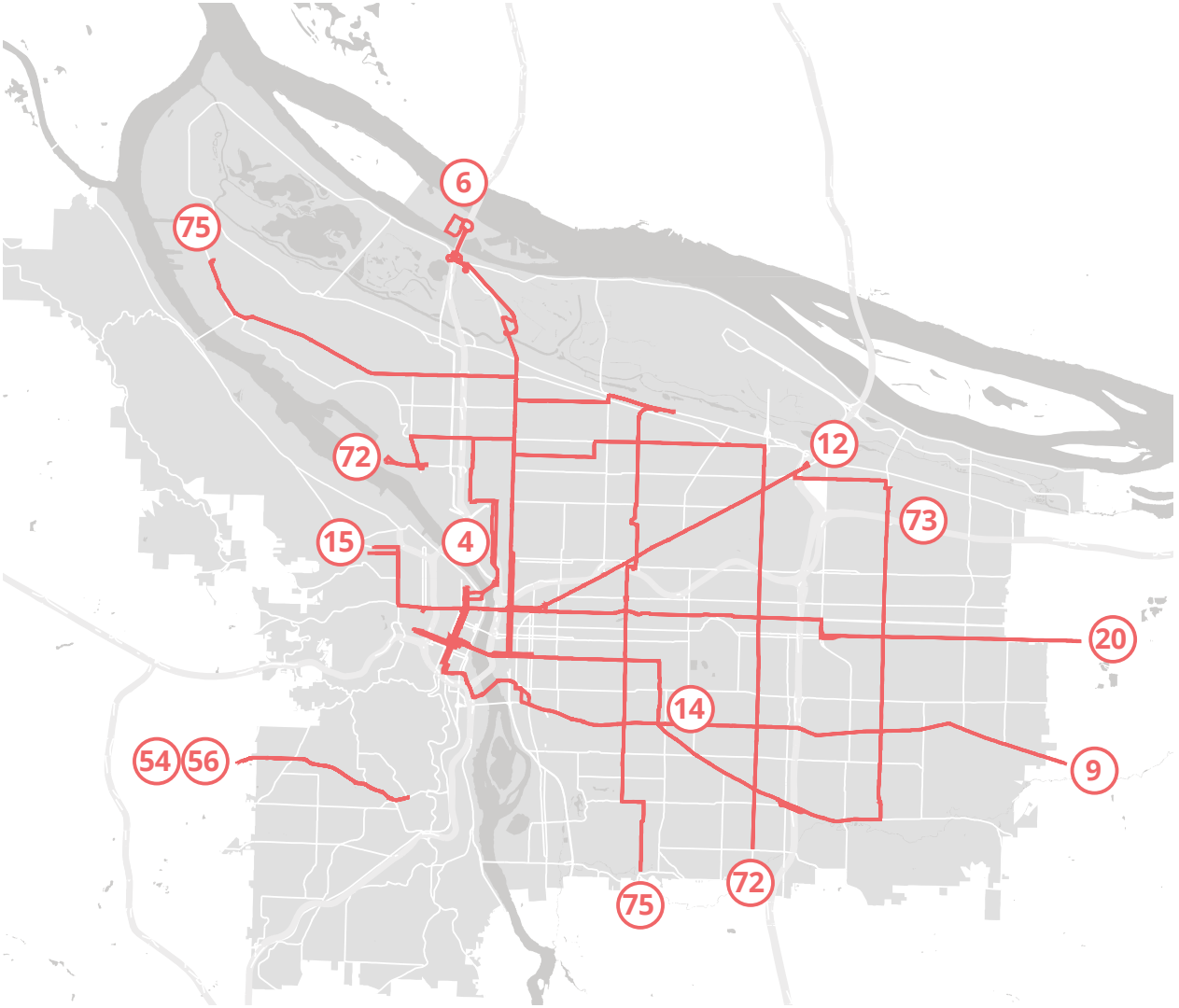
Candidate Corridor Recommendations
This map displays the results of the PBOT/TriMet candidate corridor screening in January 2017.

The recommended candidate corridors are comprised of segments of TriMet bus lines, as opposed to entire lines. Segments of lines were excluded for several reasons:

- Any segment outside the City of Portland boundary
- Segments where transit planning efforts are currently underway
- Segments were preliminary data did not show transit delay
- Segments where the urban context, character of the street, or routing are less conducive ETC Treaments

This approach helped scale the corridor selection process appropriately to the scope of the project and available resources.

Map of Recommended Candidate Corridors



Source:
PBOT Staff recommendation on eleven candidate corridors for Enhanced Transit and selection process (*January 18, 2017*)

3. Existing and Projected Conditions

Criteria and Performance Measures

Existing and projected conditions for the candidate ETC corridors are summarized in the individual profile sheets at the end of this section.
The existing and projected conditions analysis describes transit performance, equity, and future growth at the corridor and time point segment levels. The following measures were calculated for each segment between TriMet time points along individual bus lines (with the exception of the Average Weekday Stop-level Activity). Time point segments represent equal time intervals.

Average Weekday Stop-level Activity
Shown on the profile sheet overview maps, stop-level ridership describes passenger activity throughout the corridor. Activity is defined as the sum of boardings and alightings at stops. While this measure was not analyzed at the time point segment level, it is included to give a better understanding of overall corridor conditions.

Average Existing Weekday Transit Trips
This measure is calculated using the Federal Transit Administration (FTA) Warrants ridership methodology. Trips are calculated by summing the average weekday passenger load entering the corridor and stop-level boardings along the line. This indicator helps communicate the magnitude of potential benefit to riders as part of the prioritization process.

Reliability
Reliability is defined as the percent difference between the 90th and 10th percentile operating speeds. This indicator describes travel speed variability over the course of the day and helps identify the influence of vehicle volumes on traffic congestion during transit during peak periods. The greater the percentage, the longer the bus takes to travel during peak congested periods compared to free flow traffic conditions. A higher value indicates a higher deficiency – and therefore a greater need for improvement.

Transit Speed
Transit speed is defined as the 50th percentile (average) operating speed (exclusive of dwell time) proportional to the posted speed limit along each segment. This indicator identifies the overall operating speed and reveals a number of operating deficiencies across all time periods. A lower value indicates a higher deficiency – and therefore a greater need for improvement.

Dwell Time
Dwell time is defined as the 50th percentile dwell time proportional to the 50th percentile overall running time. This indicator describes open door time spent at bus stops, and helps to identify the influence of bus stop delay. A higher value indicates a higher deficiency – and therefore a greater need for improvement.

Equity
Equity measures the percentage of people of color, low income (households below 200% federal poverty level), and limited English proficiency (LEP) households. The equity score is a composite index of scores for these three demographic factors. Equity scores are based upon quartile point values for each block group within a quarter mile distance from the candidate corridor. Block groups received a higher composite score if they scored above the city-wide average for low-income, LEP, or people of color. Scoring was conducted at the time point segment-level and then aggregated to arrive at corridor-level findings. This measure identifies locations where a concentration of equity populations suggests more need for transit improvements. A higher value indicates a greater need for improvement.

Forecasted Future Growth (2010 – 2035)
This criterion measures aggregated household and job growth between base year (2010) and future year (2035) within a quarter mile of the line. The growth forecast is based on the Portland Comprehensive Plan 2035 Growth Scenario. This criterion identifies locations where future land use suggests more transit demand and the need for additional transit capacity. A higher value indicates a greater need for improvement.

The 2035 Preferred Growth Scenario was developed as a part of the City of Portland's Growth Scenarios Report. The scenario is based on growth model forecasts developed by Metro for the region. The report describes how and where Portland is expected to grow over the next 25 years and assesses alternative growth patterns and their ability to support Portland's goals and objectives. This information helped guide decisions on a preferred growth scenario for the Portland 2035 Comprehensive Plan.

See **Appendix C** for maps displaying City of Portland Comprehensive Plan designations and forecasted 2035 household and job density.

Existing and Projected Conditions Profile Sheets

The profile sheets in the following pages summarize existing and projected conditions information for each candidate corridor, including:

- An overview map showing stop-level ridership and Comprehensive Plan Center/Corridor designations
- A scorecard showing key findings for corridor-level transit performance
  - Inbound and outbound travel are aggregated to arrive at corridor-wide performance
- Corridor-wide key findings for transit operation measures; best and worst performing time point segments
- Information and key findings about Equity measures
- Future growth information and key findings
- Graphical "thermometers" that show a segment-level performance breakdown for transit reliability and transit speed
  - Colored bars represent performance scores by quintile
  - Note: For some lines (12, 20, 73, and 75) segment colors differ even though percentage values are the same. This is the result of rounding when values in the tenths or hundredths place diverge on the cusp of a quintile break. See **Appendix D** for specific break points for each indicator, and specific anomalies for each of these four lines.

What are data quintiles?

A quintile represents a 20% break point within a range of data, resulting in five equal interval data classes.

- The first quintile (20th percentile) represents the lowest fifth of the data (1%- 20%)
- The second quintile (40th percentile) represents the second fifth (21%- 40%)
- The third quintile (60th percentile) represents the third fifth (41%- 60%)
- The fourth quintile (80th percentile) represents the fourth fifth (61%- 80%)
- The fifth quintile (top percentile) represents the top 20% of the data (81%- 100%)

Quintiles are used to establish "cut-off" points for comparing transit performance data on a relative basis.

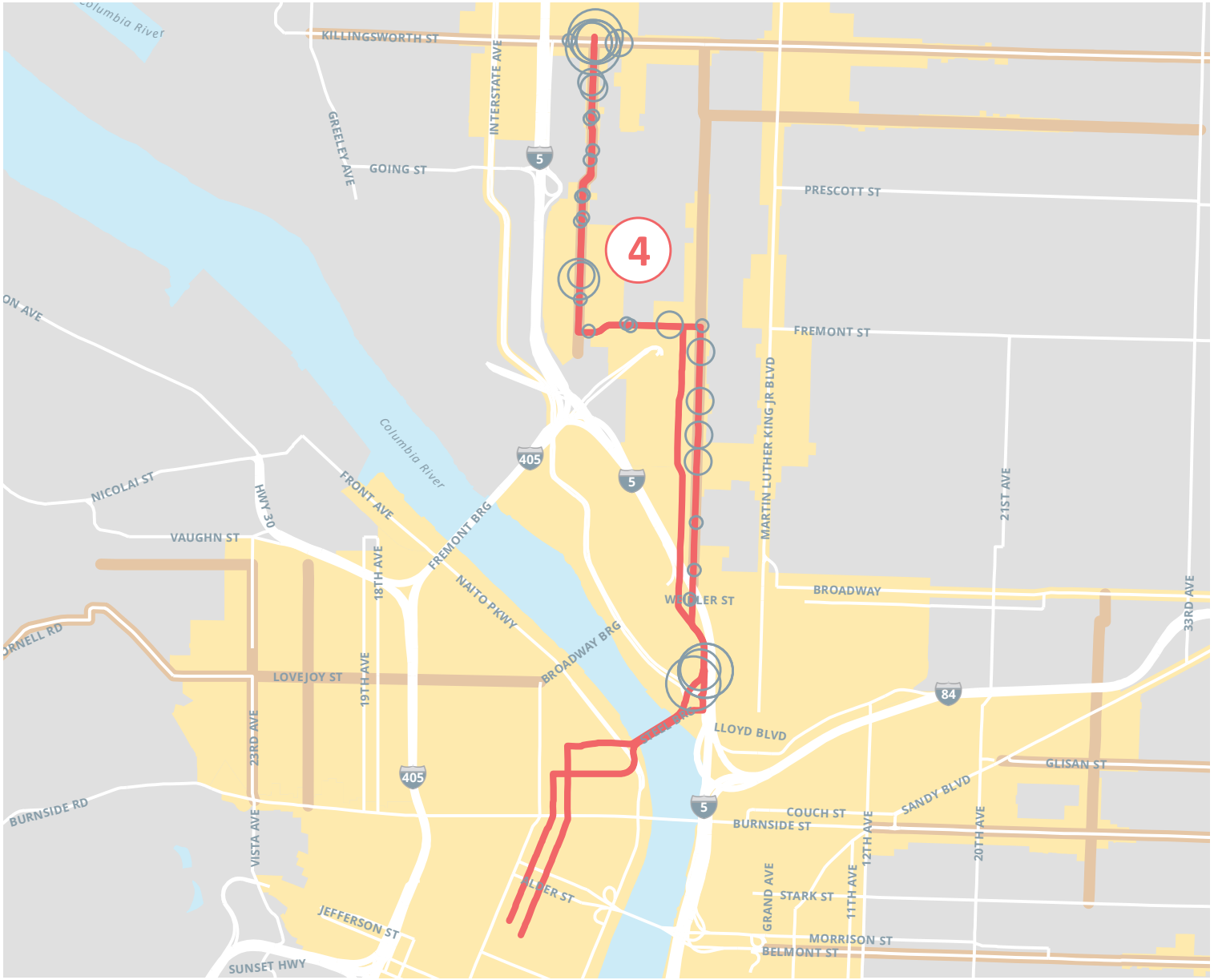
Line 4 Fessenden
(central segment only)

One-way length:
Approximately 4 miles

Termini:
SW 6th & Taylor
to N Albina & Killingsworth

Primary alignment:
N Vancouver/Williams

Note: The Line 4 ETC corridor excludes SE Division Street, since planning for a High Capacity Transit/Bus Rapid Transit improvement is currently underway for that section of the line.



Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

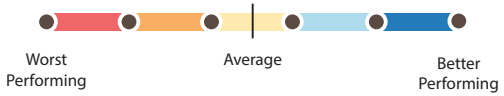
Line 4 Fessenden (central segment only)

Corridor-wide Transit Operations Performance Summary

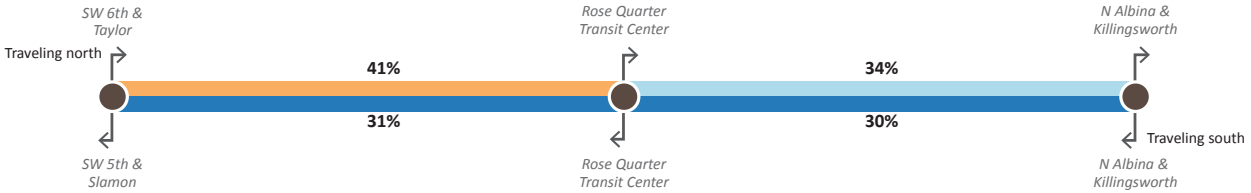
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	7,299	Greatest from **Rose Quarter Transit Center** to **SW 5th & Salmon**	Least from **SW 6th & Taylor** to **Rose Quarter Transit Center**
Transit Speed Average speed as percentage of posted speed limit	54%	Fastest from **Rose Quarter Transit Center** to **N Albina & Killingsworth**	Slowest from **SW 6th & Taylor** to **Rose Quarter Transit Center**
Reliability Percent difference between 90th and 10th percentile revenue speeds	41%	Most reliable from **N Alina & Killingsworth** to **Rose Quarter Transit Center**	Least reliable from **SW 6th & Taylor** to **Rose Quarter Transit Center**
Dwell Time Time stopped at bus stops as percentage of total runtime	12%	Least from **Rose Quarter Transit Center** to **N Albina & Killingsworth**	Greatest from **Rose Quarter Transit Center** to **SW 5th & Salmon**

Performance Breakdown by Segment

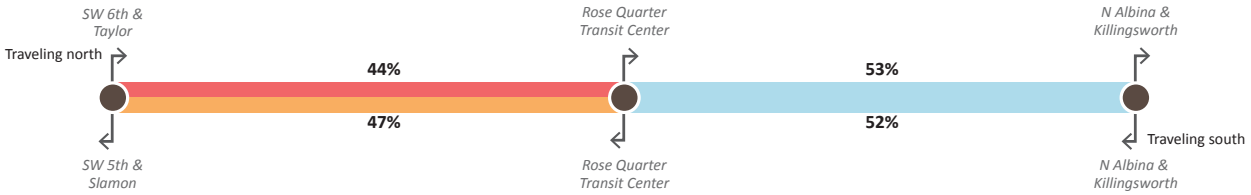
Displays corridor Reliability and Transit Speed performance by segment, from north to south and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

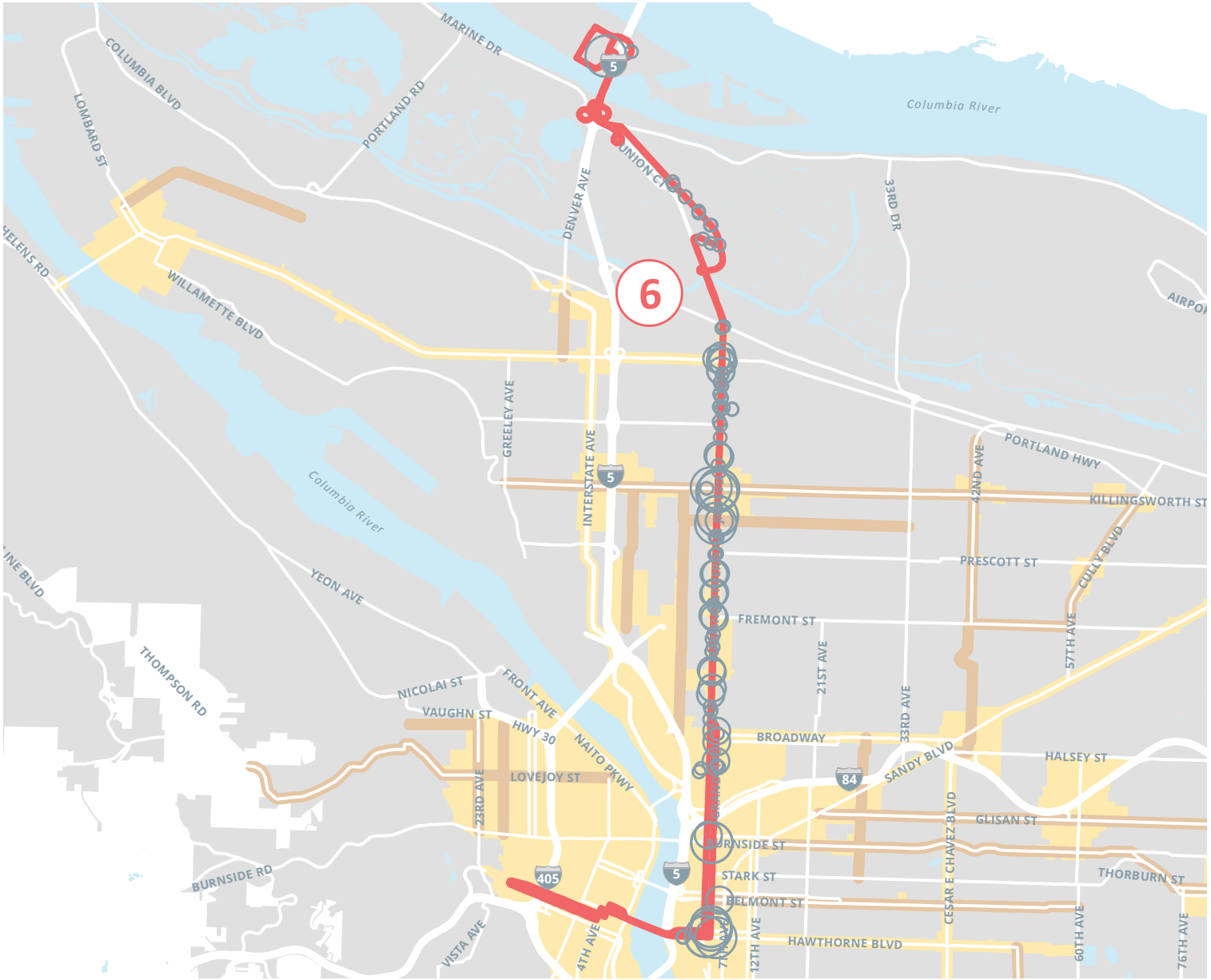
- The Line 4 corridor falls in the 40th-60th percentile among ETC corridors and is above the city-wide average for people of color, low-income, and LEP populations.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 31,760 within a quarter mile of the corridor.
- The greatest growth (approximatley 19,941 new jobs and households) is forecasted within a quarter mile of the line from SW 6th and Taylor to the Rose Quarter Transit Center.

Line 6 Martin Luther King Jr Blvd

One-way length:
Approximately 10.5 miles

Termini:
SW 18th & Goose Hollow MAX Station to Jantzen Beach Main Stop

Primary alignment:
Martin Luther King Jr Blvd



Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

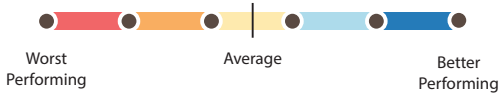
Line 6 Martin Luther King Jr Blvd

Corridor-wide Transit Operations Performance Summary

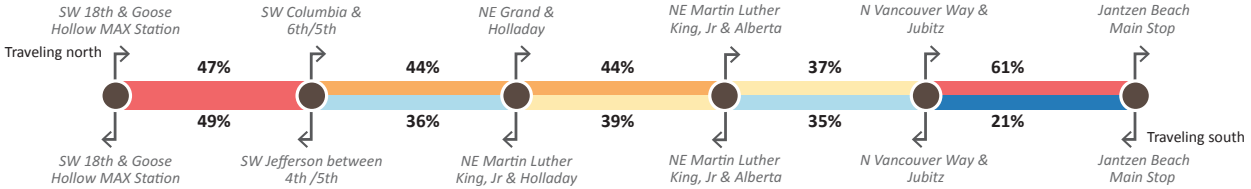
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	5,929	Greatest from NE MLK & Alberta to NE Grand & Holladay	Least from N Vancouver Way & Jubitz to Jantzen Beach Main Stop
Transit Speed Average speed as percentage of posted speed limit	54%	Fastest from N Vancouver Way & Jubitz to Jantzen Beach Main Stop	Slowest from SW Jefferson between 4th/5th to SW 18th & Goose Hollow MAX Station
Reliability Percent difference between 90th and 10th percentile revenue speeds	41%	Most reliable from Jantzen Beach Main Stop to N Vancouver Way & Jubitz	Least reliable from N Vancouver Way & Jubitz to Jantzen Beach Main Stop
Dwell Time Time stopped at bus stops as percentage of total runtime	12%	Least from N Vancouver Way & Jubitz to Jantzen Beach Main Stop	Greatest from NE MLK & Holladay to NE MLK & Alberta

Performance Breakdown by Segment

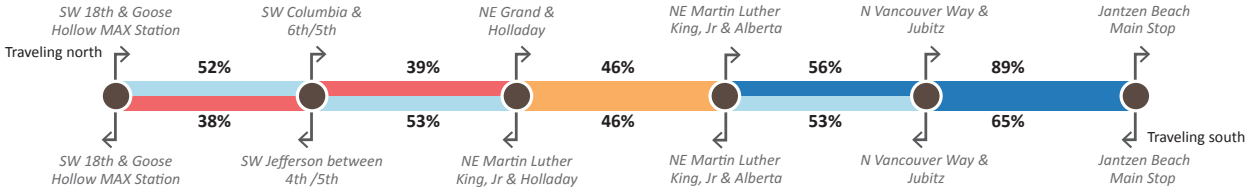
Displays corridor Reliability and Transit Speed performance by segment, from north to south and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

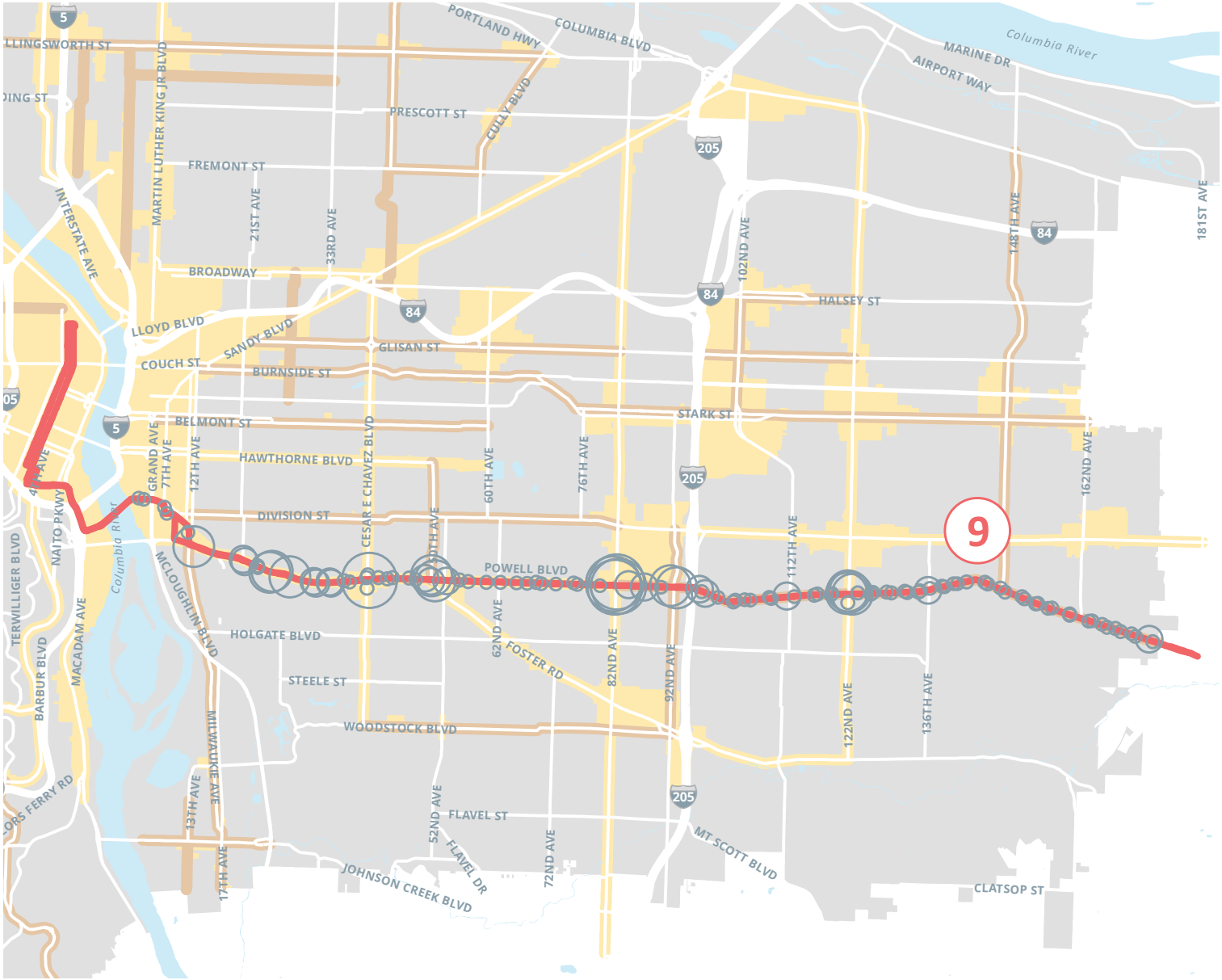
- The Line 6 corridor falls in the 25th - 50th percentile among ETC corridors and is above the city-wide average for people of color and low-income populations.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 57,649 within a quarter mile of the corridor.
- 43 percent of the corridor is within a Portland Comprehensive Plan designated Center, and 38 percent is within a Civic or Neighborhood Corridor.

Line 9
SE Powell Blvd

One-way length:
Approximately 12.3 miles

Termini:
North Terminal 5th
to W Powell & SW 181st

Primary alignment:
SE Powell Blvd



Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

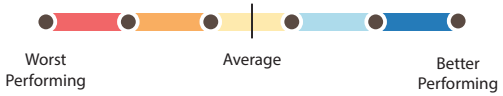
Line 9 SE Powell Blvd

Corridor-wide Transit Operations Performance Summary

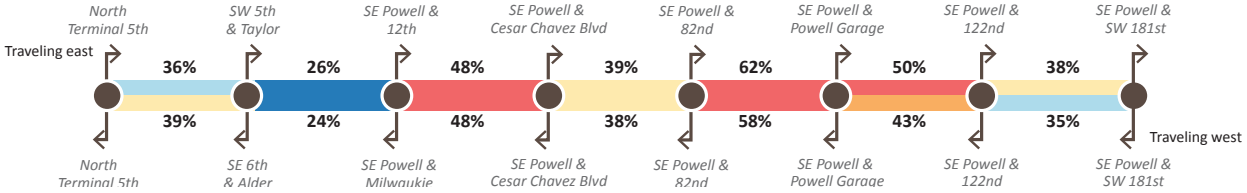
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	7,723	Greatest from SE Powell & 12th to SE Powell & Cesar Chavez Blvd	Least from North Terminal 5th to SW 5th & Taylor
Transit Speed Average speed as percentage of posted speed limit	49%	Fastest from SE Powell & 122nd to SE Powell & Powell Garage Dr	Slowest from SE Powell & 82nd to SE Powell & Powell Garage Dr
Reliability Percent difference between 90th and 10th percentile revenue speeds	42%	Most reliable from SE Powell & Milwaukie to SW 6th & Alder	Least reliable from SE Powell & 82nd to SE Powell & Powell Garage Dr
Dwell Time Time stopped as percentage of total runtime	15%	Least from SE 6th & Alder to North Terminal 5th	Greatest from SE Powell & Powell Garage Dr to SE Powell & 82nd

Performance Breakdown by Segment

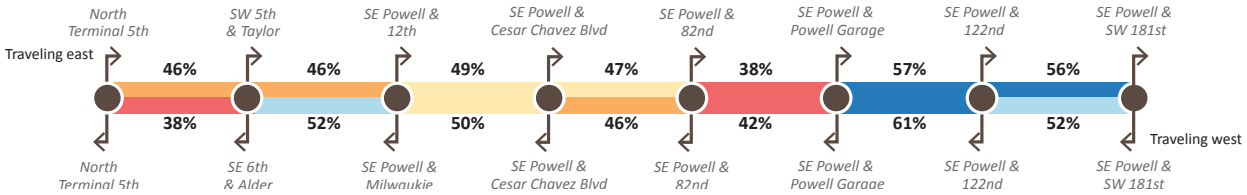
Displays corridor Reliability and Transit Speed performance by segment, from west to east and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

- The Line 9 corridor falls in the top 25th percentile among ETC corridors and is above the city-wide average for LEP and low-income populations.
- Equity communities are concentrated from SE Powell & 82nd to W Powell & SW 181st in Gresham.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 56,458 within a quarter mile of the corridor.
- Approximatley 25 percent of the corridor is within a Portland Comprehensive Plan designated Center. 85 percent of the corridor is within a Civic or Neighborhood Corridor.

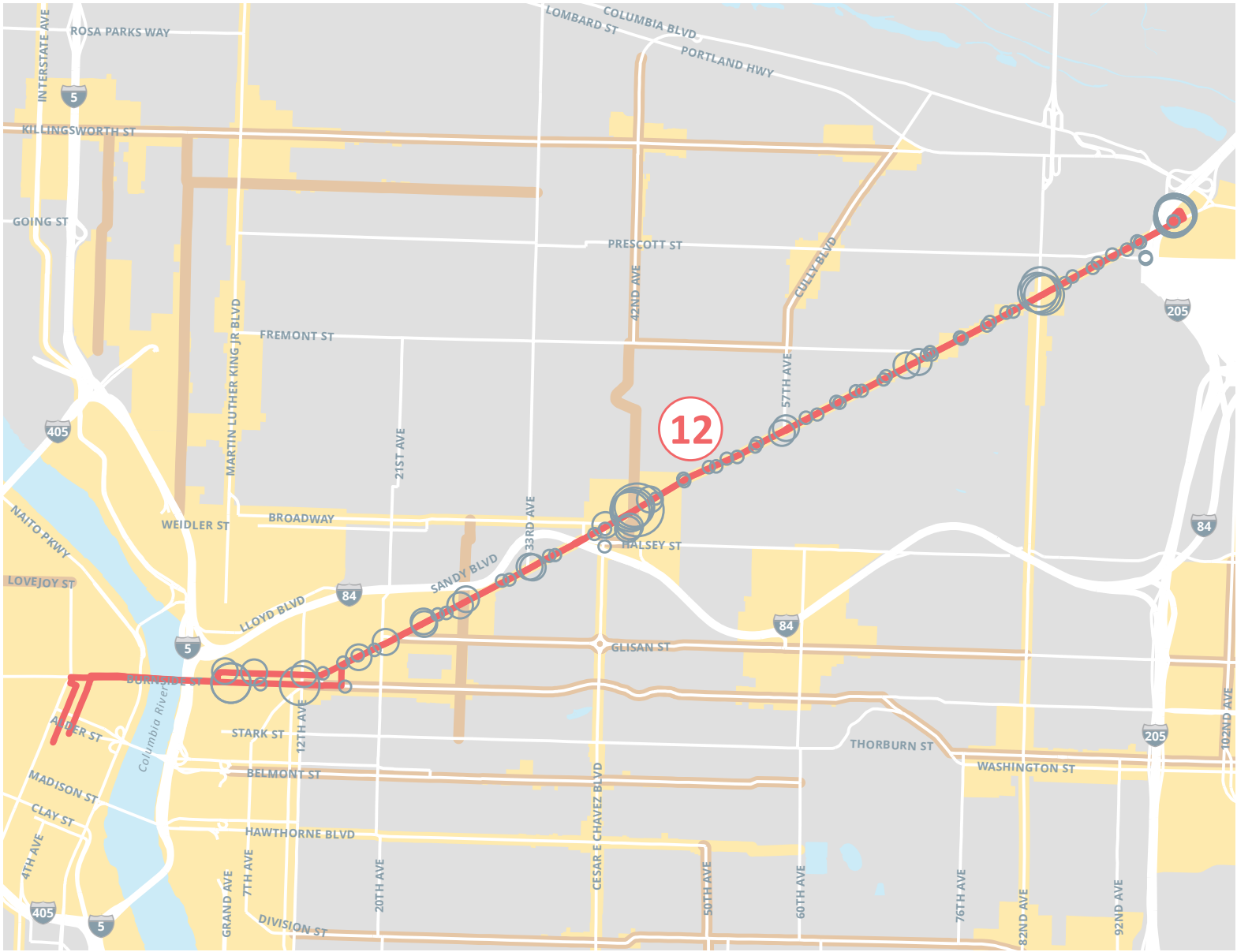
Line 12 Sandy Blvd

One-way length:
Approximately 6.6 miles

Termini:
SW 5th & Morrison/SW 6th & Alder to Parkrose Transit Center

Primary alignment:
NE Sandy Blvd

Note: The Line 12 ETC corridor excludes SW Barbur Boulevard, since planning for a High Capacity Transit/Light Rail Transit improvement is currently underway for that section of the line.



Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

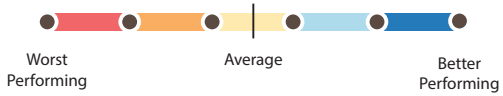
Line 12 Sandy Blvd

Corridor-wide Transit Operations Performance Summary

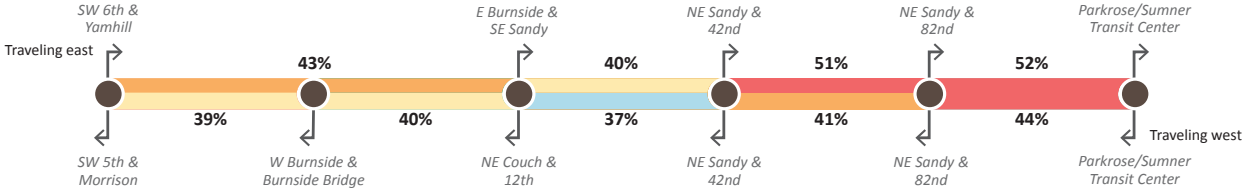
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	4,563	Greatest from SW 6th & Yamhill to E Burnside & SE Sandy Boulevard	Least between NE Sandy & Parkrose Transit Center to NE Sandy & 82nd
Transit Speed Average speed as percentage of posted speed limit	49%	Fastest from Parkrose Transit Center to NE Sandy & 82nd Avenue	Slowest from SW 6th & Yamhill to E Burnside & SE Sandy
Reliability Percent difference between 90th and 10th percentile revenue speeds	43%	Most reliable from NE Sandy & 42nd Avenue to NE Couch & 12th	Least reliable from NE Sandy & 82nd to Parkrose Transit Center
Dwell Time Time stopped at bus stops as percentage of total runtime	15%	Least from NE Couch & 12th to W Burnside & Burnside Bridge	Most from W Burnside & Burnside Bridge to SW 5th & Morrison

Performance Breakdown by Segment

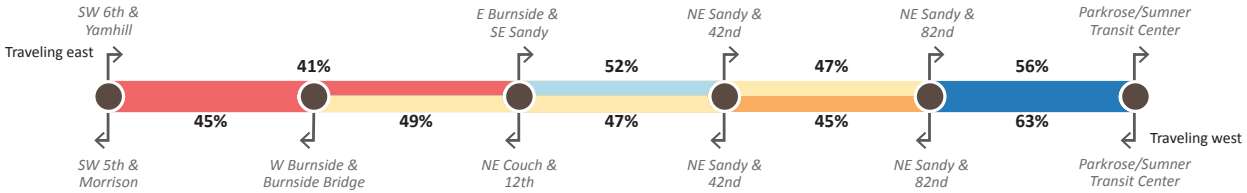
Displays corridor Reliability and Transit Speed performance by segment, from west to east and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

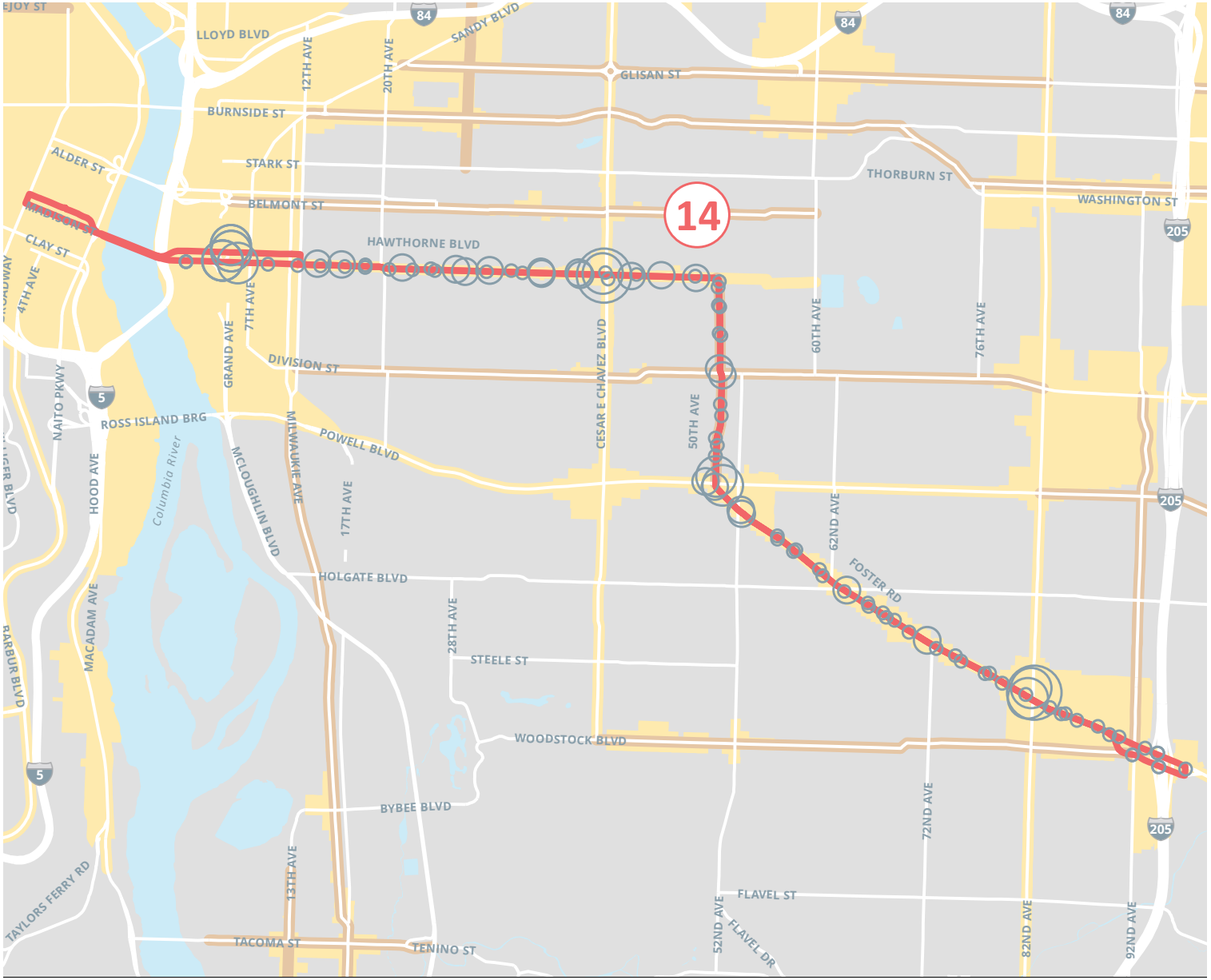
- The Line 12 corridor falls in the 25th percentile among ETC corridors and is above the city-wide average for people of color, LEP, and low-income populations.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 31,568 within a quarter mile of the corridor.
- 61 percent of the corridor is within a Portland Comprehensive Plan designated Center, and 90 percent is within a Civic Corridor.

Line 14 Hawthorne

One-way length:
Approximately 7.3 miles

Termini:
SW Madison & 4th
to SE Foster & 94th (I-205 Overpass)

Primary alignment:
SE Hawthorne Blvd/SE Foster Rd



Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

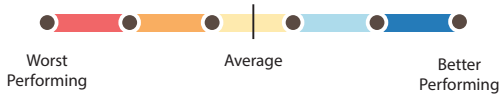
Line 14 Hawthorne

Corridor-wide Transit Operations Performance Summary

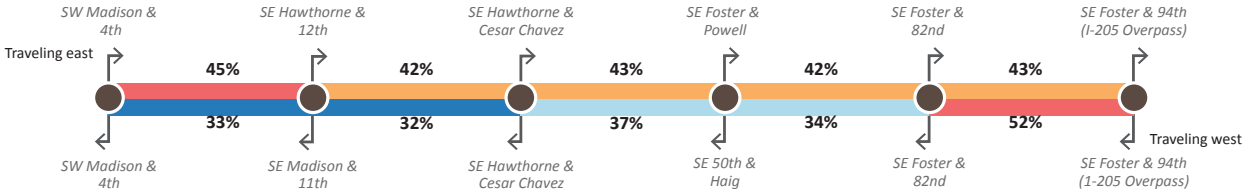
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	5,830	Greatest from **SE Madison & 11th** to **SE Madison & 4th**	Least from **SE Foster & 94th (I-205 Overpass)** to **SE Foster & 82nd**
Transit Speed Average speed as percentage of posted speed limit	48%	Fastest from **SE Hawthorne & 12th** to **SE Hawthorne & Cesar Chavez Blvd**	Slowest from **SE Hawthorne & Cesar Chavez Blvd** to **SE Foster & Powell**
Reliability Percent difference between 90th and 10th percentile revenue speeds	40%	Most reliable from **SE Hawthorne & Cesar Chavez Blvd** to **SW Madison & 11th**	Least reliable from **SE Foster & 94th (I-205 Overpass)** to **SE Foster & 82nd**
Dwell Time Time stopped at bus stops as percentage of total runtime	14%	Least from **SE Foster & 82nd** to **SE Foster & 94th (I-205 Overpass)**	Greatest from **SE Foster & 94th (I-205 Overpass)** to **SE Foster & 82nd**

Performance Breakdown by Segment

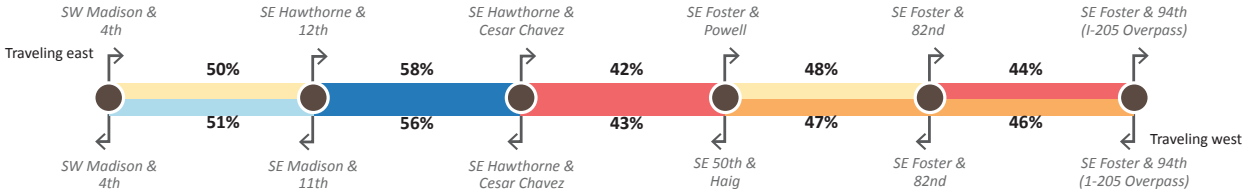
Displays corridor Reliability and Transit Speed performance by segment, from west to east and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

- The Line 14 corridor falls in the 25th - 50th percentile among ETC corridors for LEP and low-income populations.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 26,356 within a quarter mile of the corridor.
- Approximately 14,545 new households and jobs are forecasted within a quarter mile of the line from SW Madison & 4th to SE Madison & 11th.

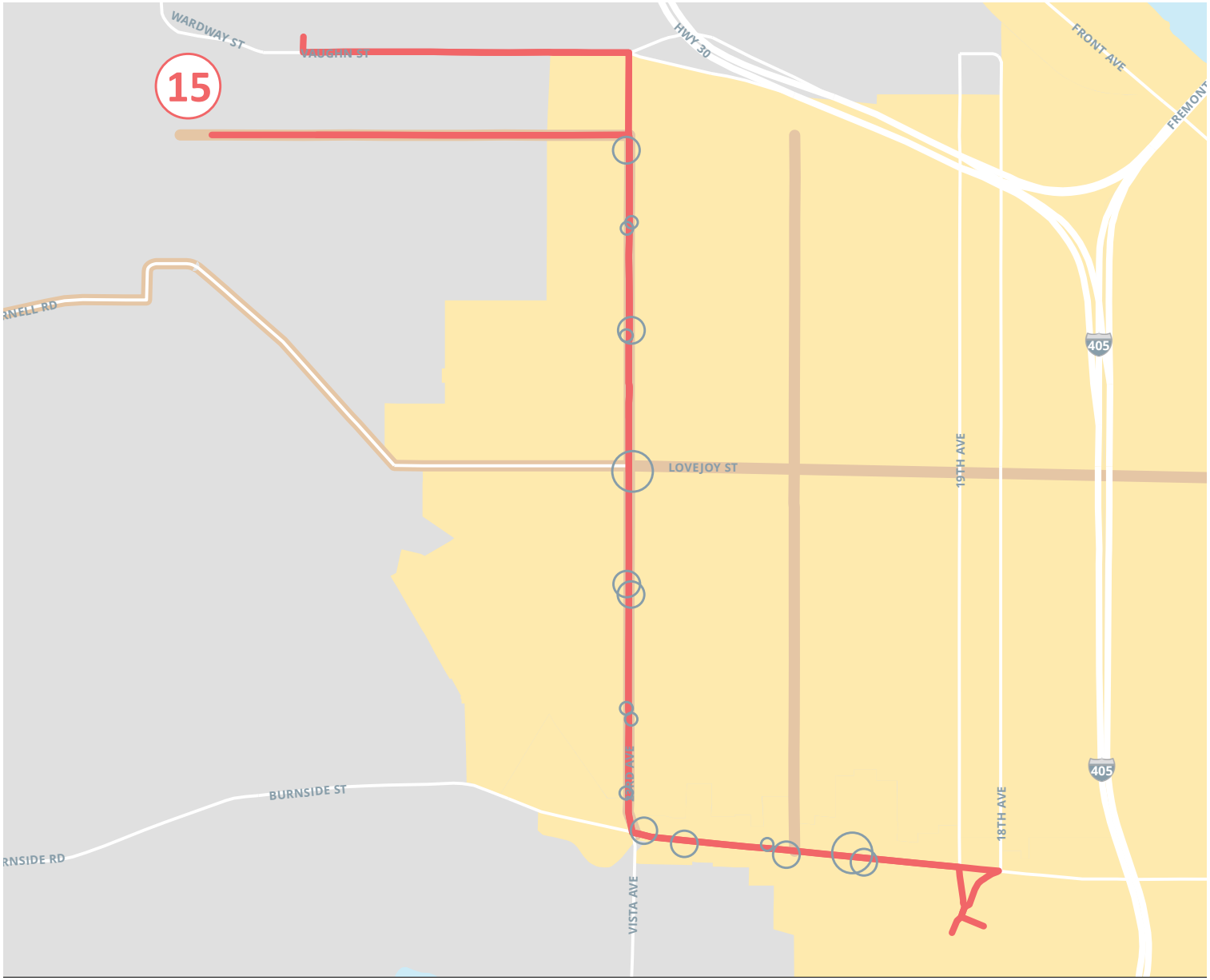
Line 15 NW 23rd
(west segment only)

One-way length:
Approximately 2.6 miles

Termini:
NW 27th & Vaughn at Montgomery Park/NW Thurman & 27th/28th
to SW Morrison & 17th/18th

Primary alignment:
NW 23rd Ave

Note: The Line 15 ETC corridor excludes SE Belmont Street, since that section of the does not currently exhibit the performance issues characterizing other ETC corridors.



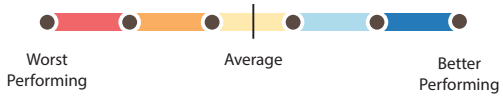
Line 15 NW 23rd (west segment only)

Corridor-wide Transit Operations Performance Summary

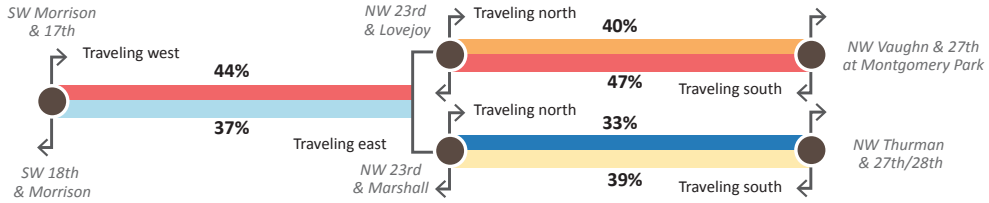
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	3,076	Greatest from SW Morrison & 17th to NW 23rd & Lovejoy	Least from NW Thurman & 27th to NW 23rd & Marshall
Transit Speed Average speed as percentage of posted speed limit	45%	Fastest from NW Vaughn & 27th at Montgomery Park to NW 23rd & Marshall	Slowest from NW 23rd & Marshall to SW 18th & Morrison
Reliability Percent difference between 90th and 10th percentile revenue speeds	40%	Most reliable from NW 23rd & Lovejoy to NW Thurman & 28th	Least reliable from NW 27th & Vaughn at Montgomery Park to NW 23rd & Marshall
Dwell Time Time stopped at bus stops as percentage of total runtime	13%	Least from NW 23rd & Lovejoy to NW Thurman & 28th	Greatest from NW 23rd & Marshall to SW 18th & Morrison

Performance Breakdown by Segment

Displays corridor Reliability and Transit Speed performance by segment, from north to south and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.

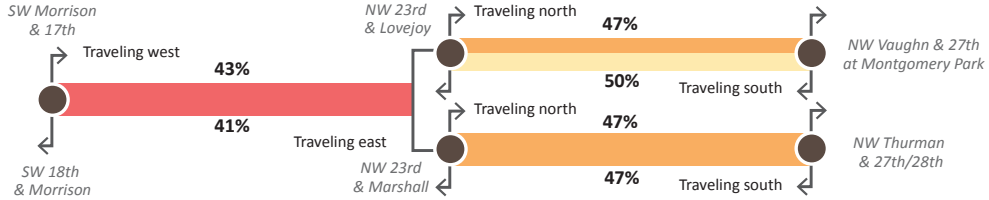


Reliability



Note: The Line 15 ETC corridor splits at NW 23rd & Lovejoy/ NW 23rd & Marshall. Service is staggered to terminate at NW Vaughn & 27th at Montegomery Park or NW Thurman & 27th/28th

Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

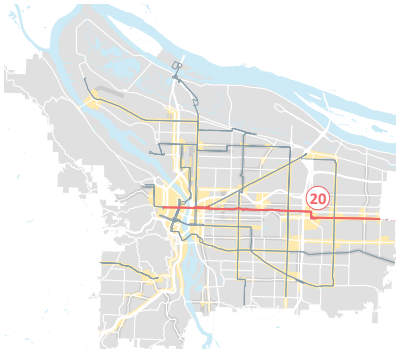
- The Line 15 corridor falls below the 25th percentile among ETC corridors for people of color, LEP, and low-income populations.
- The Line 15 corridor is below the city-wide average for LEP populations and below the city-wide average for people of color and low-income households.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 13,746 within a quarter mile of the line.

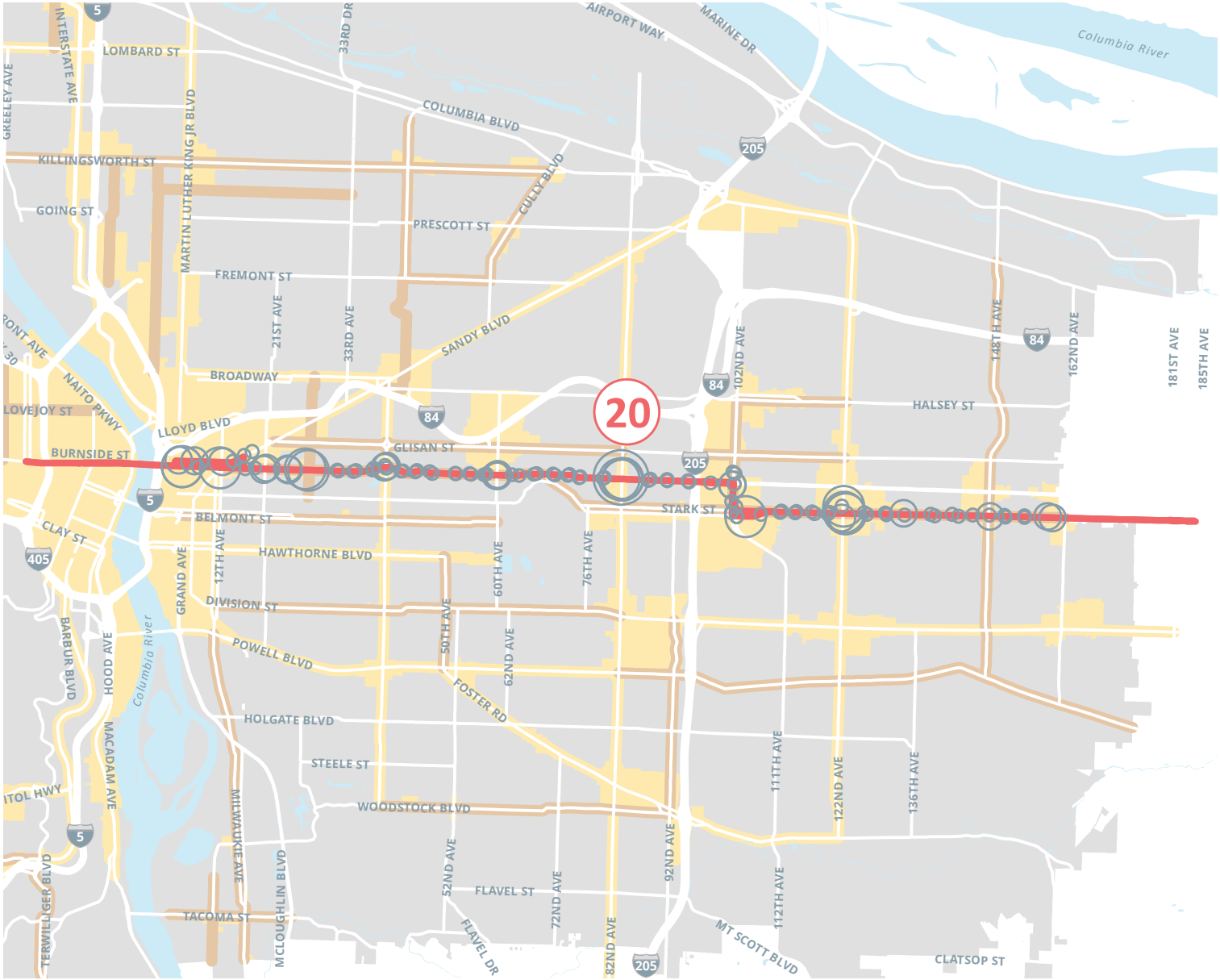
Line 20
Burnside/Stark
(east section)

One-way length:
Approximately 11 miles

Termini:
W Burnside & 18th/19th
to SE Stark & 185th

Primary alignment:
E Burnside/SE Stark St





Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

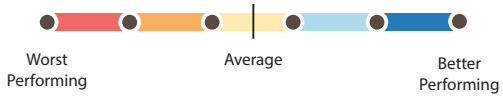
Line 20 Burnside/Stark (east section)

Corridor-wide Transit Operations Performance Summary

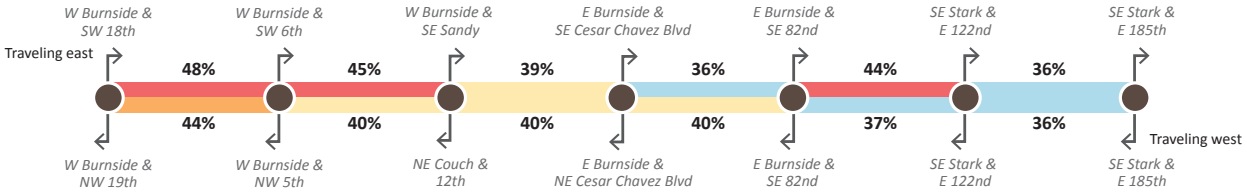
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	8,020	Greatest from W Burnside & SW 6th to E Burnside & SE Sandy	Least from E Burnside & NE 82nd to E Burnside & NE Cesar Chavez
Transit Speed Average speed as percentage of posted speed limit	51%	Fastest from E Burnside & SE Cesar Chavez Blvd to E Burnside & SE 82nd	Slowest from W Burnside & NW 5th to W Burnside & NW 19th
Reliability Percent difference between 90th and 10th percentile revenue speeds	40%	Most reliable from E Burnside & SE Cesar Chavez Blvd to E Burnside & SE 82nd	Least reliable from W Burnside & SW 18th to W Burnside & SW 6th
Dwell Time Time stopped at bus stops as percentage of total runtime	18%	Least from E Burnside & NE 82nd to E Burnside & NE Cesar Chavez Blvd	Greatest from W Burnside & SW 18th to W Burnside & SW 6th

Performance Breakdown by Segment

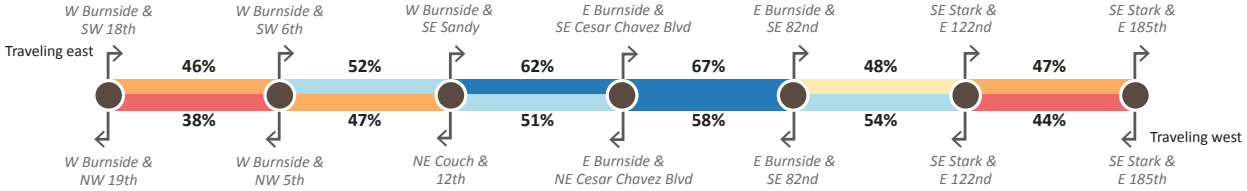
Displays corridor Reliability and Transit Speed performance by segment, from west to east and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

- From SE Stark & 122nd to SE Stark & 185th, the Line 20 corridor falls in the top 25th percentile among ETC corridors, and is above the city-wide average for people of color, limited English proficiency, and low-income populations.
- Between 2010 and 2035, the City forecasts households and jobs will grow by approximately 43,424 within a quarter mile of the corridor.
- Approximately 15,064 new households and jobs are forecasted within a quarter mile of the line from W Burnside & SW 6th to E Burnside & SE Sandy Blvd.

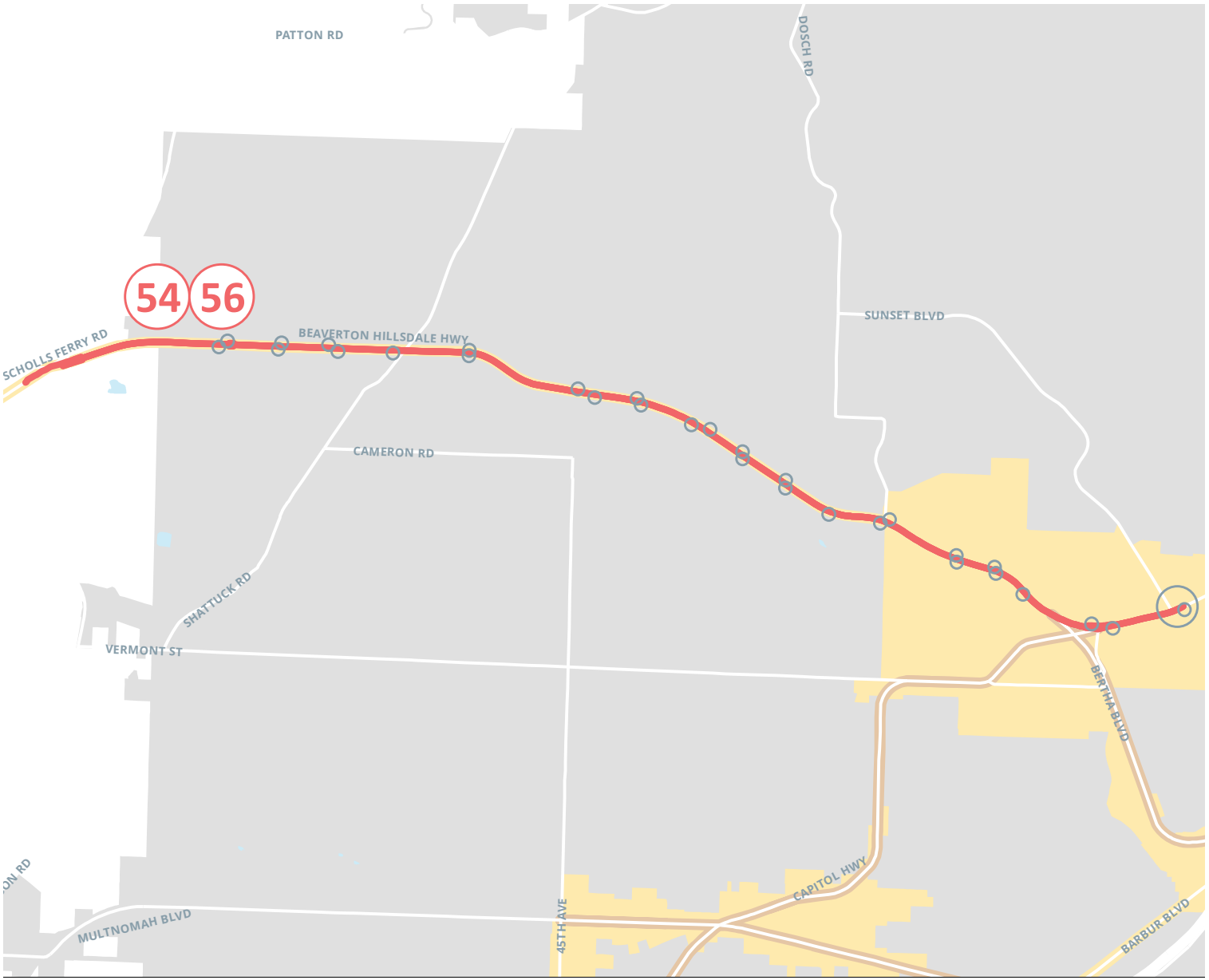
Line 54/56
Beaverton Hillsdale Hwy/Scholls Ferry Rd
(Beaverton-Hillsdale Hwy segment only)

One-way length:
Approximately 5.8 miles

Termini:
SW Capitol & Sunset
to SW Beaverton-Hillsdale Hwy
& Oleson Rd/SW Scholls Ferry

Primary alignment:
W Beaverton-Hillsday Hwy

Note: Lines 54 and 56 share overlapping segments between SW Capitol & Sunset and SW Beaverton-Hillsdale Hwy & Oleson Rd/SW Schools Ferry. Transit performance data is averaged for overlapping alignments and displayed as a single segment for both lines.



Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

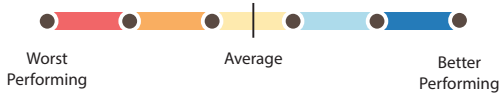
Line 54/56 Beaverton Hillsdale Hwy/Scholls Ferry Rd (Beaverton-Hillsdale Hwy segment only)

Corridor-wide Transit Operations Performance Summary

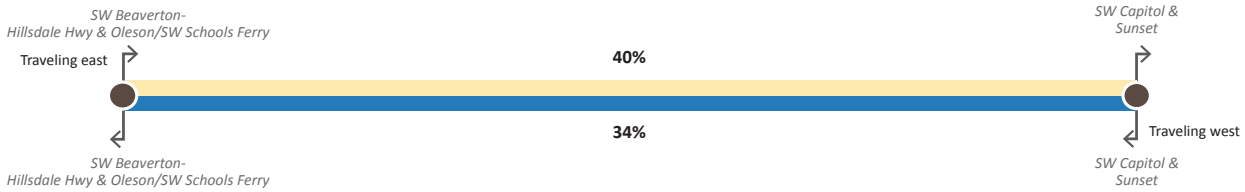
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	3,393	Greatest from SW Scholls Ferry & Beaverton-Hillsdale Hwy to SW Capitol & Sunset	Least from SW Beaverton-Hillsdale Hwy & Oleson to SW Capitol & Sunset
Transit Speed Average speed as percentage of posted speed limit	57%	Fastest from SW Capitol & Sunset to SW Beaverton-Hillsdale Hwy & Oleson	Slowest from SW Beaverton-Hillsdale Hwy & Oleson to SW Capitol & Sunset
Reliability Percent difference between 90th and 10th percentile revenue speeds	37%	Most reliable from SW Beaverton-Hillsdale & Oleson to SW Capitol & Sunset	Least reliable from SW Capitol & Sunset to SW Scholls Ferry & BH Hwy
Dwell Time Time stopped at bus stops as percentage of total runtime	14%	Least from SW Capitol & Sunset to SW Scholls Ferry & BH Hwy	Greatest from SW Beaverton-Hillsdale & Oleson to SW Capitol & Sunset

Performance Breakdown by Segment

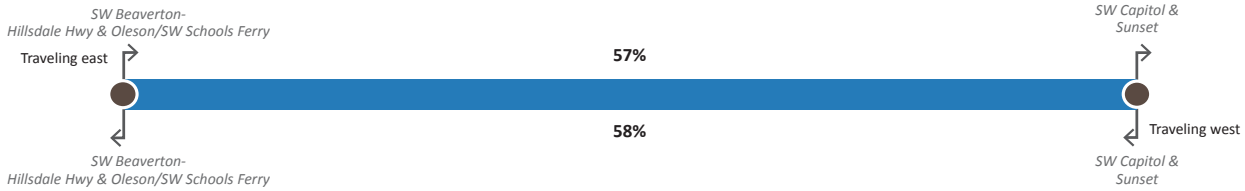
Displays corridor Reliability and Transit Speed performance by segment, from west to east and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

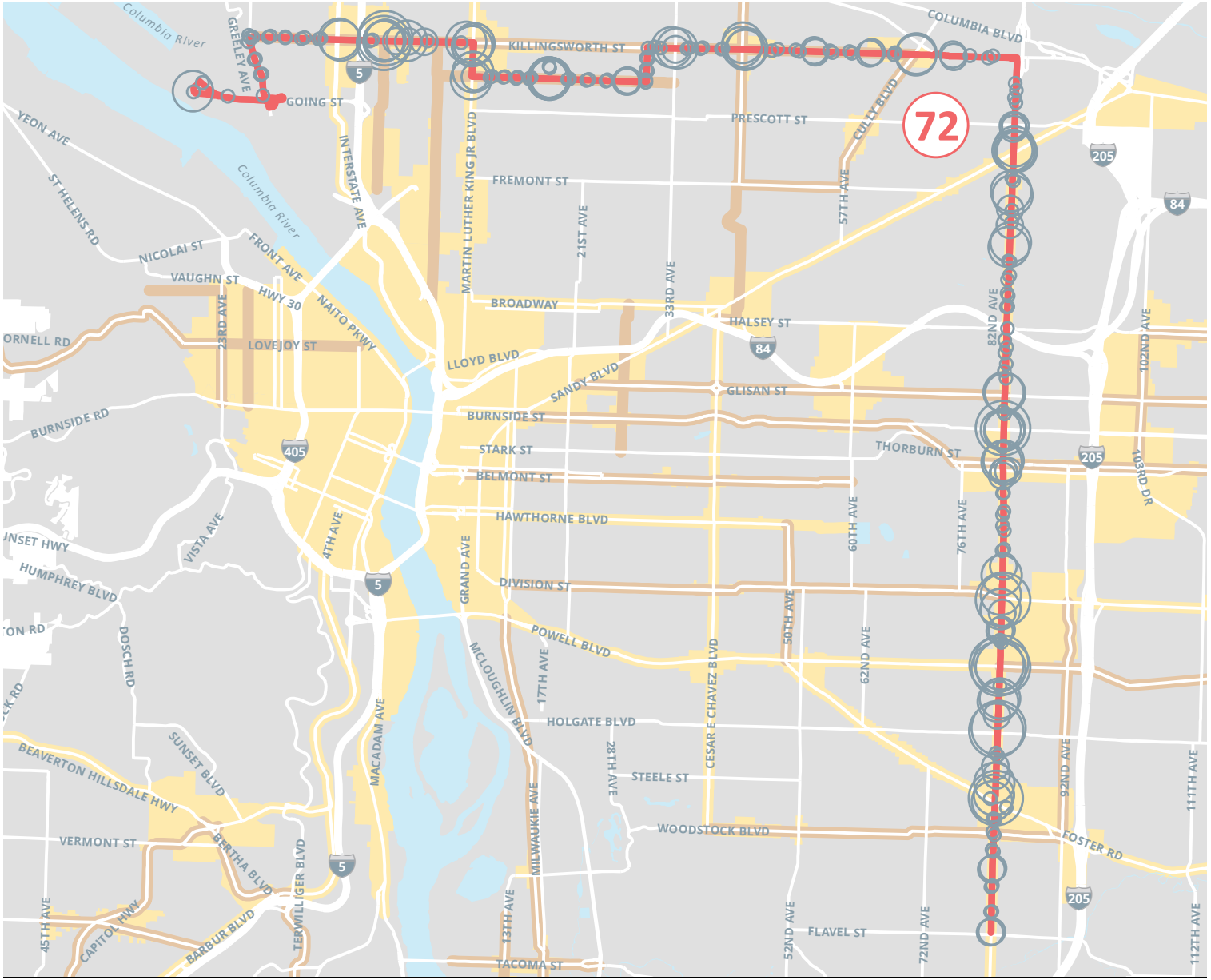
- The Line 54/56 corridor falls below the 25th percentile among ETC corridors and is below the city-wide average for people of color, LEP, and low-income populations.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 3,920 within a quarter mile of the corridor.
- 28 percent of the corridor is within a Portland Comprehensive Plan designated Center, and 46 percent is within a Civic or Neighborhood Corridor.

Line 72
Killingsworth/82nd

One-way length:
Approximately 14 miles

Termini:
N Anchor & Channel
to SE 82nd & Flavel

Primary alignment:
N Killingsworth/82nd Ave



Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

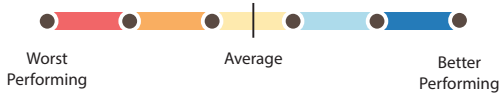
Line 72 Killingsworth/82nd

Corridor-wide Transit Operations Performance Summary

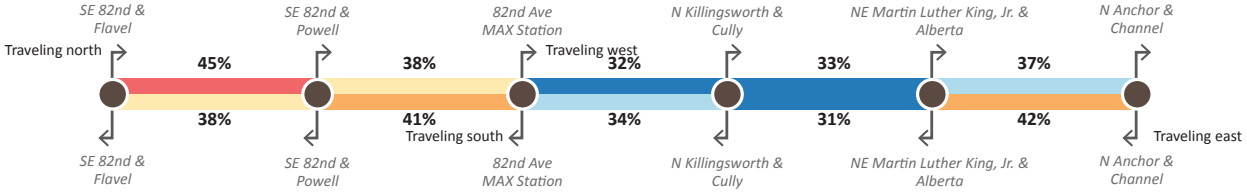
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	14,838	Greatest from NE 82nd & 82nd Ave MAX Stn/I-84 to SE 82nd & Powell	Least from NE MLK & Alberta to N Anchor & Channel
Transit Speed Average speed as percentage of posted speed limit	47%	Fastest from NE MLK & Alberta to N Killingsworth & Cully	Slowest from SE 82nd & Flavel to SE 82nd & Powell
Reliability Percent difference between 90th and 10th percentile revenue speeds	37%	Most reliable from NE MLK & Alberta to N Killingsworth & Cully	Least reliable from SE 82nd & Flavel to SE 82nd & Powell
Dwell Time Time stopped at bus stops as percentage of total runtime	15%	Least from SE 82nd & Flavel to SE 82nd & Powell	Greatest from NE MLK & Alberta to N Anchor & Channel

Performance Breakdown by Segment

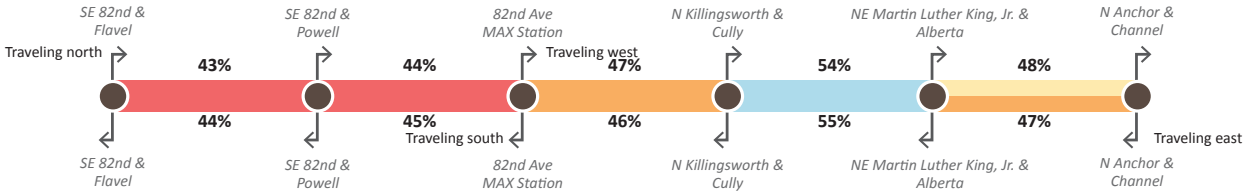
Displays corridor Reliability and Transit Speed performance by segment, from north to south and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

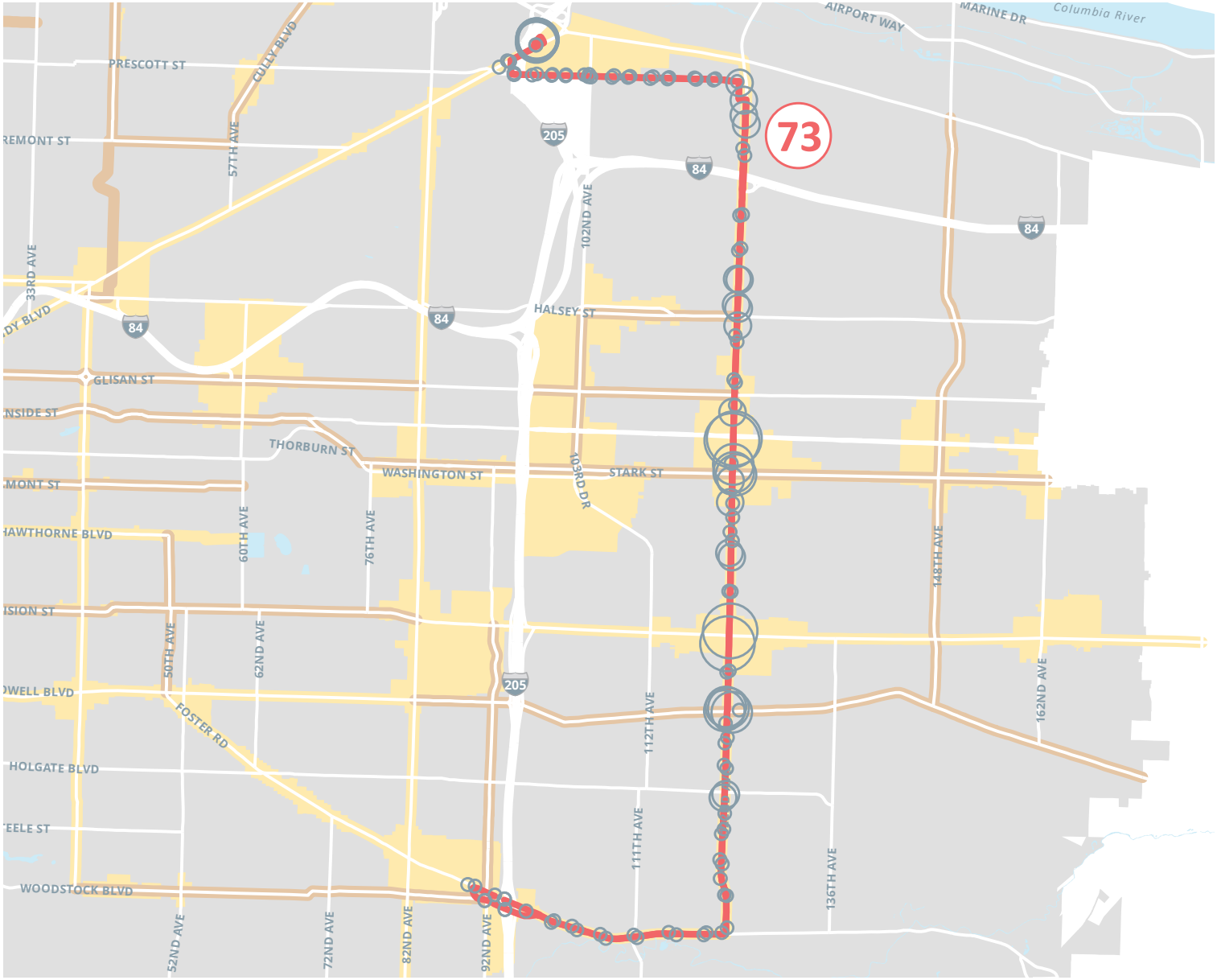
- The Line 72 corridor falls in the top 25th percentile among ETC corridors and is above the city-wide average for people of color.
- The corridor scores in the 50th - 75th percentile among ETC corridors and is above the city-wide average for low-income and LEP populations.
- 26 percent of the corridor is within a Portland Comprehensive Plan designated Center, and 77 percent is within a Civic or Neighborhood Corridor.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 24,767 within a quarter mile of the corridor.

Line 73 122nd

One-way length:
Approximately 9 miles

Termini:
Parkrose/Sumner Transit Center to SE Foster & 94th (I-205 Overpass)

Primary alignment:
NE 122nd Ave



Average Weekday Stop-Level Activity (Boardings + Alightings)

0 - 100 | 101 - 200 | 201 - 400 | 401 - 820

Portland Comprehensive Plan Designation

Center or Civic Corridor | Neighborhood Corridor

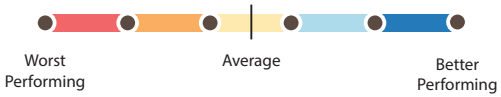
Line 73 122nd

Corridor-wide Transit Operations Performance Summary

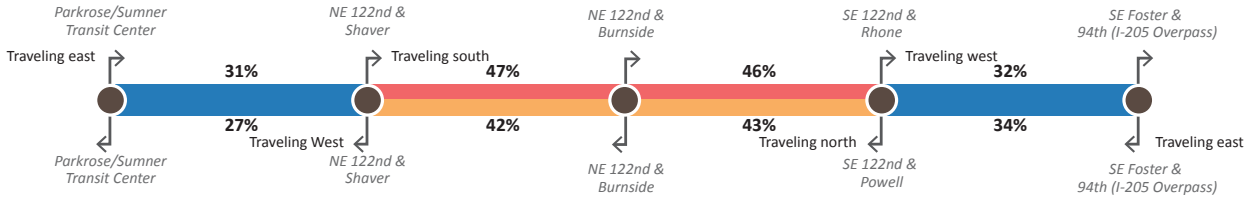
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	4,293	Greatest from SE 122nd & Shaver to SE 122nd & Burnside	Least from NE 122nd & Shaver to Parkrose/ Sumner Transit Center
Transit Speed Average speed as percentage of posted speed limit	51%	Fastest from NE 122nd & Shaver to Parkrose/Sumner Transit Center	Slowest from SE 122nd & Burnside to SE 122nd & Rhone
Reliability Percent difference between 90th and 10th percentile revenue speeds	38%	Most reliable from NE 122nd & Shaver to Parkrose/Sumner Transit Center	Least reliable from NE 122nd & Shaver to SE 122nd & Burnside
Dwell Time Time stopped at bus stops as percentage of total runtime	15%	Least from SE 122nd & Powell to SE 122nd & Burnside	Greatest from SE 122nd & Rhone to SE Foster & 94th (I-205 Overpass)

Performance Breakdown by Segment

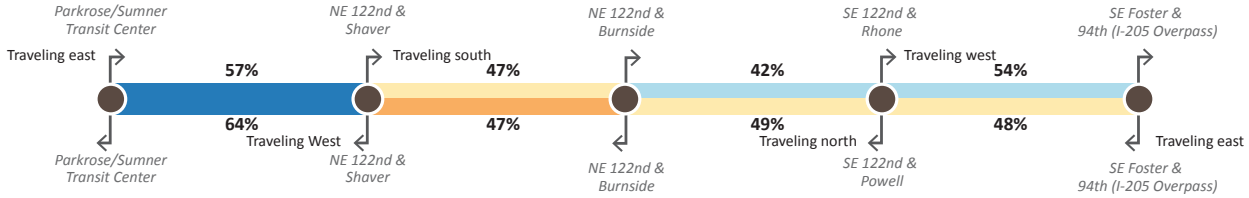
Displays corridor Reliability and Transit Speed performance by segment, from north to south and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

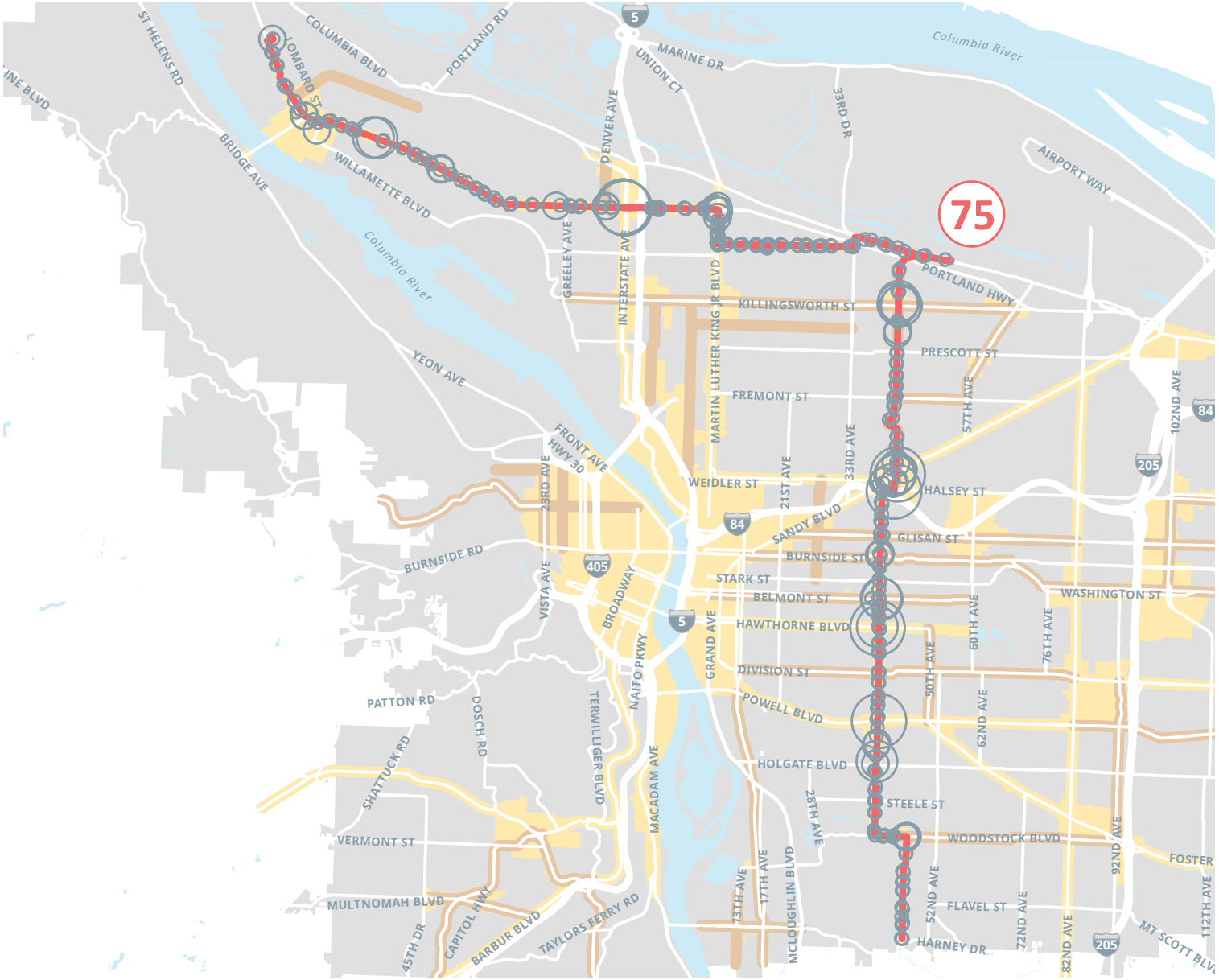
- The Line 73 corridor falls in the top 25th percentile among ETC corridors and is above the city-wide average for people of color, LEP, and low-income populations.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 14,502 within a quarter mile of the corridor.
- Approximately 26 percent of the corridor is within a Portland Comprehensive Plan designated Center, and 77 percent is within a Civic or Neighborhood Corridor.

Line 75
Cesar Chavez/Lombard

One-way length:
Approximately 20.6 miles

Termini:
Pier Park
to SE 45th & Harney St

Primary alignment:
Lombard/Cesar Chavez



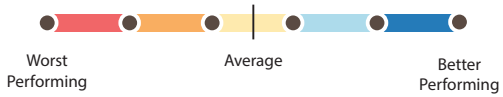
Line 75 Cesar Chavez/Lombard

Corridor-wide Transit Operations Performance Summary

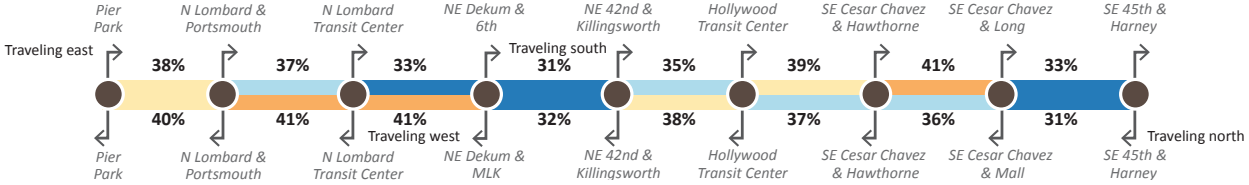
Performance Measure		Key Findings	
Average Existing Weekday Transit Trips Entering load plus stop-level boardings in each direction	9,527	Greatest from **Hollywood Transit Center** to **NE 42nd & Killingsworth**	Least from **SE Cesar Chavez & Long** to **SE 45th & Harney**
Transit Speed Average speed as percentage of posted speed limit	52%	Fastest from **SE Cesar Chavez & Long** to **SE 45th & Harney**	Slowest from **Hollywood Transit Center** to **SE Cesar Chavez & Hawthorne**
Reliability Percent difference between 90th and 10th percentile revenue speeds	36%	Most reliable from **NE Dekum & 6th** to **NE 42nd & Killingsworth**	Least reliable from **NE Dekum & MLK** to **N Lombard Transit Center**
Dwell Time Time stopped at bus stops as percentage of total runtime	14%	Least from **SE Cesar Chavez & Long** to **SE 45th & Harney**	Greatest from **SE Cesar Chavez & Hawthorne** to **Hollywood Transit Center**

Performance Breakdown by Segment

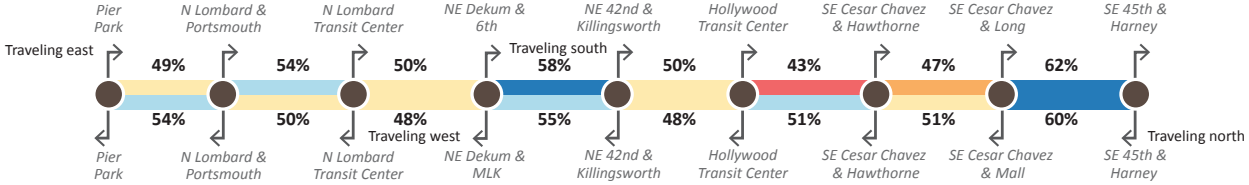
Displays corridor Reliability and Transit Speed performance by segment, from north to south and back. The color scale represents 20th percentile breaks in the data. Quintiles are calculated from the universe of performance scores for all Enhanced Transit Corridors.



Reliability



Transit Speed



Equity and Forecasted Future Growth (2010 - 2035)

- The Line 75 corridor falls below the 25th percentile among ETC corridors and is above the city-wide average for low-income populations.
- Equity communities are concentrated from Pier Park to N Lombard & Portsmouth.
- Between 2010 and 2035, the City forecasts households and jobs to grow by approximately 28,044 within a quarter mile of the corridor.
- Approximately 28 percent of the corridor is within a Portland Comprehensive Plan designated Center. The entire corridor is within a Civic or Neighborhood Corridor.

4. Corridor Prioritization Methodology

Building on the initial corridor screening summarized in Section 2 of this memorandum, the ETC Prioritization Methodology will be developed in two phases.

The **Phase 1** methodology includes the following activities:

- Evaluate candidate corridors and segments: evaluate the ETC candidate corridors using a quantitative scoring and weighting framework that is easily replicable for future application, using a set of six evaluation measures
- Categorize candidates: analyze the spatial patterns of the evaluation results for all of the candidate corridors and assess where the need is at a *line level* scale of treatment, a *segment* level, or a *hot spot* level affecting one or more lines
- Score and rank Enhanced Transit corridors, segments and hot spots: group the candidate ETC corridors into priority tiers for further analysis

Phase 2 elements of the Methodology will be finalized later in the project in consultation with the ETC Project Management Team. Outputs will likely include:

- Assessing readiness and feasibility: this will be a qualitative assessment of the readiness of a corridor or segment in terms of political, physical considerations, or ability to integrate improvement into another project at the same location, thereby reducing the cost and disruption of implementing the solution Performance targets for ETC corridors
- Establishing thresholds or “triggers” for designating enhanced transit corridors, segments and hot spots or applying enhanced transit treatments
- Develop a framework for ongoing evaluation and monitoring of ETC corridors and potential future ETC corridors

Phase 1 Corridor and Segment Evaluation

Evaluation Criteria

As described earlier in this memorandum, the Phase 1 Corridor Evaluation applied six of the criteria described in Section 3 of this memorandum. (Average weekday stop level activity was not analyzed for this phase).

- **Average Existing Weekday Transit Trips (FTA Warrants methodology)**
- **Reliability**
- **Transit Speed**
- **Dwell Time**
- **Equity**
- **Forecasted Future Growth (2010 – 2035)**

These evaluation criteria will be applied to each corridor in order to rank and prioritize them into three ETC "tiers."

Evaluation Process

ETC corridors were ranked into tiers by the following process:

- Five percentile breaks were identified for each indicator, based on the indicator values for all ETC time point segments.
- Each time point segment recieved a score between 1 and 5, depending on where the performance indicator value falls within the percentile breaks.
- Scores for each indicator were aggregated for each time point segment.
- Since some candidate corridors have more time point segments than others, the total segment score was normalized to accurately compare candidate corridors to avoid inflating scores for corridors with more segments. The aggregate scores were weighted based on the proportion of time point segment distance to the total corridor distance in each direction.
- The resulting weighted segment scores were totaled for each corridor to establish a candidate corridor ranking. The maximum score for any candidate corridor is 60.
- The corridors were ranked by total score, and broken up into three tiers (*see box to the right*)

Note: Before Phase 2 analysis begins, evaluation results will be analyzed for individual measure scores and total corridor scores to assess whether the need is most appropriately addressed at a *line level* scale of treatment, a *segment* of a line or a *hot spot* (a single time point segment or smaller) that serves one or more lines.

Tier 1: Corridor lines, segments or hot spots most in need of capital and operational improvements. These are the highest priority Enhanced Transit Corridor lines, segments and hot spots. From this tier, up to three ETC candidate corridors will be studied further during this planning process to inform Conceptual Investment Plans. The investment plans may identify capital improvements and operational treatments to improve transit performance. Corridor lines, segments and hot spots in this tier are likely to be recommended as projects in the Metro RTP, City of Portland TSP Major Projects List or City of Portland TSP Transit Priority program.

Tier 2: Corridor lines, segments or hot spots with moderate need. These candidates may be studied further at a future date through another planning process or program to assess need and applicability of ETC Toolbox solutions. Corridors, segments and hot spots in this tier may also be recommended as projects in the RTP, TSP Major Projects List or TSP Transit Priority program in a later implementation timeframe.

Tier 3: Corridors with the least need, to be monitored. As population, employment and demand increase, corridor performance will be assessed over time and ETC Toolbox solutions will be considered for application as certain thresholds or "triggers" are met in the future.

Phase 1 Evaluation Results

Appendix D: **Methodology Evaluation** documents the evaluation process. Results will be reviewed and discussed by the project team and the ETC TAC.

Next Steps

During the next phase of the ETC planning process, Phase 2 of the Methodology will be developed and up to three corridors in Tier 1 will be identified for further analysis to inform Conceptual Investment Plans with potential design treatments from the Enhanced Transit Corridors Toolbox.

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