

APPENDIX A

COMMUNITY DEMOGRAPHICS

This document provides key historic context of the region, and data for the evaluation of candidate corridors, including equity metrics and other data for community context.



PierceTransit
Stream
Community Demographics &
Equity

January 12, 2022

The Stream System Expansion Study (SSES) will evaluate four candidate BRT corridors and identify the best candidate for Stream BRT service.

This memo provides key historic context and data for the evaluation of candidate corridors.

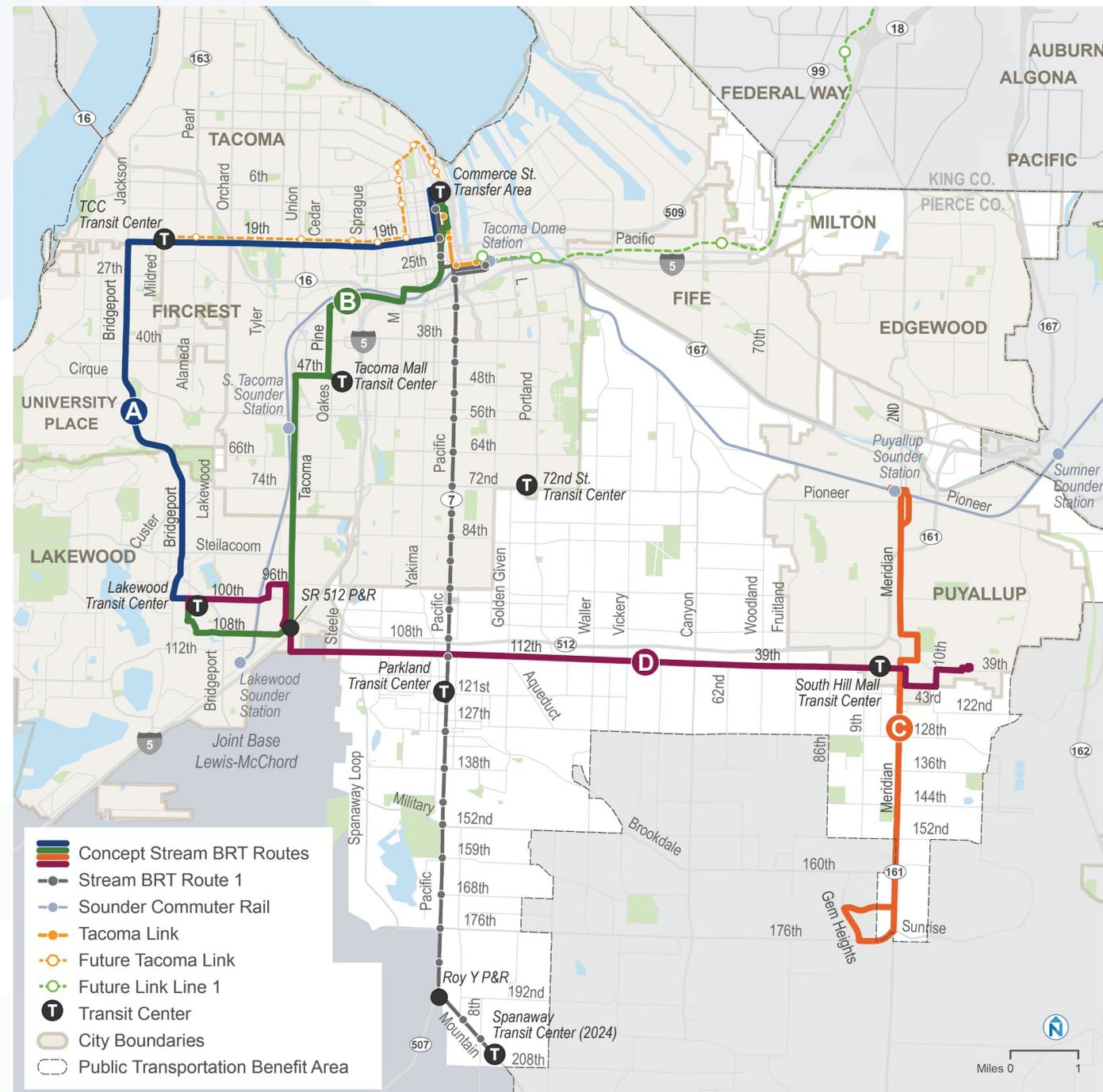
Overview

Table of Contents

- Historic Context
 - *History of study area and equity impacts of land use and transportation decisions.*
- Prioritizing Equity
 - *Methodology to identify underserved populations and highlight where investment can connect to the most opportunities.*
- SSES Community Context
 - *Demographic overview and projected growth surrounding the four candidate corridors.*

SSES CANDIDATE CORRIDORS

- 4 candidate BRT corridors.
- Corridors generally follow existing Pierce Transit Routes 2, 3, 4, 402 (ending at Puyallup Station).



HISTORIC CONTEXT



Historic Context

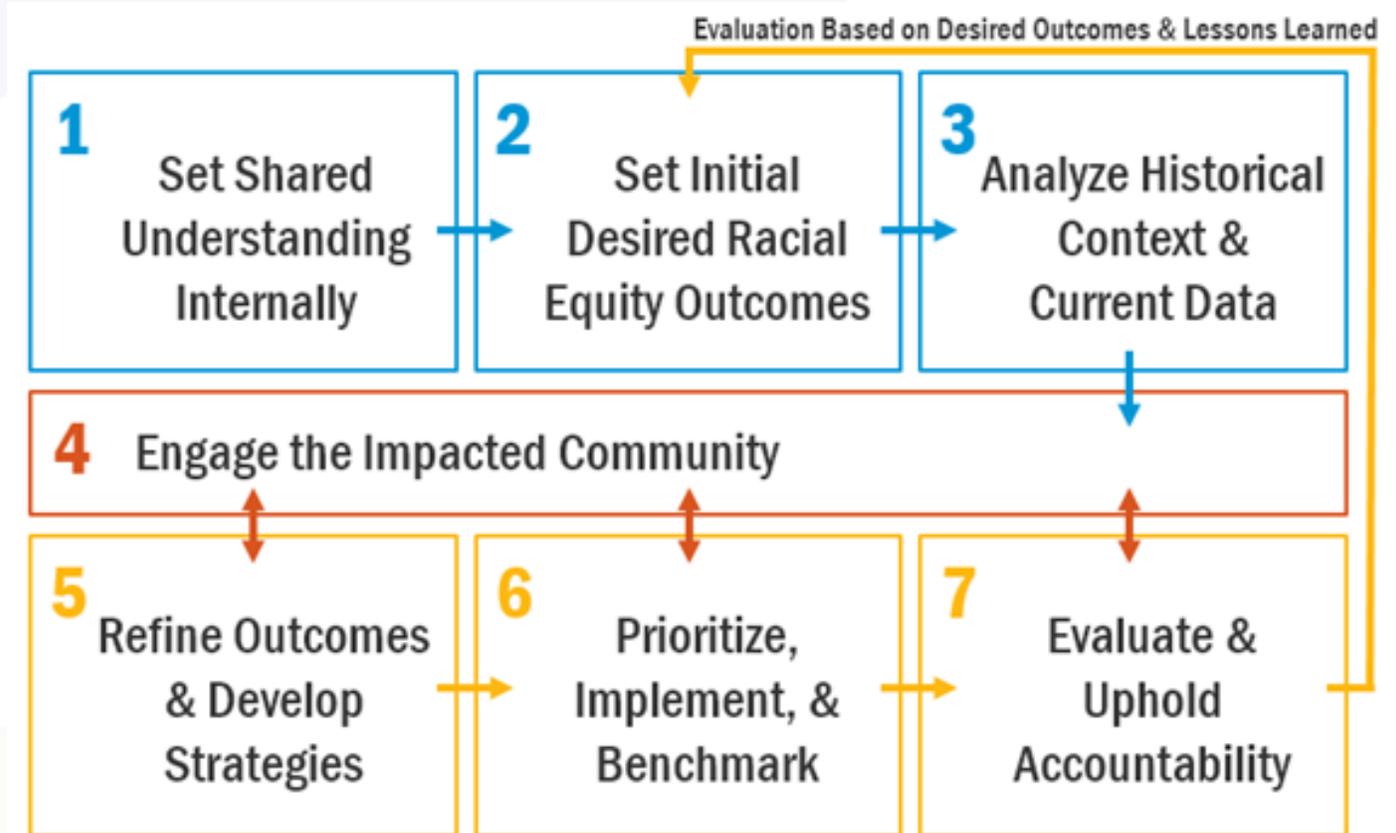


Pierce Transit and the Stream System Expansion Study (SSES) team recognize the historic harms caused to black people, indigenous people, and people of color by land and transportation system development. We do so to ensure future decisions create benefits for and with these communities and others.

HISTORIC CONTEXT:

What we can learn

- Land use and transportation policies impact where people live, quality of life, and access to opportunity and essential services.
- Understanding major historical events in the study area serves two purposes:
 1. Acknowledge past and current harm inflicted upon communities from transportation and land use decisions, and
 2. Identify populations that are historically and currently underserved.



HISTORIC CONTEXT:

Indigenous Lands⁽¹⁾

- Today's Pierce County was the original homelands of the Nisqually, Puyallup, Squaxin, Steilacoom, and Muckleshoot peoples.
- These lands were acquired through aggressive white colonization and settlement expansion tactics, occupying areas rich in natural resources and close to established trade routes.
- Naches Trail was the first major transportation route connecting indigenous people from the Cascades to the Puget Sound, including across what is today's Pierce County.

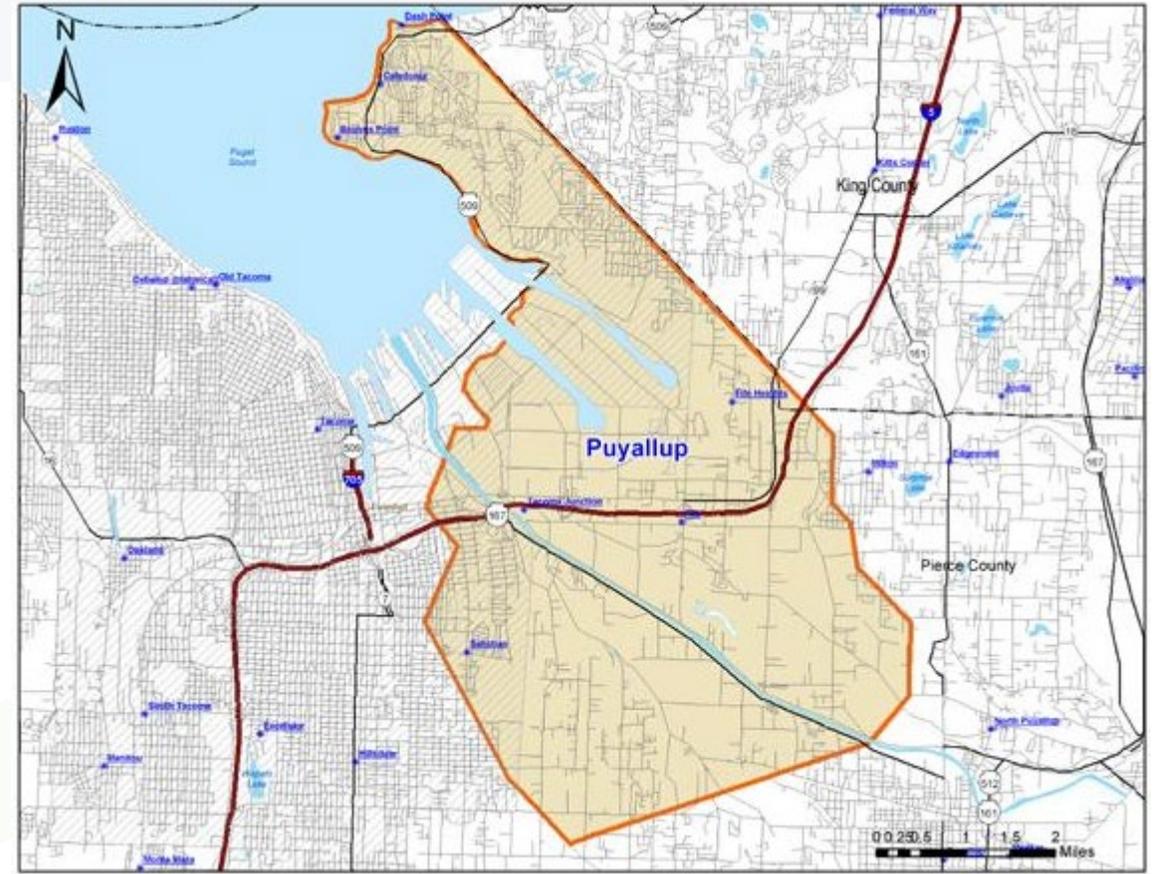


White acquisition of Naches Pass drove tribal communities off their lands.

HISTORIC CONTEXT:

Tribal Land Acquisitions⁽²⁾

- Throughout the 1850s, tribal communities were forced off their native lands due to white settlement and resource extraction.
- This resulted in segregation of native populations into reservations.
- The Puyallup people were forced to relocate into a reservation on the south shore of Commencement Bay.
- Native people were forced to legally relinquish rights to their land and water through treaties such as the one signed at Medicine Creek in 1854 between western leaders and members of the Nisqually and Puyallup.



[Puyallup Reservation; Tacoma, Washington](#)

KEY DATES IN TRANSIT HISTORY

Transit Modes

Horse Car: 1888-1889 - Tacoma Street
Railway Co.

Steam Dummy: 1888-1895 - several
companies

Electric Streetcar: 1890-1899 - Tacoma
Railway & Motor Co: 1899-1941 - Tacoma
Railway & Power Co.

Operated Cable Cars: 1891-1938

Buses Introduced: 1923

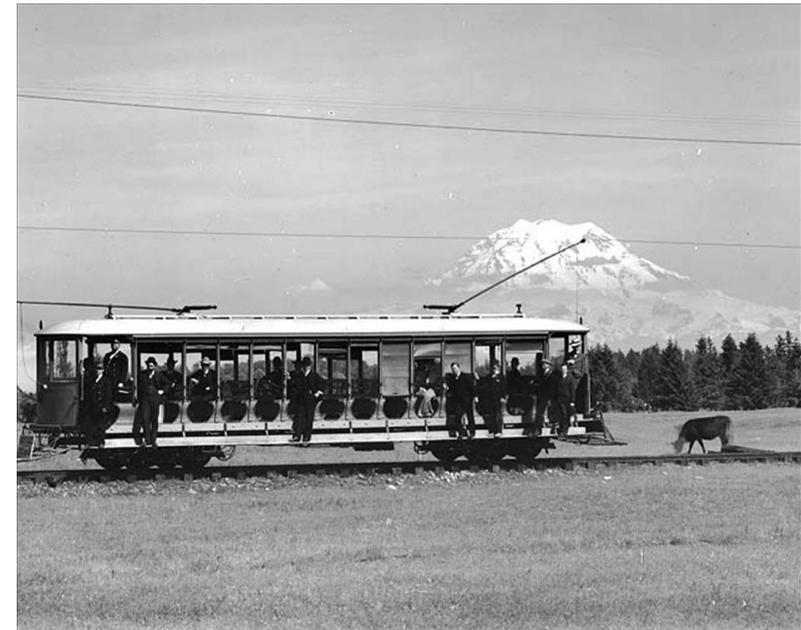
Streetcars discontinued: 1938

Transit Agencies

Tacoma Transit Company: 1941-1961

Tacoma Transit System: 1961-1980

Pierce Transit: 1980-Current



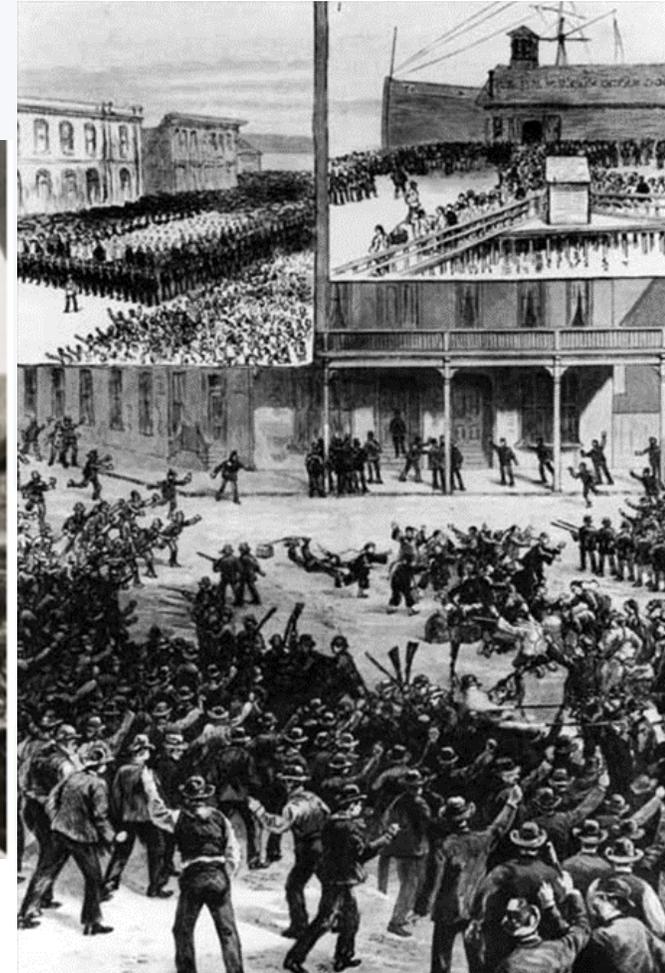
RAIL DEVELOPMENT

Transcontinental Railroad⁽³⁾

- In 1873, Tacoma was chosen over Seattle to be the terminus of the Northern Pacific Railroad.
- Construction of the Western Division and Northern Pacific Rail railroad in the 1870s-1880s relied upon forced labor from the Chinese, a transient community who lived on the waterfront along the Northern Pacific tracks on land leased from the railroad.
- Forced labor conditions resulted in riots that broke out in 1885. This led to the complete destruction of their community, the death of many Chinese people, and the complete expulsion of Chinese people from Tacoma.



Railroad Laborers



Tacoma Labor Riots, 1885

RAIL & ECONOMIC DEVELOPMENT

Port of Tacoma⁽⁴⁾



Workers at the Todd Pacific Shipyards (circa 1940). Photo courtesy of Tacoma Public Library

- In 1918, Pierce County citizens voted to establish the Port of Tacoma.
- White people's appetite for wealth creation and resource extraction allowed by the port resulted in continued taking of indigenous lands, including the Puyallup settled at Commencement Bay.
- A 240-acre tract of land including parts of the Puyallup reservation was taken from already settled people to develop the port.
- During WWII, the Port of Tacoma's Todd Pacific Shipyards constructed 74 warships, solidifying the Port's importance in the US's defense industry.

HISTORIC CONTEXT:

The Great Migration of the 1940s (5)

- The Port of Tacoma's wartime economic engine spurred changes to Pierce County's demographics
- During the 1940s, approximately 25,000 African-Americans migrated to Washington and Oregon, mainly to find work in the thriving defense industries and escape the harshness of the South.
- The new Black population in Washington grew by 300% between 1940 to 1950, disrupting the existing "white utopia" of the Pacific northwest.
- The migration brought positive changes to the Pacific Northwest culture including increase of political Black influence, strengthening of civil rights organizations, and the enactment of anti-discrimination legislation.



HISTORIC CONTEXT:

Official Recognition of Tribal Lands

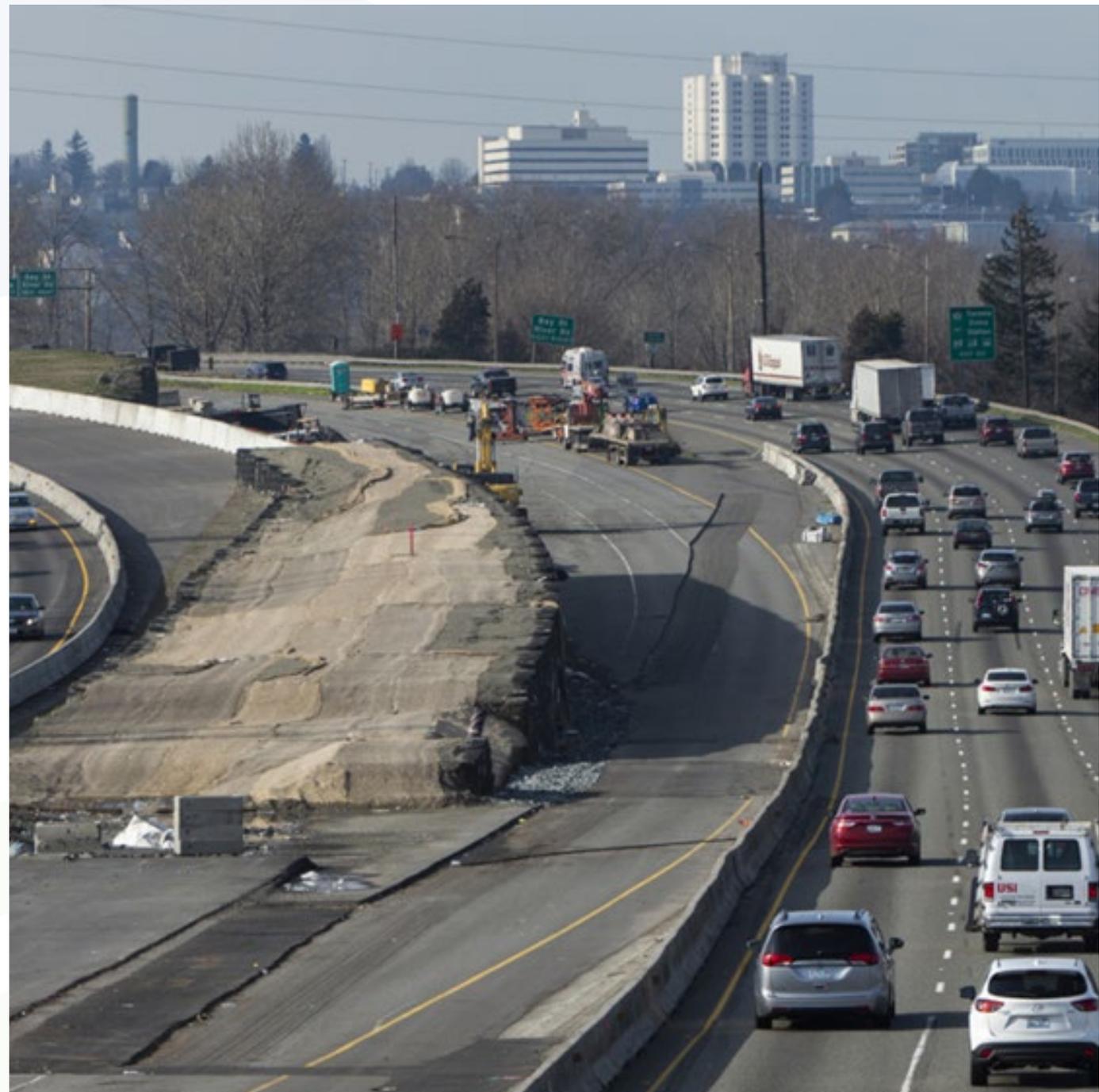
- The Port of Tacoma continues to be a major economic engine, but this success caused lasting damage to tribal communities.
- President Bush signed the 'Puyallup Tribe of Indians Settlement Act of 1989' formally recognizing the theft of indigenous lands.
- The Puyallup Tribe accepted a settlement of \$162 million in cash, real estate, and economic development programs in exchange for claims to some 18,000 acres of land on its historic reservation on Commencement Bay.



HISTORIC CONTEXT:

Destruction from I-5 ⁽⁶⁾

- Interstate 5 is the main north-south traffic and freight artery from the Mexican Border to the Canadian Border
- The freeway clearly privileged the interests of those driving through the area over individuals living in the corridor.
- "Urban Renewal" programs ushered in an era of freeway construction and neighborhood destruction, harming Black business and communities along the I-5 corridor, including in Tacoma.



HISTORIC CONTEXT:

Destruction from I-5 (6)

- I-5 went through Tacoma along South Tacoma Way and then swung east along Puyallup Avenue.
- I-5 intentionally divided ethnic and lower income districts where property condemnation was cheaper, and home and business ownership was less common. Puyallup tribal lands and the largely African American residents at Salishan, who migrated during WWII, were fenced off from the downtown and port areas by the freeway.
- The new freeway cut through established working-class neighborhoods in South Tacoma - the Wapato Lake and Lincoln districts - and destroyed the Hawthorn neighborhood at the foot of McKinley Hill.



January 1961, I-5 bend with 38th Street cloverleaf in distance and Old Pacific Highway 99 below.

Key Findings

- Oppressive white colonial expansion for economic growth and political gain has had lasting devastating impacts on communities, including but not limited to indigenous, Chinese and Black communities.
- This history, particularly as it relates to policy and planning decisions related to land use, resource management, economic development, and transportation, underscores the importance of analyzing decisions and impacts on various communities so as not to perpetuate harms but rather to create benefits for and within these communities and others.

Prioritizing Equity



Prioritizing Equity

The Stream System Expansion Study (SSES) Equity Index is a data-driven approach to considering the locational and access needs of priority populations in the candidate Stream BRT corridors.

EQUITY ANALYSIS METHODOLOGY

Inputs

1. Population

Population Score based on:

- Number of households.

2. Equity Index

- **Equity Index Score** at block group level. Higher score indicates higher concentrations of Priority Populations.
- Weights are applied to each Priority Population based on extensive research and analysis conducted by King County Metro.

Purpose of Analysis:

Identify places where vulnerable populations live, work, and conduct life activities and create an index to this data to be used as a factor in corridor prioritization.

Priority Population	Weight
Non-white or Hispanic	40%
Low-income households (below 200% of federal poverty line)	30%
Foreign-born population	10%
Limited English-speaking households	10%
Population living with disabilities, aged 20 to 64	10%

EQUITY ANALYSIS METHODOLOGY

Analysis Inputs

3. Jobs and Opportunities

Opportunity Score based on:

- Total jobs.
- Low-income jobs (earning <\$3,333 per month).

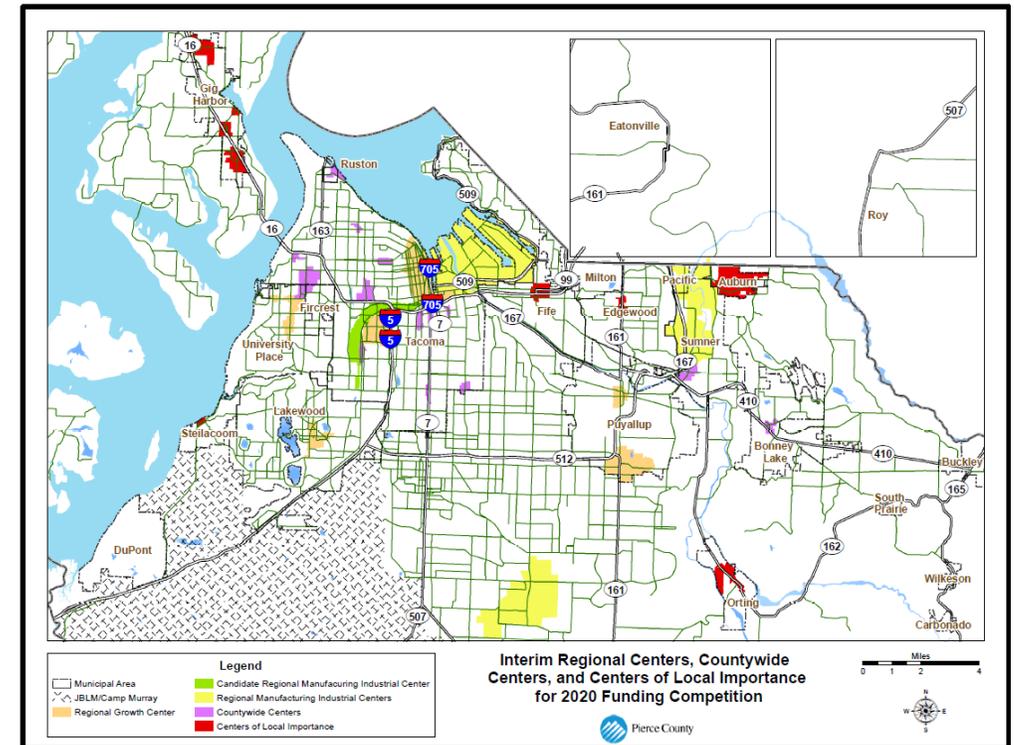
Access to Opportunities:

The jobs score includes all jobs then amplifies this information by adding low-income jobs. This tells us where existing low-income earners work but also where they might access future higher-paying jobs.

4. Activity (Life, other than employment)

Activity Score based on:

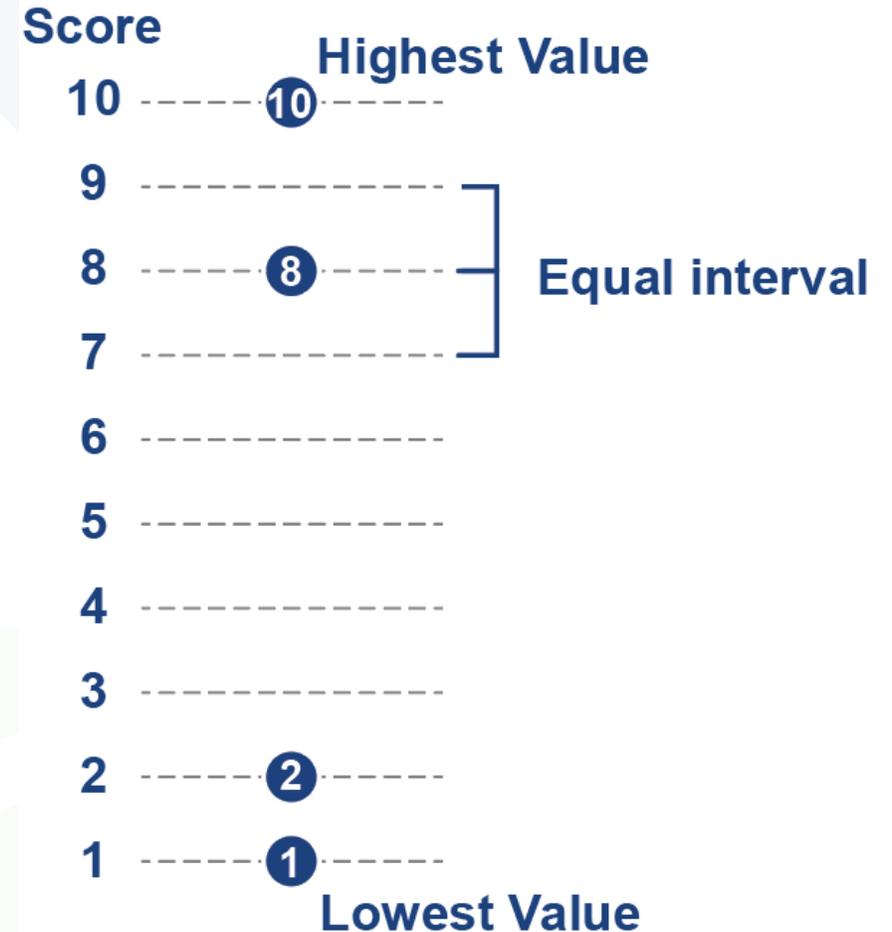
- Puget Sound Regional Council's 2050 regional and local centers and destinations.
- Identifies key activity centers such as schools, hospitals, retail, and grocery stores. Centers are arrayed in hierarchy based on level of activity. Also are places of emphasis to accommodate growth.



EQUITY ANALYSIS METHODOLOGY

Scoring

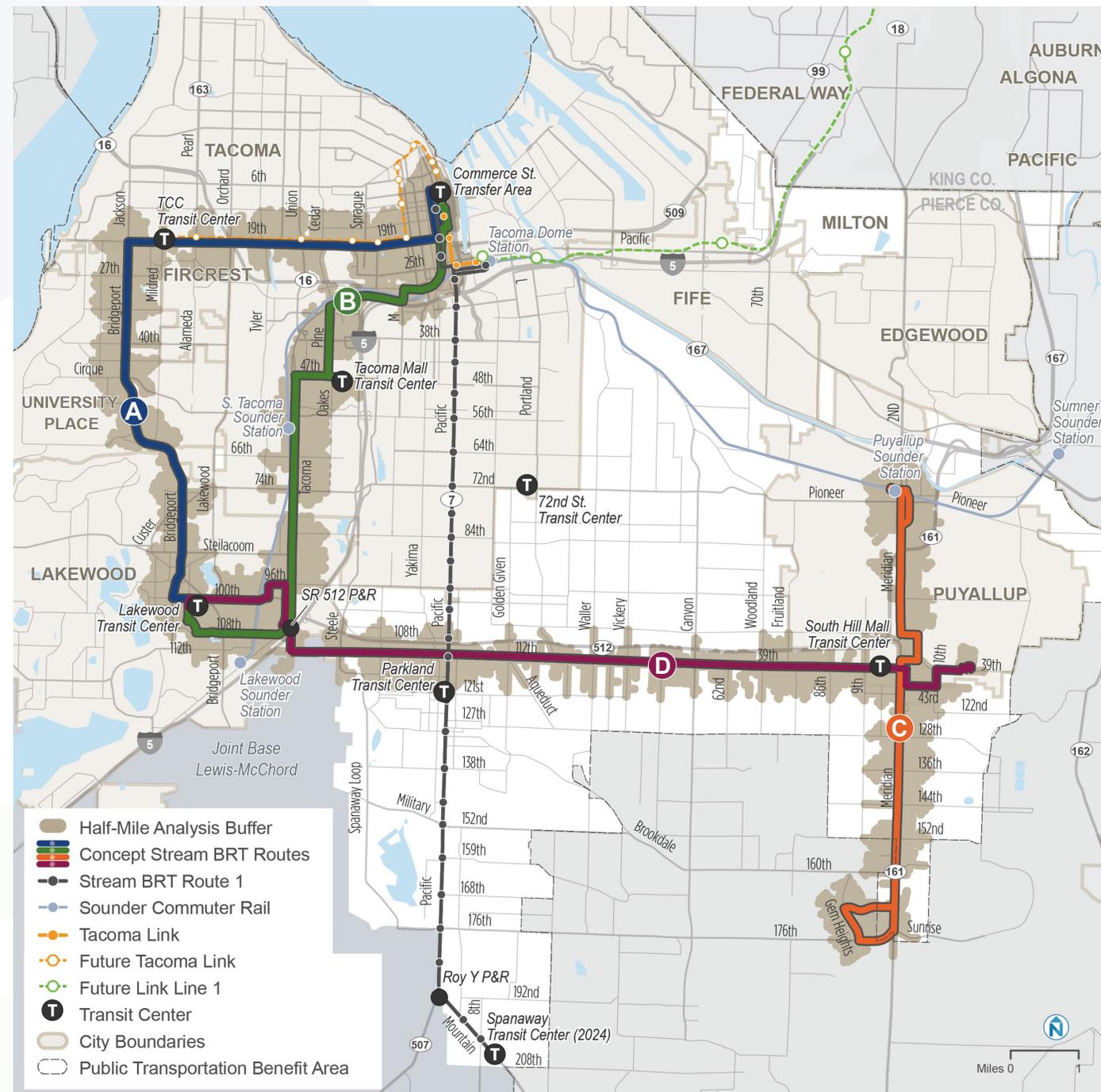
- Developed 10-scale score system for each criterion:
 - Identified the data range (from the lowest to the highest value)
 - Used equal interval to develop 10-scale system
 - Corridor with the lowest value gets a score of one
 - Corridor with the highest value gets a score of 10.
- Total score equals the sum of all individual scores.



EQUITY ANALYSIS GEOGRAPHY

Analysis Buffers

- Half-mile walksheds around proposed stops.
- Stop buffers were merged for each corridor.



EQUITY ANALYSIS OUTCOMES

1. Population

Serving the most people

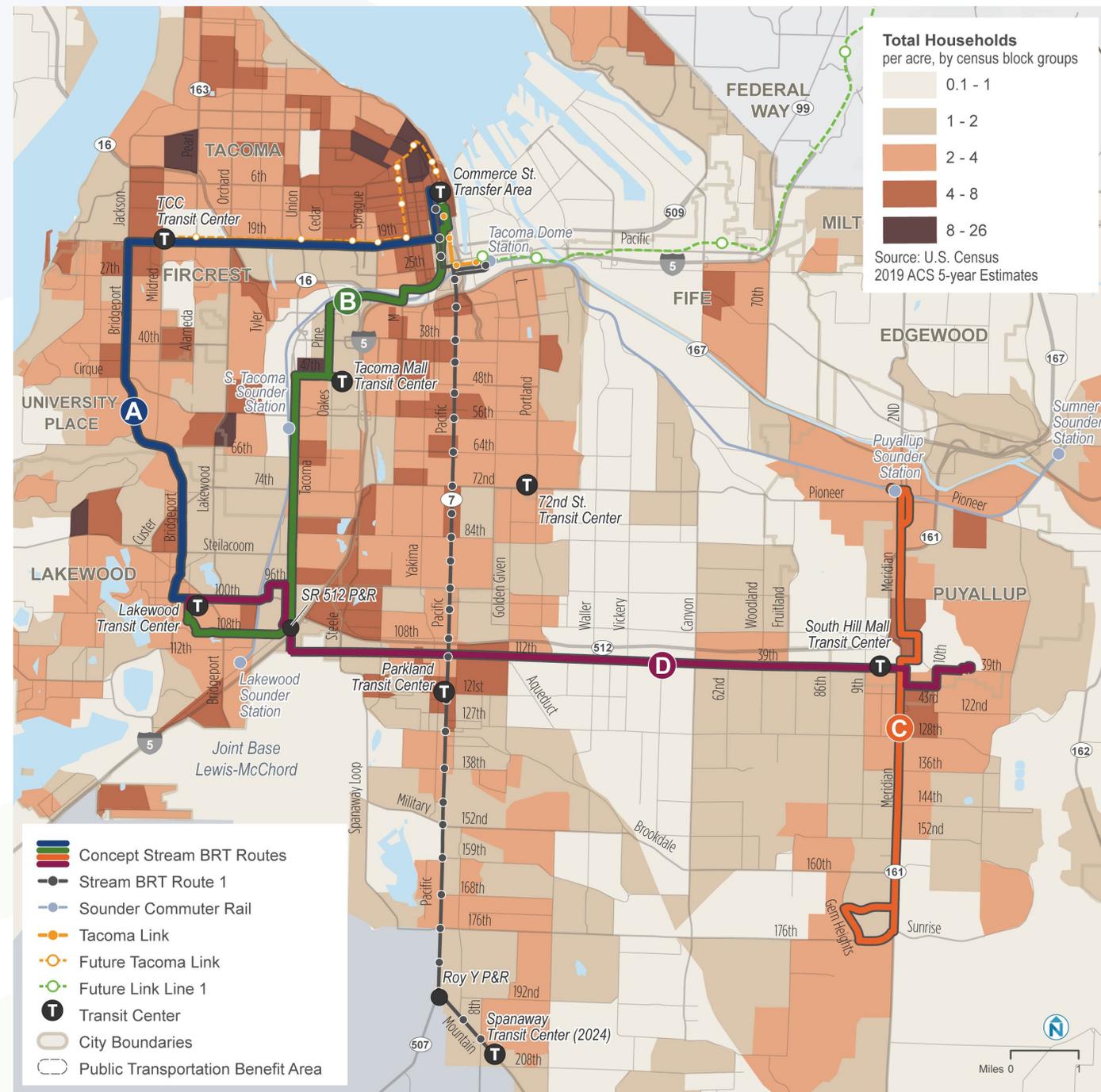
Population Score, calculated based on:

Total households

(within 1/2-mile analysis buffer, per corridor mile)

Outcome

Corridor	Households per corridor mile	Population Score
A	1,524	10
B	1,198	6
C	884	2
D	764	1



EQUITY ANALYSIS OUTCOMES

2. Equity Index

Serving Priority Populations

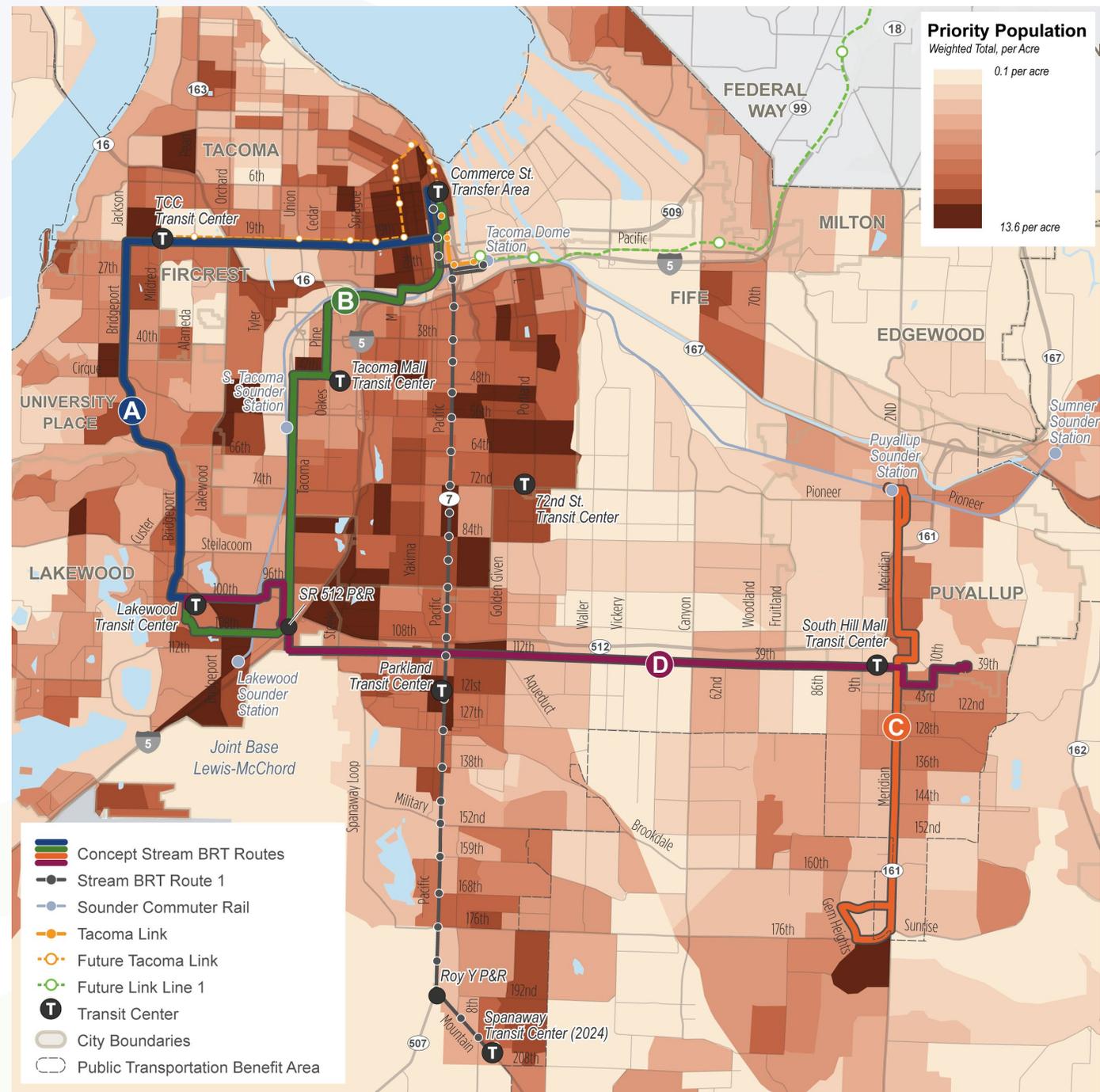
Equity Index Score, calculated based on the weighted sum of priority population:

- Non-white or Hispanic (Weight - 40%)
- Low-income households (30%)
- Foreign born population (10%)
- Limited English-speaking households (10%)
- People with disabilities (10%)

(within 1/2-mile analysis buffer, per corridor mile)

Outcome

Corridor	Weighted Sum of Priority Pop. per Corridor Mile	Equity Index Score
A	1,037	10
B	1,016	9
C	482	1
D	625	3



EQUITY ANALYSIS OUTCOMES

3. Jobs/Opportunity

Serving Job Locations

Job Score, calculated based on:

Total jobs

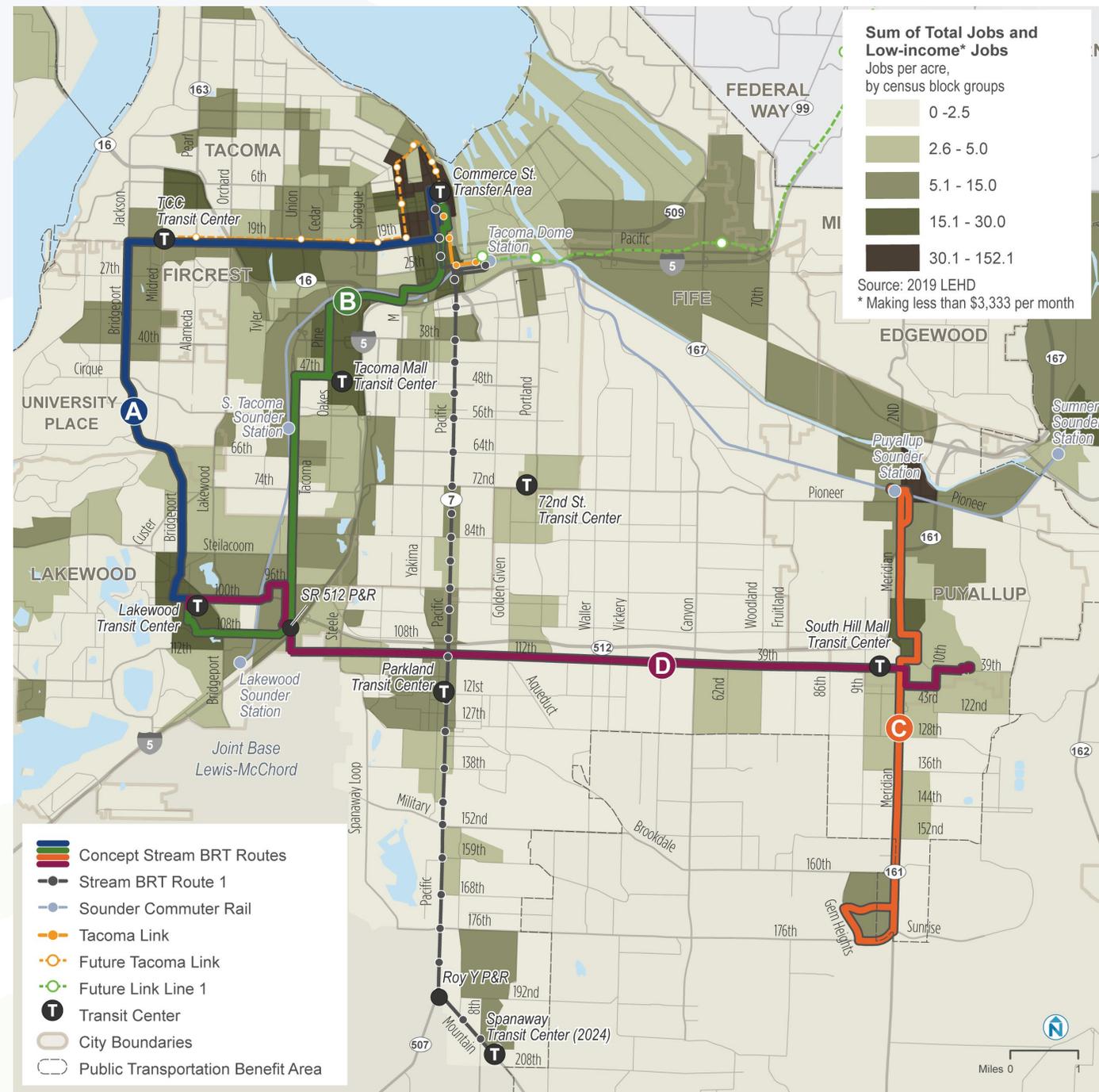
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Low-income jobs (earning <\$3,333 per month)

(within 1/2-mile analysis buffer, per corridor mile)

Outcome

Corridor	Total Jobs + Low income jobs per corridor mile	Job Score
A	6,051	8
B	6,860	10
C	2,310	2
D	1,606	1



EQUITY ANALYSIS OUTCOMES

4. Activity (Life)

Serving Activity Centers

Activity Score, calculated based on:

Total area of PSRC Center Designation

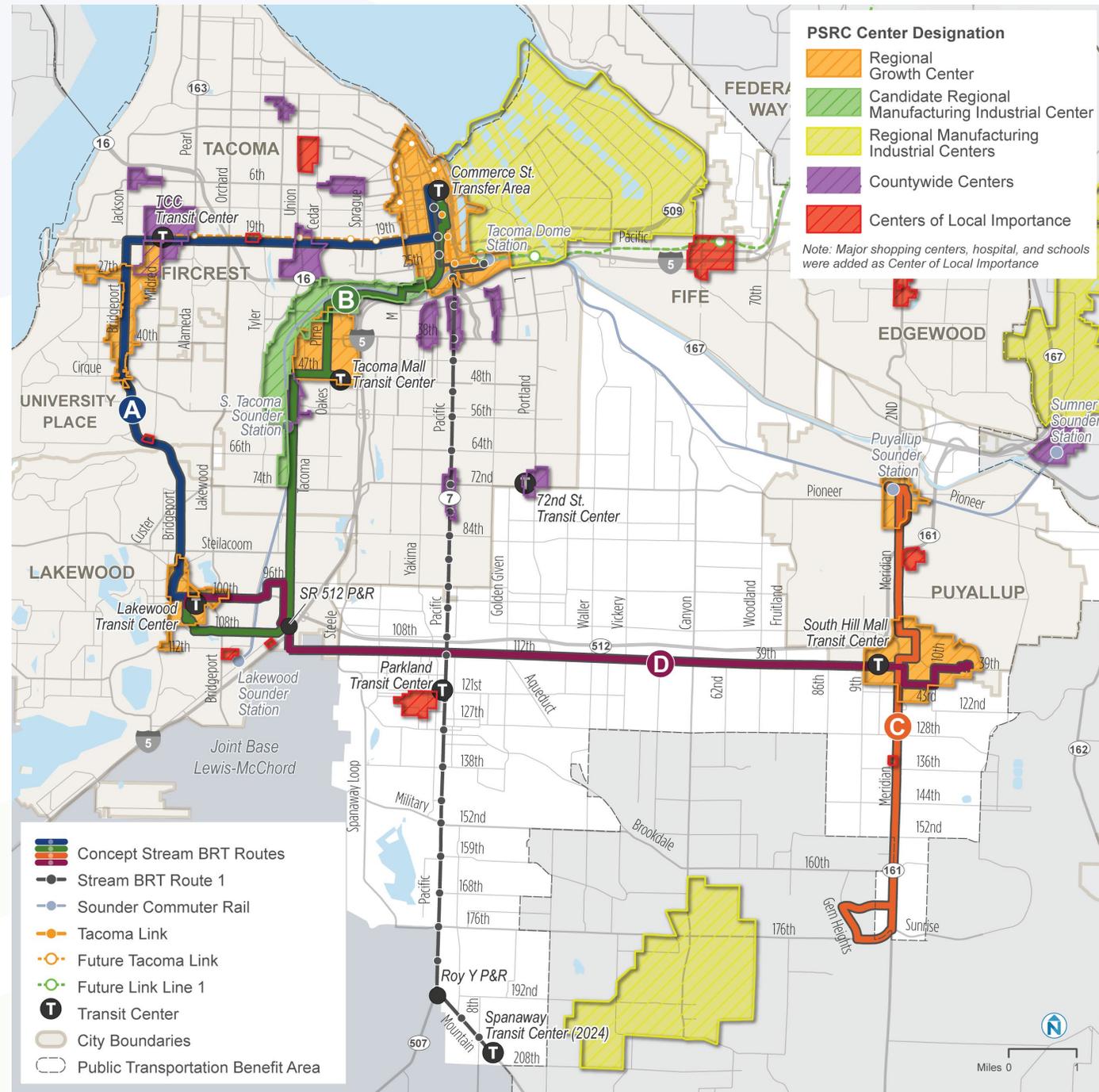
+

Total area of key local destinations

(within 1/2 mile analysis buffer, per corridor mile)

Outcome

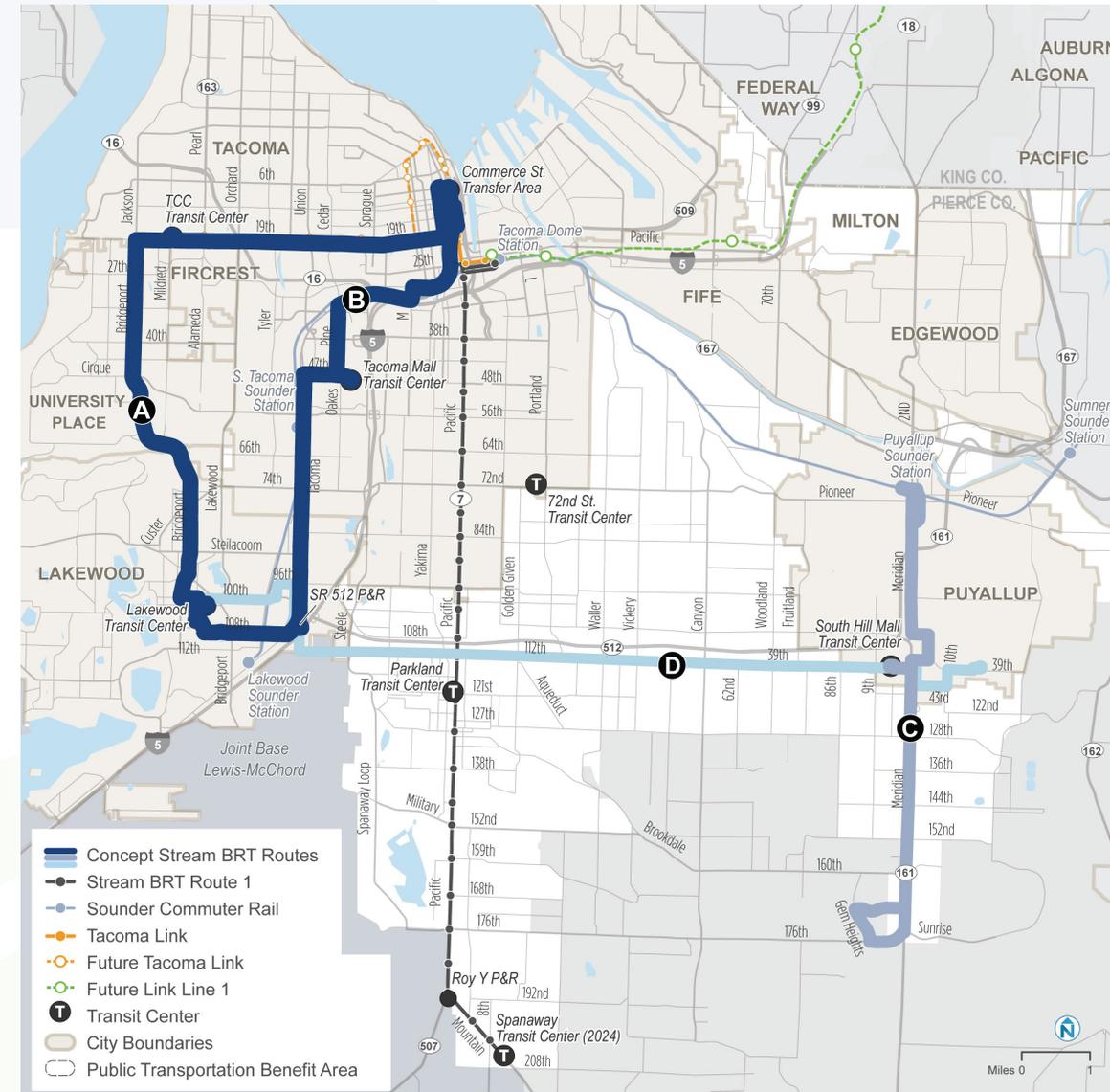
Corridor	Total area (in acre) per corridor mile	Activity Score
A	152	7
B	198	10
C	67	2
D	50	1



EQUITY ANALYSIS RESULTS

- Corridors A and B received high scores across all criteria.
- Corridor A would serve more households.
- Corridor B would serve more jobs and activity locations.
- Both Corridors A and B would serve higher concentrations of priority populations.

Corridor	Population Score	Equity Index Score	Job Score	Activity Score
A	10	10	8	7
B	6	9	10	10
C	2	1	2	2
D	1	3	1	1



LOCAL EQUITY INDICES

Pierce County's Equity Index

- List of recommended indicators developed in Summer 2021.
- 28 indicators, developed based on Tacoma's indicators.
- Added a few agricultural / farmland indicators to reflect the diverse land use types.
- Analysis completion timeline undetermined.

Five Indicator Categories

Indicators Category	Examples
Accessibility (7 indicators)	Access to healthy food, parks, transit
Livability (8)	Life expectancy, crime, home value, cost-burden
Education (4)	High school graduation rates
Economy (6)	Pierce County jobs index, unemployment rate
Environmental health (3)	Air quality, Flood plains

Key Findings

- Most **households** along Corridor **A**.
- Most **jobs** and **activity locations** along Corridor **B**.
- Higher concentrations of **priority populations** along **Corridors A and B**.

SSES Corridor Community Context



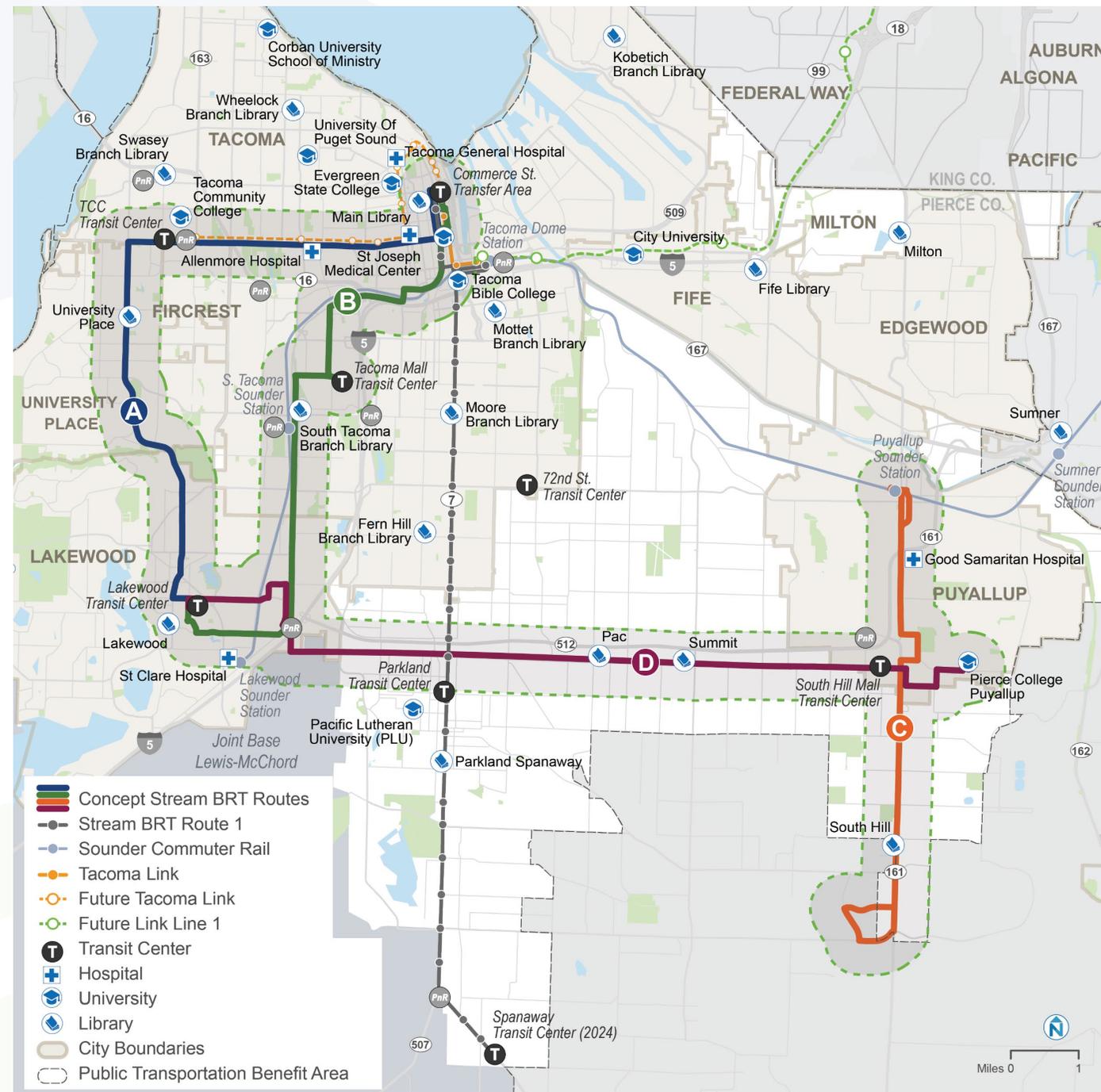
Community Context

This section details key demographic and community data that will be used to evaluate candidate corridor needs and opportunities. Data detailed in this section supports the evaluation of candidate corridors as outlined in the Task 3.2 Prioritization Methodology memo.

KEY DESTINATIONS

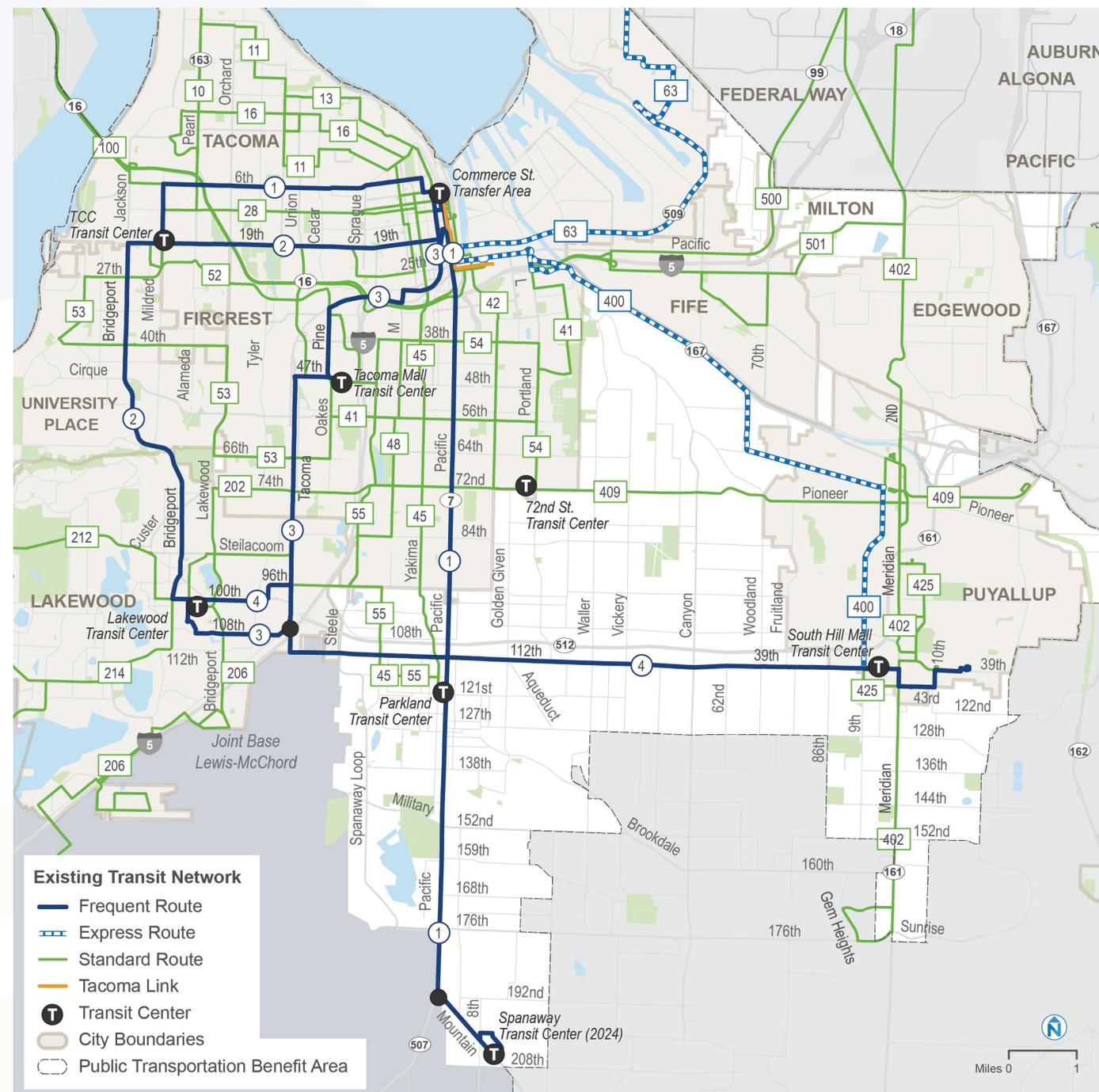
Served within 1/2-mile of candidate corridors:

- Transit Centers: **6**
- Park & Ride: **9**
- Hospitals: **4**
- Libraries: **7**
- Universities/Colleges: **4**
- All Other Schools: **58**

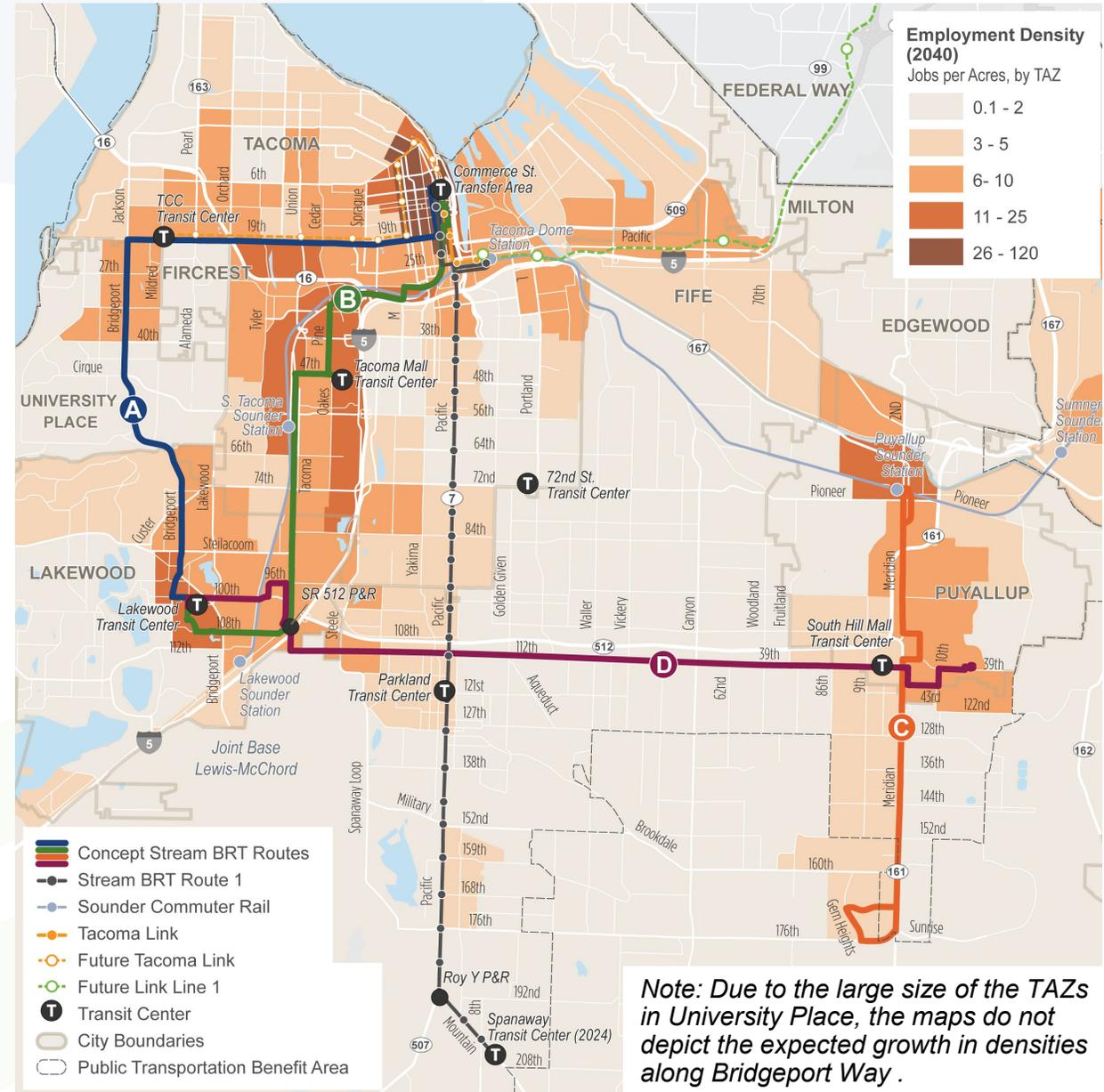
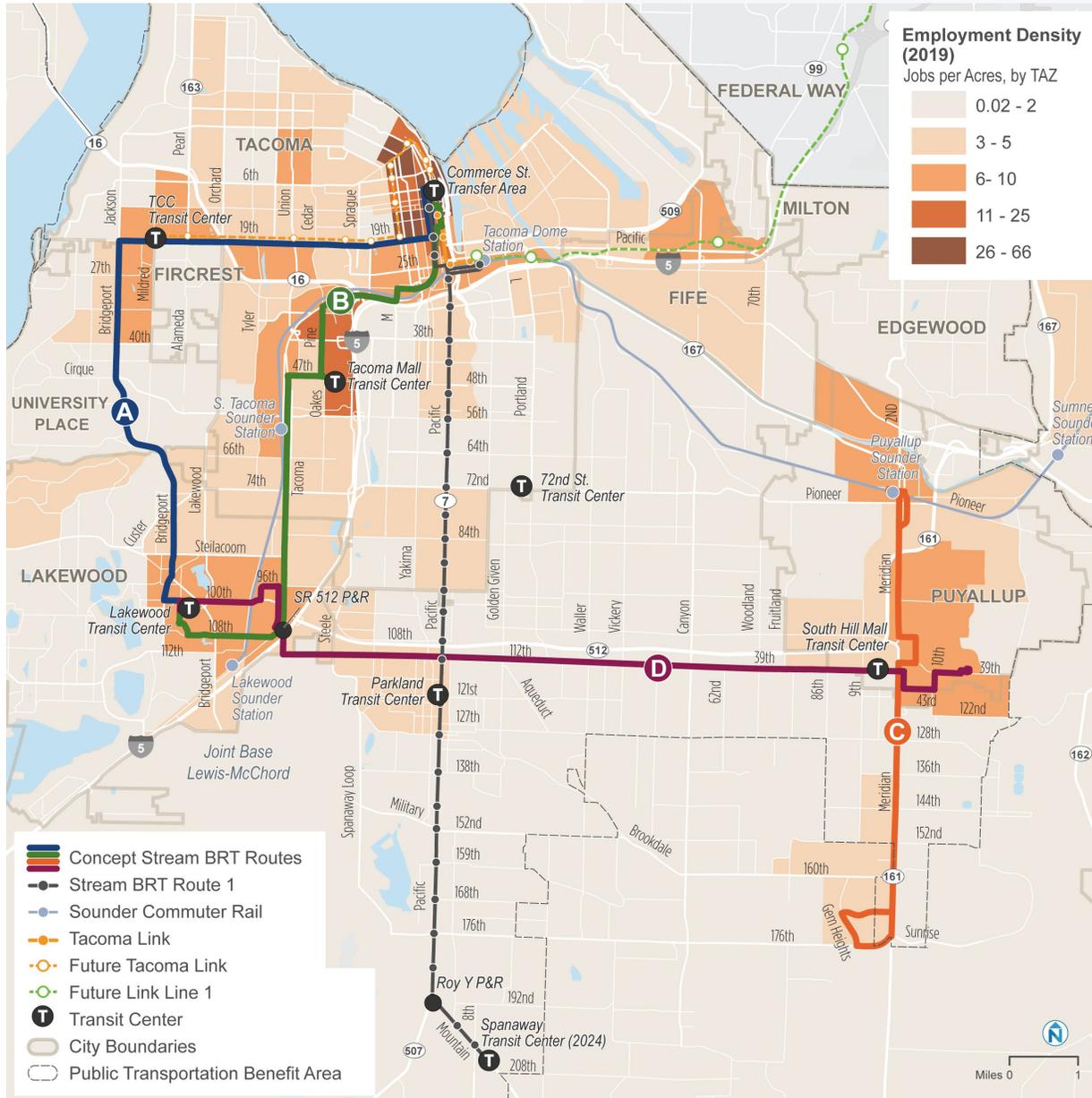


TRANSIT NETWORK

- **Frequent Routes:** Run earlier, later, and more often along major streets.
- **Express Routes:** Faster and more direct AM/PM service connects major destinations with fewer intermediate stops.
- **Standard Routes:** Connect urban and suburban areas to transit centers, typically every 30-60 minutes.
- **Tacoma Link:** Operated by Sound Transit, runs approximately every 12 minutes through downtown Tacoma.
- *Stream 1 and corridors A, B, D align with frequent routes*

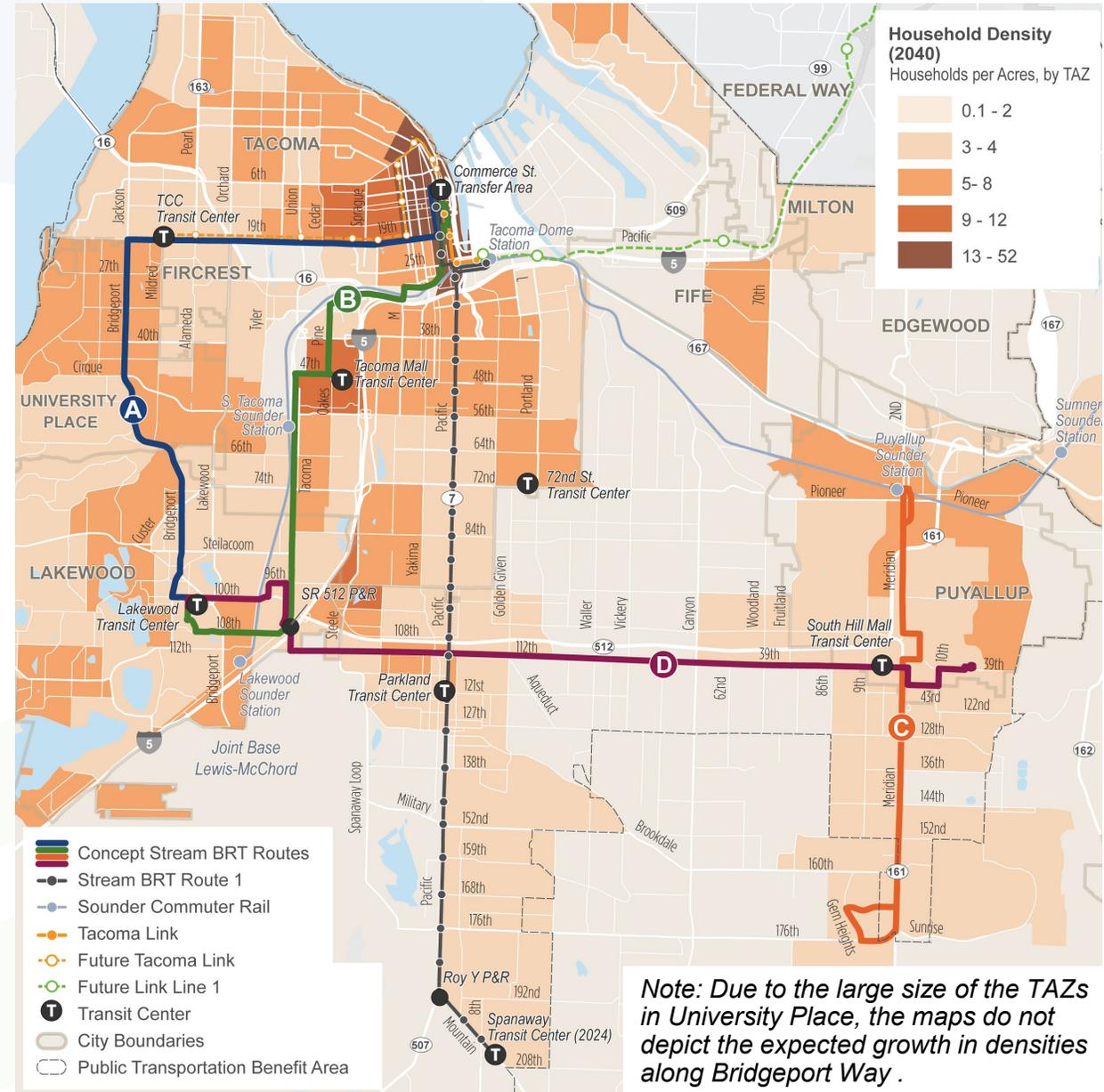
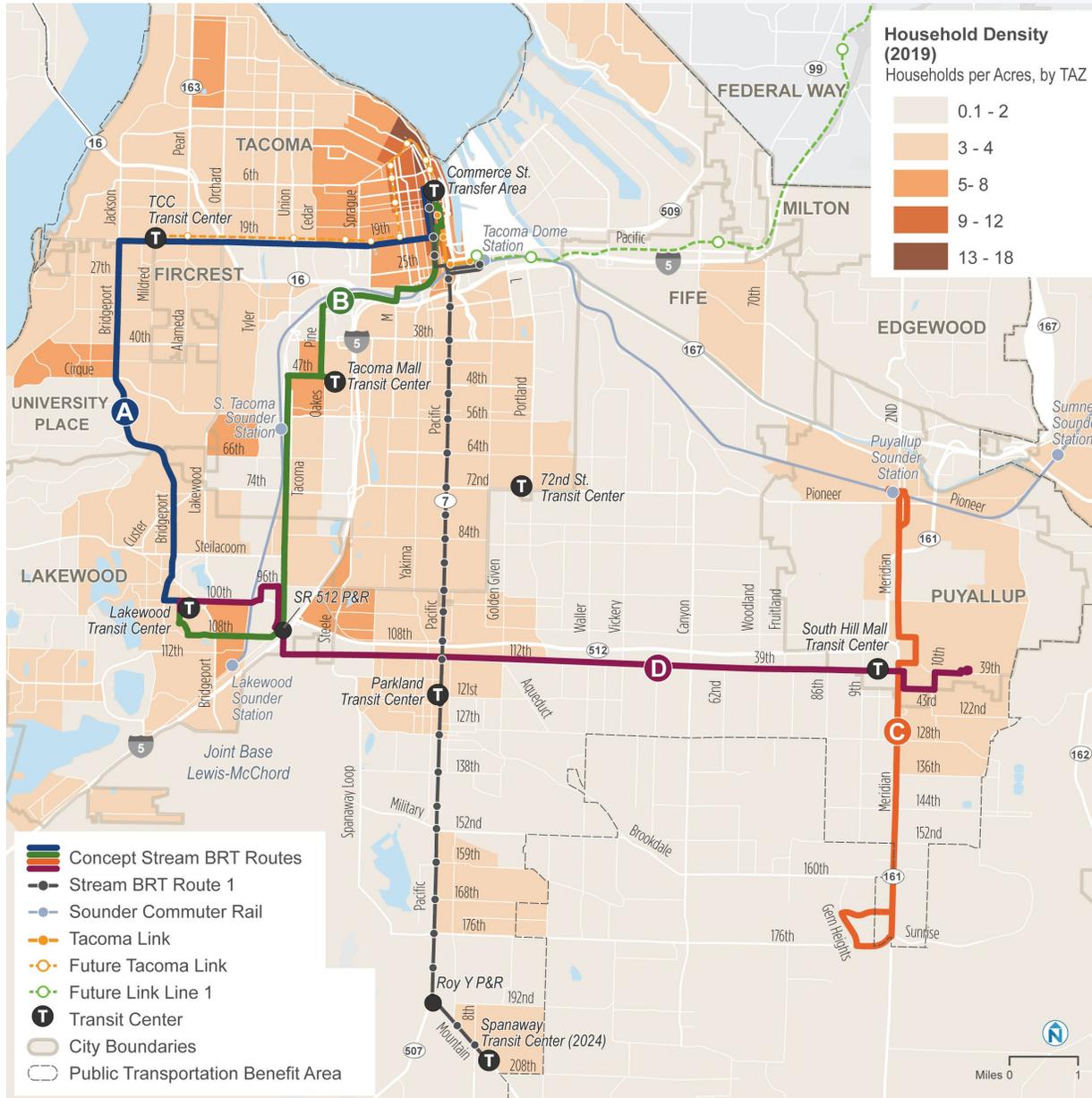


EMPLOYMENT DENSITY: 2019 and 2040



Note: Due to the large size of the TAZs in University Place, the maps do not depict the expected growth in densities along Bridgeport Way.

HOUSEHOLD DENSITY: 2019 and 2040



Key Findings

Today: High concentrations of population and jobs along the corridors.

- About a **quarter of PTBA population**, and
- Nearly **half of PTBA jobs** within ½-mile of the corridors.

Future: Highest job and population growth expected along Corridors A and B.

- **Higher than the average employment growth**, especially in Center City, along Tacoma Way, Bridgeport Way, and 19th St.
- Projected to **double in population density** by 2040 along Corridors A and B.

Reference



POPULATION & EMPLOYMENT DENSITY MATRIX

1. Download population data – 2019 American Community Survey 5-year estimates (block groups level).
2. Download employment data – 2018 Longitudinal Employer-Household Dynamics (block level).
3. Merge these two data into one shapefile.
4. Calculate population density.
5. Calculate employment density.
6. Categorize each population and employment density values into three classes.
7. Develop population / employment matrix, using the chart below.

Population, values 1-3	1,3=7	2,3=8	3,3=9
	1,2=4	2,2=5	3,2=6
	1,1=1	2,1=2	3,1=3
Employment, values 1-3			

Equity Analysis – Data Source

Section	Data	Source
Population	Number of households	2019 ACS 5-year estimates B25009
Equity Index	Population that is non-white or Hispanic	2019 ACS 5-year estimates B03002
Equity Index	Population living 200% below the federal poverty line	2019 ACS 5-year estimates C17002
Equity Index	Population that is foreign-born	2019 ACS 5-year estimates B99051
Equity Index	Limited English-speaking household	2019 ACS 5-year estimates C16002
Equity Index	Population living with a disability, aged 20 to 64	2019 ACS 5-year estimates B23024
Jobs	Number of jobs	2018 LEHD
Jobs	Number of low-income jobs (making less than \$3,333 per month)	2018 LEHD
Activity	PSRC 2050 Center Designation	Pierce County
Activity	Key destinations	Developed by Nelson\Nygaard

Equity Analysis - Steps

0. Creating half mile walksheds:

Create half mile walksheds around proposed stops in GIS. Merge the buffers for each corridor.

1. Population Score:

1. Download the Census data (2019 American Community Survey 5-year estimates, block group level).
2. Calculate total households (area weighted sum) within ½-mile analysis buffer in GIS.
3. Divide by corridor mile.
4. Develop a score using the ten-scale scoring system (see the slide under Methodology section).

Result: Population score for each corridor.

Score calculated based on: Number of households within ½-mile analysis buffer, per corridor mile.

2. Equity Index Score:

1. Download the Census data (2019 American Community Survey 5-year estimates, block group level) of the priority population defined in the table at right.
2. Calculate total number of each Priority Population groups (area weighted sum) within ½-mile analysis buffer in GIS.
3. Apply the weights (table right) to the number of priority population groups.
4. Sum the weighted totals for each corridor.
5. Develop a score using the ten-scale scoring system (see the slide under Methodology section).

Result: Social equity score for each corridor.

Score calculated based on: Average of the equity index scores for proposed stops.

Priority Population	Weight
Population that is non-white or Hispanic	40%
Population living 200% below the federal poverty line	30%
Population that is foreign-born	10%
Limited English-speaking household	10%
Population living with a disability, aged 20 to 64	10%

Equity Analysis – Steps (Continued)

3. Job Score

1. Calculate the number of jobs (area weighted sum) within the ½-mile analysis buffer in GIS.
2. Calculate the number of low-income jobs (area weighted sum) within the ½-mile analysis buffers in GIS.
3. Sum the two numbers above.
4. Divide the summed number by corridor mile.
5. Develop a score using the ten-scale scoring system (see the slide under Methodology section).

Result: Job score for each corridor.

Score calculated based on: sum of total jobs and low-income jobs, per corridor mile.

4. Activity Score

1. Review the PSRC's center designations. Add the following landmarks as center of local importance
- Pacific Lutheran University, St. Clare Hospital, Good Samaritan Hospital (Puyallup), Fred Meyer (7250 Pacific Ave, Tacoma); Fred Meyer (S 19th St, Tacoma) Grocery Outlet (Lakewood), Safeway (Puyallup).
2. Using GIS, calculate the areas of centers overlapping with the ½-mile analysis buffers.
3. Sum the areas for each corridor. Divide by corridor mile.
4. Develop a score using the ten-scale scoring system (see the slide under Methodology section).

Result: Activity score for each corridor.

Score calculated based on: total area of designated centers and key destinations overlapping with the analysis buffers, per corridor mile.

Equity Analysis – Detailed Outcome

1. Population

Households within 1/2 mile analysis buffer

Corridor	One-way Length (mile)	Households within 0.5 mile	Households per corridor mile	Population Score
A	12.4	18,886	1,524	10
B	11.5	13,813	1,198	6
C	10.3	9,104	884	2
D	14.2	10,824	764	1

40% 30% 10% 10% 10% <-- Weight

2. Equity Index

Priority population within 1/2 mile analysis buffer

Population living 200% that is non-white or Hispanic	Population living below the federal poverty line	Population that is foreign-born	Population Limited-English speaking household	Population living with a disability, aged 20 to 64	Weighted sum	Weighted Sum of Priority Pop. per Corridor Mile	Equity Index Score
18,500	14,761	5,020	1,038	4,197	12,854	1,037	10
17,158	13,011	4,795	1,227	3,499	11,719	1,016	9
7,138	5,649	2,226	471	1,518	4,971	482	1
12,884	10,171	3,618	726	2,196	8,859	625	3

Equity Analysis – Detailed Outcome

3. Jobs/Opportunity

Num of jobs within 1/2 mile analysis buffer

Corridor	One-way Length (mile)	Num of Jobs (2018)	Num. of low-income jobs (2018)	Total Jobs + Low income jobs	Low income jobs per corridor mile	Job Score
A	12.4	52,690	22,326	75,016	6,051	8
B	11.5	54,414	24,676	79,090	6,860	10
C	10.3	14,867	8,935	23,802	2,310	2
D	14.2	14,510	8,243	22,753	1,606	1

4. Activity

Areas (acre) of centers within 1/2 mile analysis buffer

Corridor	One-way Length (mile)	Candidate					Centers of Local Importance	Total per corridor mile	Activity Score
		Regional Center	Regional Industrial Center	Regional Manufacturing Centers	Countywide Centers	Regional Industrial Centers			
A	12.4	1,489	2	13	352	22	152	7	
B	11.5	1,574	555	11	123	19	198	10	
C	10.3	633	-	-	-	60	67	2	
D	14.2	704	-	-	-	5	50	1	