TECHNICAL MEMORANDUM

To:	Darby Watson, Alicia McIntire, Mark Yand Parametrix	From:	Jennifer Emerson-Martin, Iteris, Inc.
Date:	March 11, 2025		
RE:	WO#3 – Traffic Modeling Methods, Assumptions, and Results		

The purpose of this memorandum is to document the travel demand modeling process used to support the analysis for *Work Order #3* of the Division Street BRT Design project. This memorandum documents the following:

- Methods and assumptions used for developing the travel model forecasts
- Detailed performance metric information
- Forecast analysis for each of the performance metrics

To ensure that the Division Street Corridor Study represents the most accurate regional background information and produces the most realistic forecasts, the project team coordinated with local agencies as follows:

- **Spokane Regional Transportation Council (SRTC):** The project team obtained the current Metropolitan Transportation Plan (MTP) 2022 and 2050 land use information for use in this effort
- **Spokane Transit Authority (STA):** The project team presented, and STA concurred with, background modeling assumptions for the Locally Preferred Alternative to be used in the 2050 future year modeling.
- **Washington State Department of Transportation (WSDOT):** The project team obtained network geometry and configuration for North Spokane Corridor (NSC), including adjacent ramps and local facilities, and met during the scenarios development process to discuss assumptions, model methodologies, and performance metrics analysis.

Most importantly, technical modeling group meetings reviewing results documented in this memorandum were held including STA, WSDOT, the City of Spokane, and the County of Spokane throughout the modeling effort.

1 INTRODUCTION

The primary tool used in the analysis was the current SRTC Travel Model (for years 2019 and 2045, updated to the land use years of 2022 and 2050). The SRTC model was used to forecast traffic volumes and transit ridership on Division Street and adjacent arterials within the Division Street Corridor Study area. To provide context on the analysis in this documentation, the SRTC model is a regional travel demand model, used to macroscopically forecast regional travel in the existing and future years based on changes in networks and land use. A regional travel demand model is capable of providing a "big picture" analysis of growth in the region, primarily where growth is likely to occur and a representation of the potential amount of growth. It is important to note that a regional travel demand model is not a microsimulation tool, thus further diversion from congested facilities to parallel uncongested facilities is likely to occur.

The information used in this report is intended to guide the operations analysis and stop level transit ridership forecasting analysis and is not a final answer on either metric. The intersection operations analysis will be completed using Synchro software, and the stop level transit ridership will be completed using FTA STOPS software. This memo is not intended to justify the project or project elements, such as BAT lanes. It simply documents the modeled outcomes for the project based upon the modeled project assumptions.

1.1 Alternative Descriptions

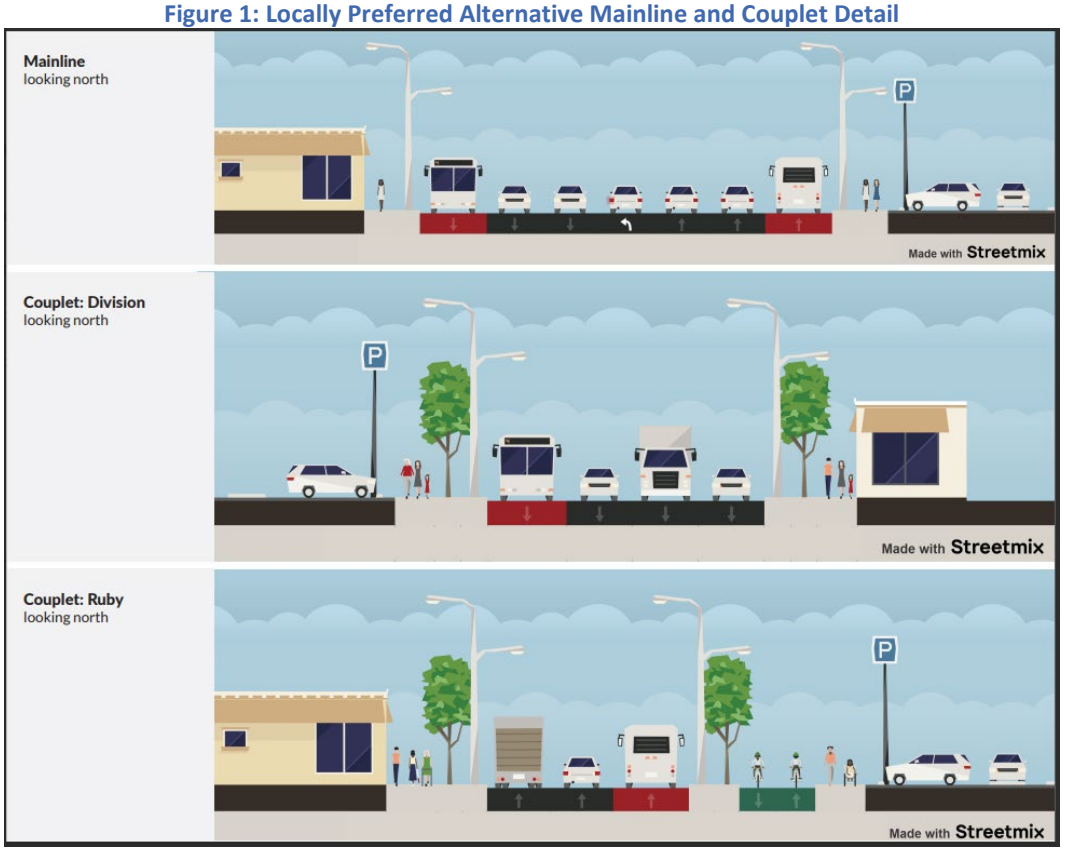
The Locally Preferred Build Alternative, as modeled in this memorandum, is described in **Table 1**, and a more detailed illustration is included in **Figure 1**.

Table 1: Alternatives Description

Alternative	Mainline: Division Street between the Couplet and the "Y"			Couplet: Division Street and Ruby Street between North River Drive and Cleveland Avenue		
	Bus Lane Configuration	Number of General-Purpose Lanes	Activate Transportation Facilities	Bus Lane Configuration	Number of General-Purpose Lanes	Activate Transportation Facilities
No Build (Existing and Future)	None	3 through lanes with left turn pockets at intersections	None	None	4 through lanes northbound on Ruby Street, 4 through lanes southbound on Division Street	None
Locally Preferred Alternative (LPA)	Right side-running BAT lanes	2 through lanes with left turn pockets at intersections	None; assumes off-corridor bicycle facility	Right side-running BAT lanes on both northbound Ruby Street and southbound Division Street	2 through lanes northbound on Ruby Street, *3 through lanes southbound on Division Street	Two-way cycle track on Ruby Street

*Note: The official LPA has 2 lanes on Division Street in the couplet, however, upon further review and direction from WSDOT and the City of Spokane, the proposed parking along Division Street is infeasible, and will be replaced by an additional general-purpose lane, thus resulting in a configuration of 3 general purpose lanes on Division Street.
*Note: The official LPA will need to be coordinated with any active transportation facilities proposed by WSDOT for the corridor.

Figure 1: Locally Preferred Alternative Mainline and Couplet Detail



1.2 Project Scenarios

Three scenarios were analyzed for this memorandum. As a note, the SRTC travel demand model is not capable of fully forecasting active transportation, thus the project descriptions do not fully describe the active transportation component of the project. The three scenarios are:

1. **2022 Existing**
    a. Year 2022 land use
    b. Existing year roadway network
    c. Existing regional transit network, with existing Route 25 on Division Street
    d. NSC constructed north of Francis Avenue
2. **2050 No Build**
    a. Future Year 2050 land use
    b. Future planned SRTC 2045 MTP roadway network
    c. Future year regional transit networks, with existing Route 25 on Division Street (coded as 2022 Existing configuration and headways)
    d. NSC fully constructed
3. **2050 Locally Preferred Alternative (LPA)**
    a. Future Year 2050 land use
    b. Future planned SRTC 2045 MTP roadway network, with BAT lanes and reduced general purpose lanes on Division between the Spokane River and the "Y", consistent with **Table 1**. Additionally, the walk and bike classifications were added to the Division Street corridor roadway network to enhance the active transportation network component of the Locally Preferred Alternative, ensuring walk and bike access to BRT and local transit stops.
    c. Future year regional transit networks, with Route 25 coded as a BRT route with shorter headways than the Existing Route 25, and revised stations.
    d. NSC fully constructed

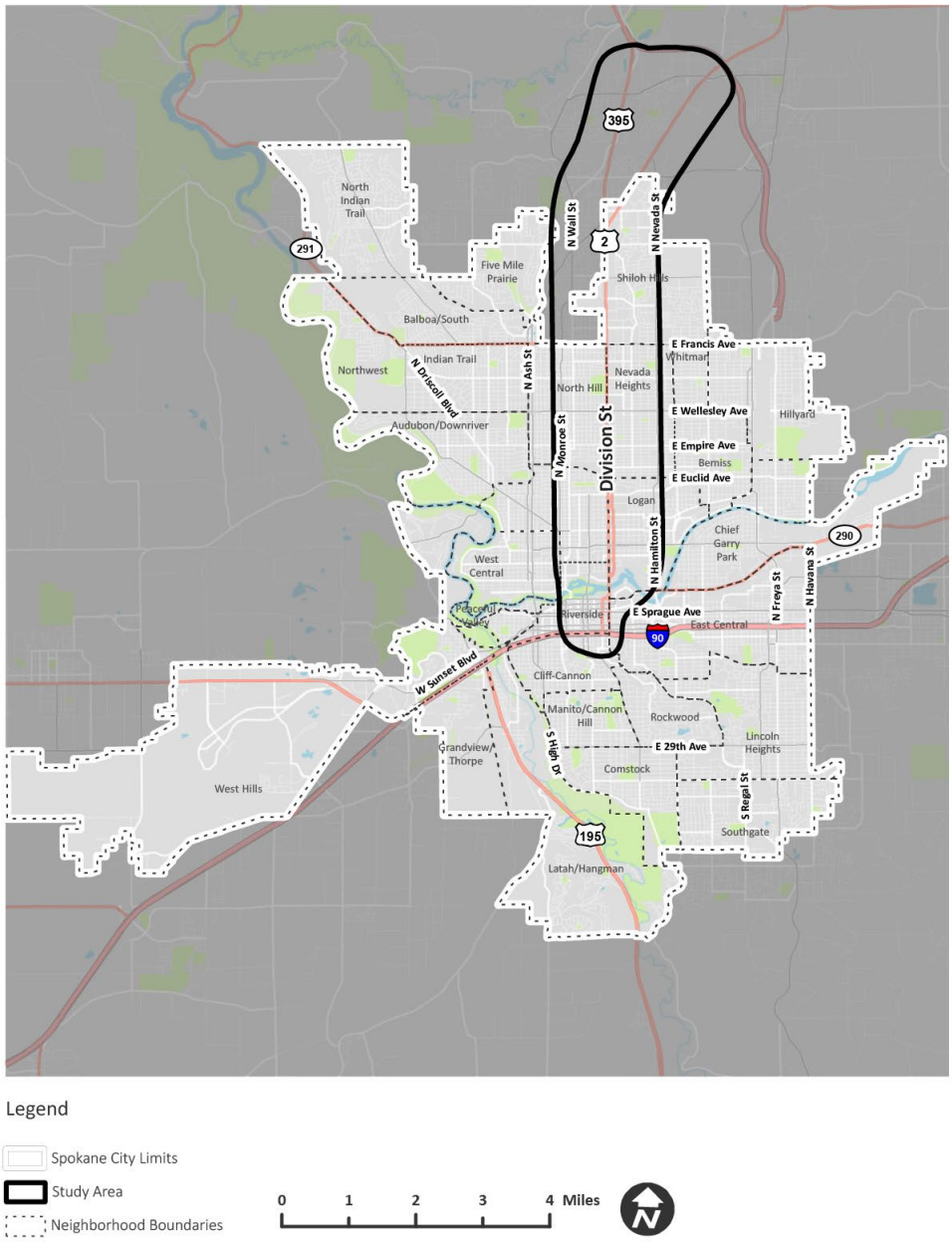
1.3 Areas of Analysis

The analysis for the project is completed for a variety of study areas, working their way from larger to smaller. The purpose of multiple sized and geographically located study areas is to get a better understanding of how travel occurs throughout the corridor, acknowledging that the travel patterns and travel decisions (how, where, when, how far) are also dependent on locations of trip origins and destinations. The geographic areas of analysis include:

- **The Region:** The entire SRTC modeled area
- **The Study Area:** Generally areas with ¾ mile of either side of Division Street.
- **Corridor Project Segments:** Break down of the Study Area into five segments
- **Geographic Analysis Areas:** Further refinement of corridor project segments into defined geographic areas of similar land uses.

Most of the performance metrics and analysis metrics presented for the region are also summarized by the study area. This allows for the understanding of how this corridor performs in relation to the full region. The **Study Area** includes the area within ¾ mile of either side of Division Street, which encompasses Hamilton Street to the east and Monroe Street to the west as illustrated in **Figure 2**.

Figure 2: Study Area



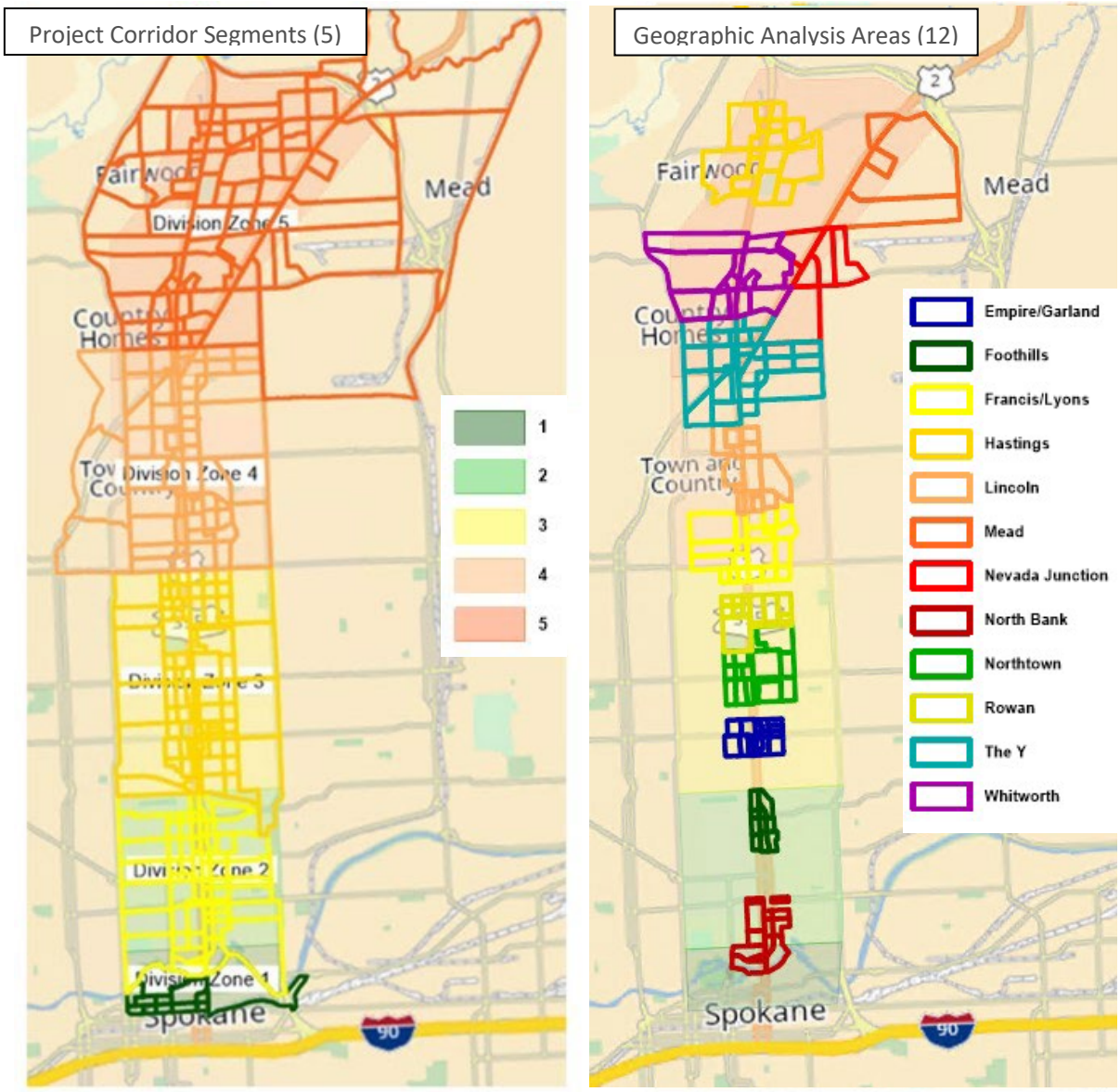
Breaking down the study area even further allows for an understanding of traffic flows and traffic distribution patterns for different areas of the full project corridor. This breakdown is useful when looking at the flow bundle analysis illustrated in Section 4.2, as well as an understanding of the distribution of north-south travel, as discussed in Section 4.7. There are five (5) segments that the project corridor was broken into for analysis, which are described below and illustrated in **Figure 3**:

1. **Segment 1:** Riverside Avenue/Division Street from the Transit Plaza to the Spokane River
2. **Segment 2:** Division Street/Ruby Street from the Spokane River to Euclid Avenue
3. **Segment 3:** Division Street from Euclid Avenue to Francis Avenue
4. **Segment 4:** Division Street from Francis Avenue to Newport Highway (the "Y")
5. **Segment 5:** Division Street and Newport Highway from the "Y" to Hastings Road

An additional geographic analysis is also included in several sections of this technical memorandum, which is more refined than the project segments. Performance measures related to land use type (dwelling unit or employment) summarize statistics by geographic analysis area. There are twelve (12) geographic analysis areas that the project corridor was broken into are detailed below and illustrated in **Figure 3**:

1. **Geographic Analysis Area 1:** North Bank, north of the Spokane River and south of Mission Avenue
2. **Geographic Analysis Area 2:** Foothills, north of Montgomery Avenue and South of Euclid Avenue
3. **Geographic Analysis Area 3:** Empire/Garland, centered primarily around Empire Avenue/Garland Avenue
4. **Geographic Analysis Area 4:** Northtown, centered around Wellesley Avenue, primarily including the Northtown mall
5. **Geographic Analysis Area 5:** Rowan, north of Northtown mall, surrounding Rowan Avenue and the Franklin Park shopping center
6. **Geographic Analysis Area 6:** Francis/Lyons, slightly south of Francis Avenue and south of Weile Avenue
7. **Geographic Analysis Area 7:** Lincoln, north of Weile Avenue to slightly north of Lincoln Road/Cascade Way
8. **Geographic Analysis Area 8:** The Y, centered around the "y", including land between Wall Street and Nevada Street
9. **Geographic Analysis Area 9:** Whitworth, centered around Hawthorne Road, west to Wall Street to include all of Whitworth University
10. **Geographic Analysis Area 10:** Mead, primarily east of Highway 2 north of the powerlines in the area west of the NSC
11. **Geographic Analysis Area 11:** Hastings, centered around Hastings Avenue including retail establishments and the current STA Park and Ride
12. **Geographic Analysis Area 12:** Nevada Junction, centered around the junction of Highway 2 and Nevada Street

Figure 3: Division Corridor Project Segments (5) and Geographic Analysis Areas (12)



1.4 Travel Model Limitations

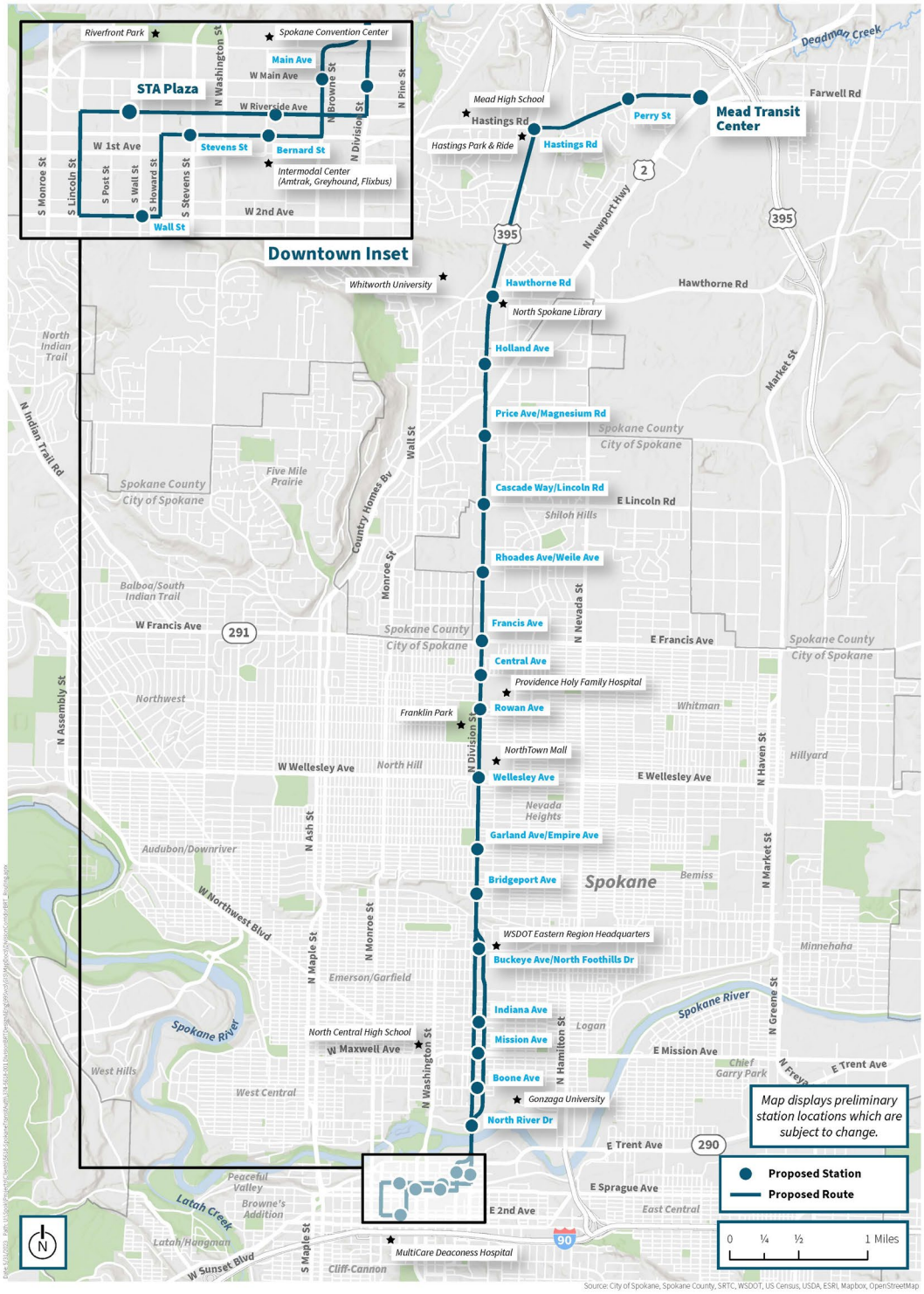
As a note for this technical memorandum, for a majority of analyses an explanation of "why" is described. These analyses are determined based on professional judgement in combination with travel model outputs. While these analyses are logical, the travel model is merely one tool out of many to be used to come to a definitive conclusion for decision making.

It is important to note that the future year (2050) alternatives are based on an identical assumption for land use in the region, which results in identical person trips to and from each origin and destination. The VISUM travel demand model is a trip-based model, and not an economic model. This means that the sole purpose of the model is to assume identical economic activity while distributing trips using the most likely mode (e.g. vehicle, bus, walk) and path those trips will take. The mode and path are determined using a variety of data including travel time, travel cost, automobile maintenance cost, income of person, and other socioeconomic variabilities, although the travel time often is the highest weighted factor for determining travel path.

2 ALTERNATIVE ASSUMPTIONS

The future year scenarios assume that all regional transit improvements assumed in the SRTC Metropolitan Transportation Plan (MTP) are included in the background conditions. The alignment and stop locations for the Locally Preferred Alternative is illustrated in **Figure 4**.

Figure 4: Transit Route Alignment



2.1 Locally Preferred Alternative Transit Service Plan

The headways for the Locally Preferred Alternative were assumed as typical weekday service. The service plan includes a 19.5-hour service span from 5:00 AM to 12:30 AM. LPA frequencies by time of day are:

- 5:00 AM to 7:00 AM (Early AM): 15 Minute Headways
- 7:00 AM to 6:30 PM (Mid-day): 10 Minute Headways
- 6:30 PM to 11:00 PM (PM Peak): 15 Minute Headways
- 11:00 PM to 12:30 AM (Late PM): 30 Minute Headways

2.2 Mid-Block and Left Turn Access

One component of the operations is the mid-block and left turns at intersections. For the LPA, it is assumed that the mid-block left-turn access is the same as the No Build scenario. The following mid-block and left turn access can be summarized as follows:

- The Division Street/Ruby Street couplet has left turn access at driveways, local streets, and arterials throughout the entire couplet
- Division Street between the couplet and Francis Avenue has channelized left turn access to local streets and arterials
- Division Street between Francis Avenue and the “Y” has a two-way left-turn lane which is used to access driveways, local streets, and arterials

3 DIVISION CORRIDOR ZONES AND LAND USE

To better analyze the land use scenarios, and their impact on transportation, the model Transportation Analysis Zones (TAZ) were split into smaller zones along the Division Street Corridor. During the zone split process, employment and housing units were split manually by referencing satellite image background. Other land use inputs were either calculated by the proportions of the housing units multiplied by the percentage of the newly split zones acres from the original zone acres or used the original zone data. **Figure 5** illustrates the original SRTC model zones in black, and the updated model zone structure in green. As illustrated, there was refinement in the zone structure as illustrated for the project, with changes limited to the general study area as illustrated in **Figures 2 and 3**.

The land use for the project was obtained from SRTC and has been summarized into both the project segments and geographic analysis areas, which were previously illustrated in **Figure 3**. **Table 2** summarizes the single-family and multi-family units for the years of 2022 and 2050 for the project segments and geographic analysis areas. **Table 3** summarizes the retail and non-retail employment for the years of 2022 and 2050 for the project segments and geographic analysis areas.

Figure 5: Division Corridor Project Zone Structure

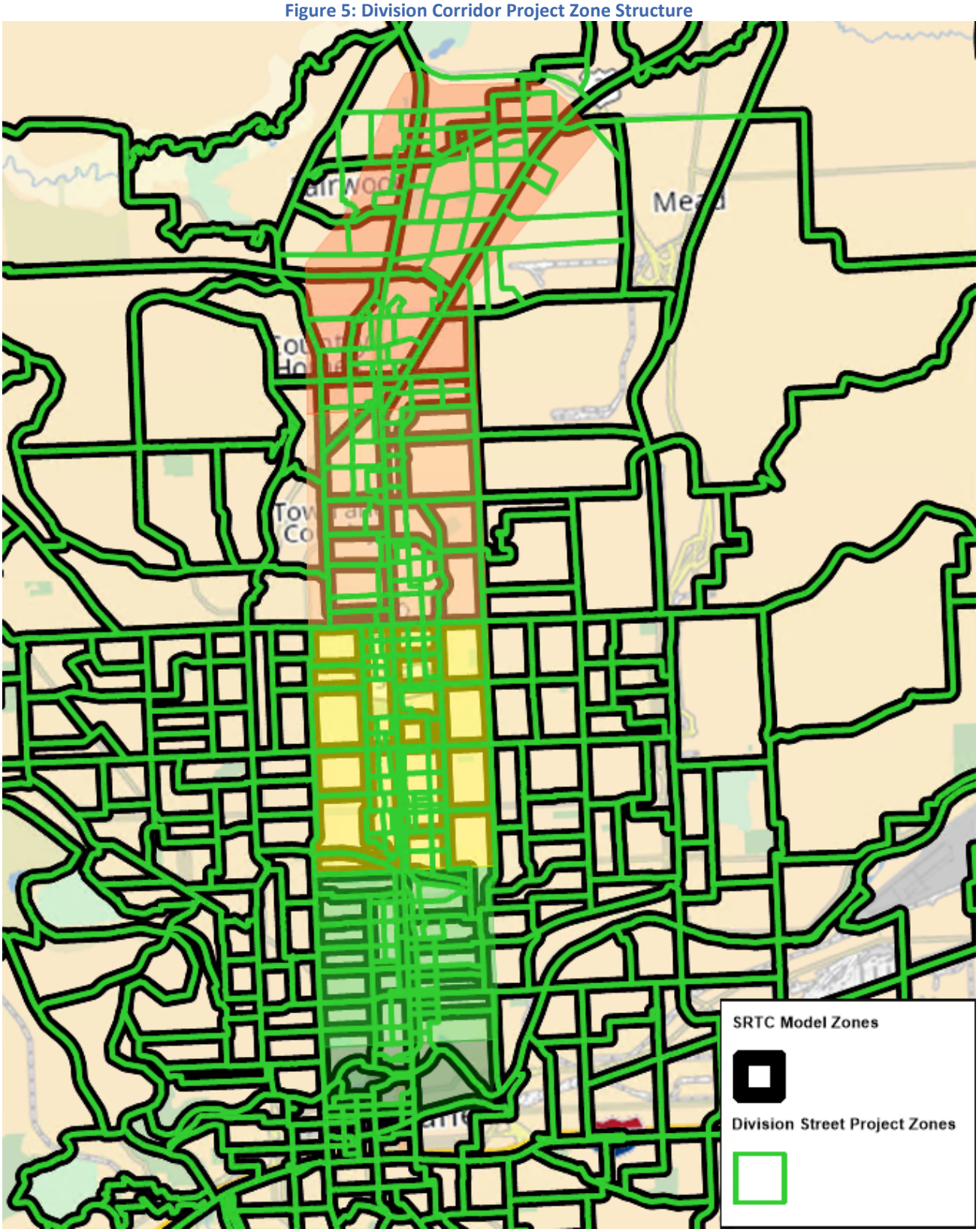


Table 2: Residential Dwelling Units by Division Corridor Project Segment (5) and Geographic Analysis Area (12)

Project Corridor Segment Or Geographic Analysis Area	2022			2050			Growth 2022-2050		
	Single-Family	Multi-Family	Total	Single-Family	Multi-Family	Total	Single-Family	Multi-Family	Total
Project Corridor Segment									
1: Transit Plaza to Spokane River	-	985	985	45	2,070	2,115	45	1,085	1,130
2: Spokane River to Euclid Avenue	2,470	1,480	3,950	2,790	2,355	5,145	320	875	1,195
3: Euclid Avenue to Francis Avenue	6,725	755	7,480	7,015	835	7,850	290	80	370
4: Francis Avenue to the "Y"	3,435	3,660	7,095	3,800	4,545	8,345	365	885	1,250
5: the "Y" to Hastings Road	4,105	2,335	6,440	5,590	3,840	9,430	1,485	1,505	2,990
Combined Total:	16,735	9,215	25,950	19,240	13,645	32,885	2,505	4,430	6,935
Geographic Analysis Areas									
1. North Bank	15	65	80	30	85	115	15	20	35
2. Foothills	35	-	35	35	-	35	-	-	-
3. Empire/Garland	450	-	450	455	-	455	5	-	5
4. Northtown	685	10	695	695	10	705	10	-	10
5. Rowan	145	20	165	150	20	170	5	-	5
6. Francis/Lyons	500	1,015	1,515	585	1,115	1,700	85	100	185
7. Lincoln	335	820	1,155	415	865	1,280	80	45	125
8. The Y	710	945	1,655	835	1,505	2,340	125	560	685
9. Whitworth	425	500	925	470	505	975	45	5	50
10. Mead	5	15	20	630	790	1,420	625	775	1,400
11. Hastings	350	155	505	435	620	1,055	85	465	550
12. Nevada Junction	-	-	-	5	10	15	5	10	15
Combined Total:	3,655	3,545	7,200	4,740	5,525	10,265	1,085	1,980	3,065

As a note, the combined total for Project Corridor Segments and Geographic Analysis Areas do not equal each other, because there are areas included in the Project Corridor Segments that are not included in Geographic Analysis Areas, as illustrated in **Figure 3**.

Table 3: Total Employment by Division Corridor Project Segment (5) and Geographic Analysis Area (12)

Project Corridor Segment Or Geographic Analysis Area	2022			2050			Growth 2022-2050		
	Retail	Non-Retail	Total	Retail	Non-Retail	Total	Retail	Non-Retail	Total
Project Corridor Segment									
1: Transit Plaza to the Spokane River	4,175	11,670	15,845	4,330	12,865	17,195	155	1,195	1,350
2: Spokane River to Euclid Avenue	4,130	10,045	14,175	4,330	12,215	16,545	200	2,170	2,370
3: Euclid Avenue to Francis Avenue	2,890	4,280	7,170	3,030	6,645	9,675	140	2,365	2,505
4: Francis Avenue to the "Y"	4,595	3,345	7,940	4,890	4,195	9,085	295	850	1,145
5: the "Y" to Hastings Road	3,610	4,790	8,400	4,545	6,700	11,245	935	1,910	2,845
Combined Total:	19,400	34,130	53,530	21,125	42,620	63,745	1,725	8,490	10,215
Geographic Analysis Areas									
1. North Bank	740	2,920	3,660	765	3,325	4,090	25	405	430
2. Foothills	550	40	590	580	40	620	30	-	30
3. Empire/Garland	55	95	150	65	155	220	10	60	70
4. Northtown	1,460	405	1,865	1,500	555	2,055	40	150	190
5. Rowan	340	2,070	2,410	340	2,935	3,275	-	865	865
6. Francis/Lyons	875	955	1,830	935	1,035	1,970	60	80	140
7. Lincoln	1,290	415	1,705	1,330	685	2,015	40	270	310
8. The Y	2,130	1,290	3,420	2,315	1,675	3,990	185	385	570
9. Whitworth	325	940	1,265	465	1,785	2,250	140	845	985
10. Mead	465	5	470	940	5	945	475	-	475
11. Hastings	750	525	1,275	945	875	1,820	195	350	545
12. Nevada Junction	1,610	1,235	2,845	1,620	1,815	3,435	10	580	590
Combined Total:	10,590	10,895	21,485	11,800	14,885	26,685	1,210	3,990	5,200

As a note, the combined total for Project Corridor Segments and Geographic Analysis Areas do not equal each other, because there are areas included in the Project Corridor Segments that are not included in Geographic Analysis Areas, as illustrated in **Figure 3**.

4 PERFORMANCE METRICS

Readily available performance metrics from the travel demand model were used to complete the scenarios analysis. Performance metrics were supported by information from the SRTC model, primarily related to transit speeds, ridership, and passenger delay. **Table 4** summarizes metrics used in the analysis and available data sources.

Table 4: Division Corridor Transit Data Analysis Metrics

Metric	Description	Data Source(s)
Regional Travel Statistics	Average vehicle miles, vehicle hours, vehicle hours of delay, and overall average speed for the greater Spokane region as well as the study area Regional travel statistics also include an analysis of future year flow-bundles and locations of congestion within the region.	All data used in this analysis was obtained as direct output from the travel demand model
Mode Split	Comparison of drive alone person trips, shared-ride person trips, transit person trips, and non-motorized person trips in the Spokane region, including a comparison of the overall transit and non-motorized mode split	All data used in this analysis was obtained as direct output from the travel demand model
Transit Ridership	A comparison of total regional transit ridership compared with Route 25 ridership	Existing ridership was obtained from STA Trapeze system/Automatic Passenger Counter (APC) data The change in ridership between future year scenarios was calculated from the travel demand model outputs and applied directly to the raw ridership data
Travel Time and Speed	Average inbound and outbound vehicular travel time and speeds on Division Street between the Plaza (assumed southern terminus) and the Hastings Park and Ride (assumed northern terminus) Travel time and speed were summarized by AM and PM peak periods and separated by direction of travel (inbound and outbound)	Existing travel time was obtained from WSDOT using Bluetooth reader information The change in travel times between scenarios was calculated from the travel demand model outputs and applied directly to the raw WSDOT travel time data
Screenline Comparison	A north-south travel comparison for four east-west screenlines drawn at different locations along the study corridor Vehicle travel for the AM peak period, PM peak period, and total average day were compiled Vehicle diversion between parallel north-south facilities was compared	All data used in this analysis was obtained as direct output from the travel demand model
Geographic Area Travel Statistics	Average vehicle miles or travel by various metrics, including daily vehicular VMT per service population (population plus employment), daily home-based vehicular VMT per capita (population), daily non-home based vehicular VMT per employee.	All data used in this analysis was obtained as direct output from the travel demand model

Note: All analysis assumes a data sample from typical, post-COVID operating conditions and ridership during the school year (e.g. October 2022)

4.1 Regional Travel Statistics

Regional travel statistics are general measures used to compare vehicular travel in a large geography. For this analysis, two study areas were analyzed to calculate average weekday Vehicle Miles of Travel (VMT), Vehicle Hours of Travel (VHT), and Vehicle Hours of Delay (VHD). **Table 5** summarizes the regional and study area travel statistics for the 2022 existing, and 2050 No Build and LPA scenarios. As detailed in **Table 5**, the scenarios result in the following analysis within the study area:

- Within the Spokane Region, an increase in VMT is observed between the 2022 Existing scenario and the 2050 No Build scenario of approximately 32 percent. Additionally, there is relatively no change (0 percent) in regional VMT when comparing the 2050 No Build and the 2050 Locally Preferred Alternative.
- Within the study area, an increase in VMT is observed between the 2022 Existing scenario and the 2050 No Build scenario of approximately 14 percent. Additionally, there is a decrease in VMT of approximately 2 percent between 2050 No Build and the 2050 LPA scenarios.
    - The increase in VMT between the 2022 Existing and the 2050 No Build scenario in the study area may be due to an increase in drive alone person trips throughout the region.
        - *As a note, mode split at the person trip level is later detailed in Table 6 in Section 4.4.*
    - The decrease in VMT within the study area between the 2050 No Build and the 2050 LPA scenarios when compared to regional average is likely due to several factors, including the mode shift from auto (drive alone and shared ride) travel to non-auto (transit and non-motorized) travel, as well as the reduction in available capacity on Division Street due to the reduction of one lane.
        - *As a note, mode split at the person trip level is later detailed in Table 6 in Section 4.4.*
- Within the study area, there is an increase in VHT between the 2022 Existing scenario and the 2050 No Build of approximately 17 percent, which is similar to the 14 percent growth for the region as a whole. Additionally, there is a reduction in VHT of approximately 1 percent between the 2050 No Build and 2050 LPA scenarios.
    - The increase in VHT between the 2022 Existing and the 2050 No Build scenario in the study area may be due to an increase in drive alone person trips throughout the region.
        - *As a note, mode split at the person trip level is later detailed in Table 6 in Section 4.4.*
    - The decrease in VHT within the study area between the 2050 No Build and the 2050 LPA scenarios when compared to regional average is likely due to several factors, including the mode shift from auto (drive alone and shared ride) travel to non-auto (transit and non-motorized) travel, as well as the reduction in available capacity on Division Street due to the reduction of one lane.
        - *As a note, mode split at the person trip level is later detailed in Table 6 in Section 4.4.*
- Within the study area, there is an increase in VHD between 2022 Existing and 2050 No Build of approximately 5 percent, which is identical to the percentage growth in delay for the region. Additionally, there is a decrease in VHD within the study area of approximately 6 percent between the 2050 No Build and the 2050 LPA scenarios.
    - The increase in VHD between the 2022 Existing and the 2050 No Build scenarios in the study area may be due to an increase in drive alone person trips throughout the region.
        - *As a note, mode split at the person trip level is later detailed in Table 6 in Section 4.4.*
    - The decrease in VHD within the study area between the 2050 No Build and the 2050 LPA scenarios when compared to regional average is likely due to several factors, including the mode shift from auto (drive alone and shared ride) travel to non-auto (transit and non-motorized) travel, as well as the reduction in available capacity on Division Street due to the reduction of one lane.
        - *As a note, mode split at the person trip level is later detailed in Table 6 in Section 4.4.*

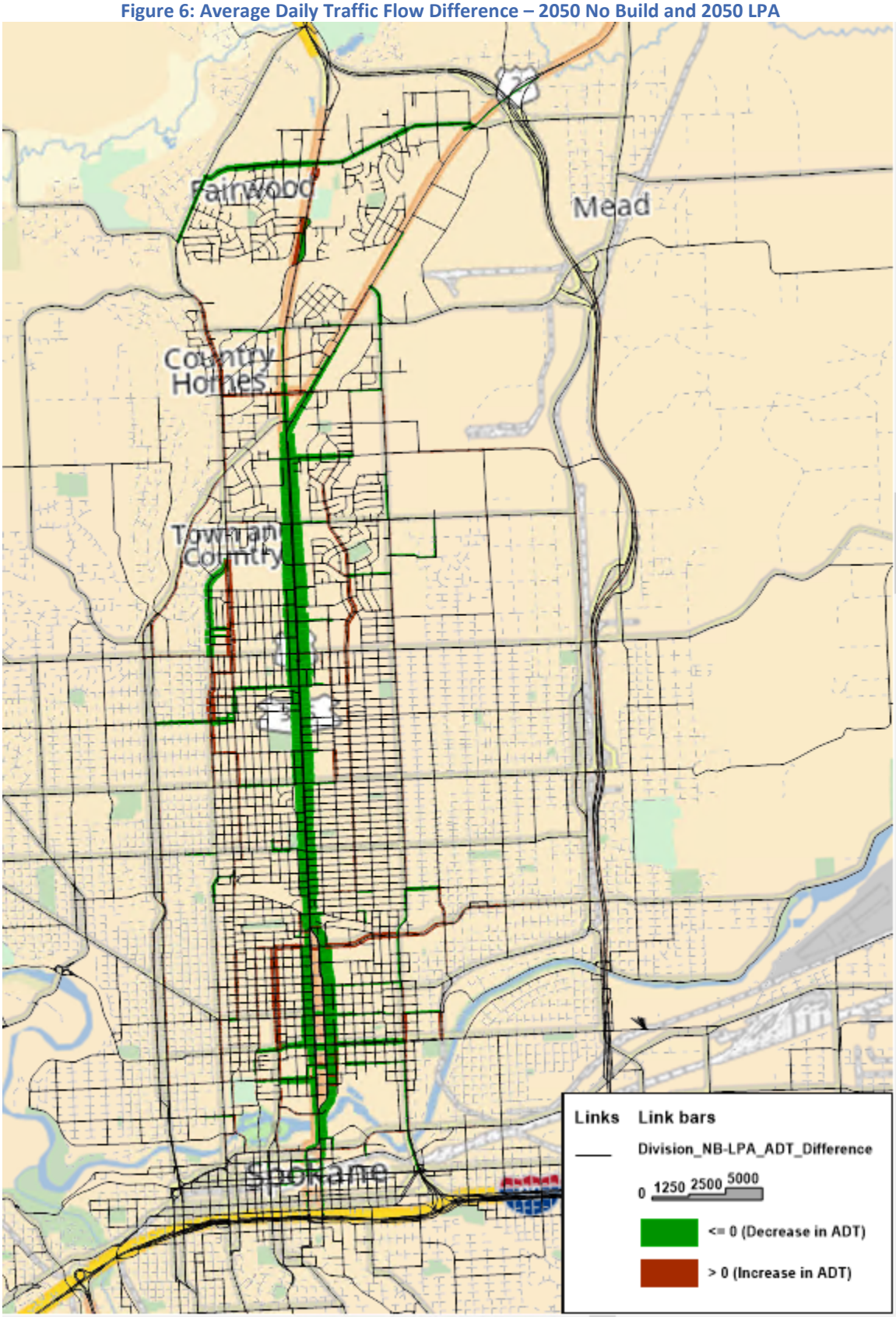
Table 5: Regional Travel Statistics Comparison (Average Weekday)

Description	With 2022/2050 Land Use		
	2022	2050 No Build	2050 LPA
Spokane Area			
VMT	10,565,900	13,905,100	13,889,600
VHT	293,500	404,000	404,400
VHD	66,500	70,100	69,600
Change in VMT	*Comparison of 2050 No Build to 2022, and 2050 Build to 2050 No Build*	32%	0%
Change in VHT		38%	0%
Change VHD		5%	-1%
Study Area			
VMT	1,020,600	1,164,300	1,135,200
VHT	35,700	41,600	41,300
VHD	6,200	6,500	6,100
Change in VMT	*Comparison of 2050 No Build to 2022, and 2050 Build to 2050 No Build*	14%	-2%
Change in VHT		17%	-1%
Change VHD		5%	-6%

Note: The 2050 No Build scenario is compared to the 2022 Existing scenario, and the 2050 LPA scenario is compared with the 2050 No Build.
[1]The study area statistical area includes the area within ¾ mile of either side of Division Street, which encompasses Hamilton Street to the east and Monroe Street to the west as illustrated in **Figure 2**.

To understand the difference in regional travel for the 2050 LPA scenario, a difference plot was made to illustrate regional changes in vehicular travel. **Figure 6** illustrates the reduction in average daily traffic from the 2050 No Build scenario with the 2050 LPA scenario. The green bars show where there is a reduction in 2050 LPA scenario volumes when compared with the 2050 No Build scenario, and the red bars show where there is an increase in 2050 LPA scenario volumes when compared with the 2050 No Build scenario. In general, the 2050 LPA scenario shows a reduction in vehicular traffic throughout the project corridor, with a greater reduction in vehicle trips north of Francis Avenue. The reduction in vehicular traffic throughout the corridor is related to a number of factors, including the mode shift from auto (drive alone and shared ride) travel to non-auto (transit and non-motorized) travel, as well as the reduction in available capacity on Division Street due to the reduction of one lane. It is important to note that the reduction in vehicular travel (vehicle trips) does not mean there is a reduction in person travel, which is detailed in *Section 4.4 and Section 4.7*.

Figure 6: Average Daily Traffic Flow Difference – 2050 No Build and 2050 LPA



4.2 Flow Bundle Analysis

A flow bundle analysis was completed for the 2050 No Build and 2050 LPA scenarios to illustrate general trip distribution throughout the region. The flow bundles illustrate the origins and destinations of trips through a specific location on the network. Flow bundles were developed for the segments north of downtown, including the following segments:

- **Segment 2:** Division Street/Ruby Street from the Spokane River to Euclid Avenue
  - Flow bundle analysis located on Division Street and Ruby Street north of Mission Avenue
- **Segment 3:** Division Street from Euclid Avenue to Francis Avenue
  - Flow bundle analysis located on Division Street north of Empire Avenue/Garland Avenue
- **Segment 4:** Division Street from Francis Avenue to Newport Highway (the "Y")
  - Flow bundle analysis located on Division Street south of Lincoln Road
- **Segment 5:** Division Street and Newport Highway from the "Y" to Hastings Road
  - Flow bundle analysis located on Division Street north of Hawthorne Road

The flow bundle analysis for the AM and PM peak periods are illustrated in **Figure 7**, **Figure 8**, **Figure 9**, and **Figure 10** for the 2050 No Build and LPA scenarios. Additionally, **Figure 11** illustrates the flow bundle analysis for any vehicles which travel through the entire corridor between the Spokane River and Hastings Road for the 2050 No Build and LPA scenarios. **Figure 12** illustrates the flow bundle analysis for vehicles which travel on the NSC south of Francis Avenue for the 2050 No Build and LPA scenarios.

As illustrated in the flow bundle figures:

- For each of the segment locations, both the AM and PM peak periods show little traffic coming from/going eastbound on I-90, because within the model it is more efficient in 2050 to utilize the future NSC for this movement.
- *Segment 2: Division Street and Ruby Street north of Mission Avenue*
  - Illustrated in **Figure 7**
  - Vehicular traffic in this segment comes from/goes to the north and south and west on I-90
  - Additional vehicles come from/go west on Francis Avenue, Wellesley Avenue, and Northwest Boulevard
  - LPA flow plots show less travel than the No Build plots
- *Segment 3: Division Street north of Empire Avenue/Garland Avenue*
  - Illustrated in **Figure 8**
  - Vehicular traffic in this segment comes from/goes to the north and south, including west on I-90
  - Additional vehicles come from/go to the west on Francis Avenue and Wellesley Avenue
  - LPA flow plots show less travel than the No Build plots
- *Segment 4: Division Street south of Lincoln Road*
  - Illustrated in **Figure 9**
  - Vehicular traffic in this segment comes from/goes to the north and south
  - The majority of vehicles appear to come from/go to areas north of Francis Avenue, with some distribution around the Spokane River
  - LPA flow plots show less travel than the No Build plots
- *Segment 5: Division Street north of Hawthorne Road*
  - Illustrated in **Figure 10**
  - Vehicular traffic in this segment comes from/go to the north and south
  - The majority of vehicles appear to come from/go to areas north of Francis Avenue, as well as to the west along Country Homes Boulevard and to the east along Nevada Street
  - LPA flow plots show less travel than the No Build plots

- *Full Corridor Travel (Division Street/Ruby Street between Spokane River and the "Y")*
    - Illustrated in **Figure 11**
    - LPA flow plots show less travel than the No Build plots
- *NSC Travel*
    - Illustrated in **Figure 12**
    - Traffic from north Spokane (north of Francis Avenue) utilizes the NSC for travel to/from east and west of Spokane via I-90
    - Additional traffic to/from downtown Spokane via 2nd Avenue utilizes the NSC for travel through the region.
    - LPA flow plots show less travel than the No Build plots

Figure 7: 2050 No Build and 2050 LPA AM/PM Peak Hour Flow Bundle - North of Mission Avenue – Segment 2

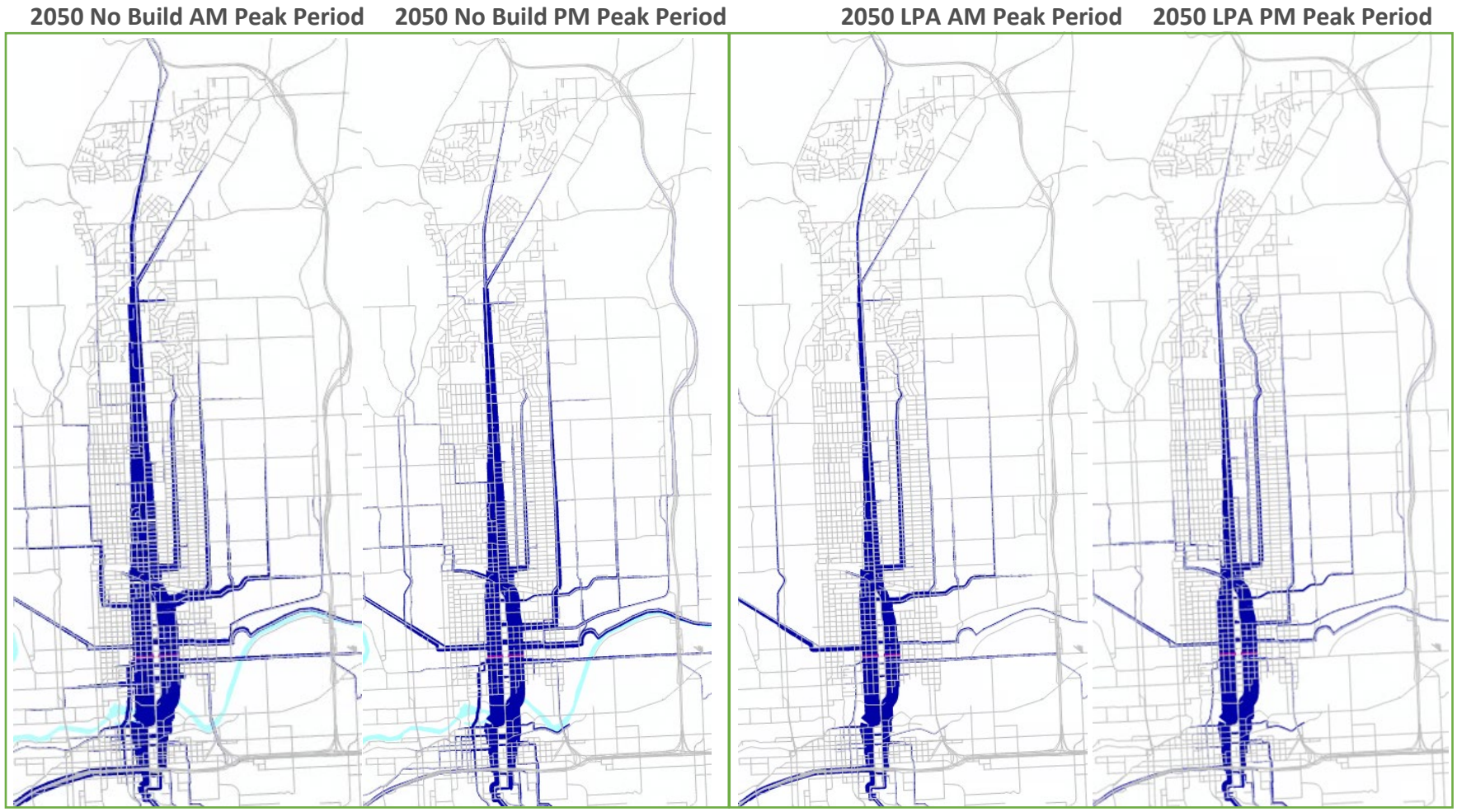


Figure 8: 2050 No Build and 2050 LPA AM/PM Peak Period Flow Bundle - North of Empire Avenue/Garland Avenue – Segment 3

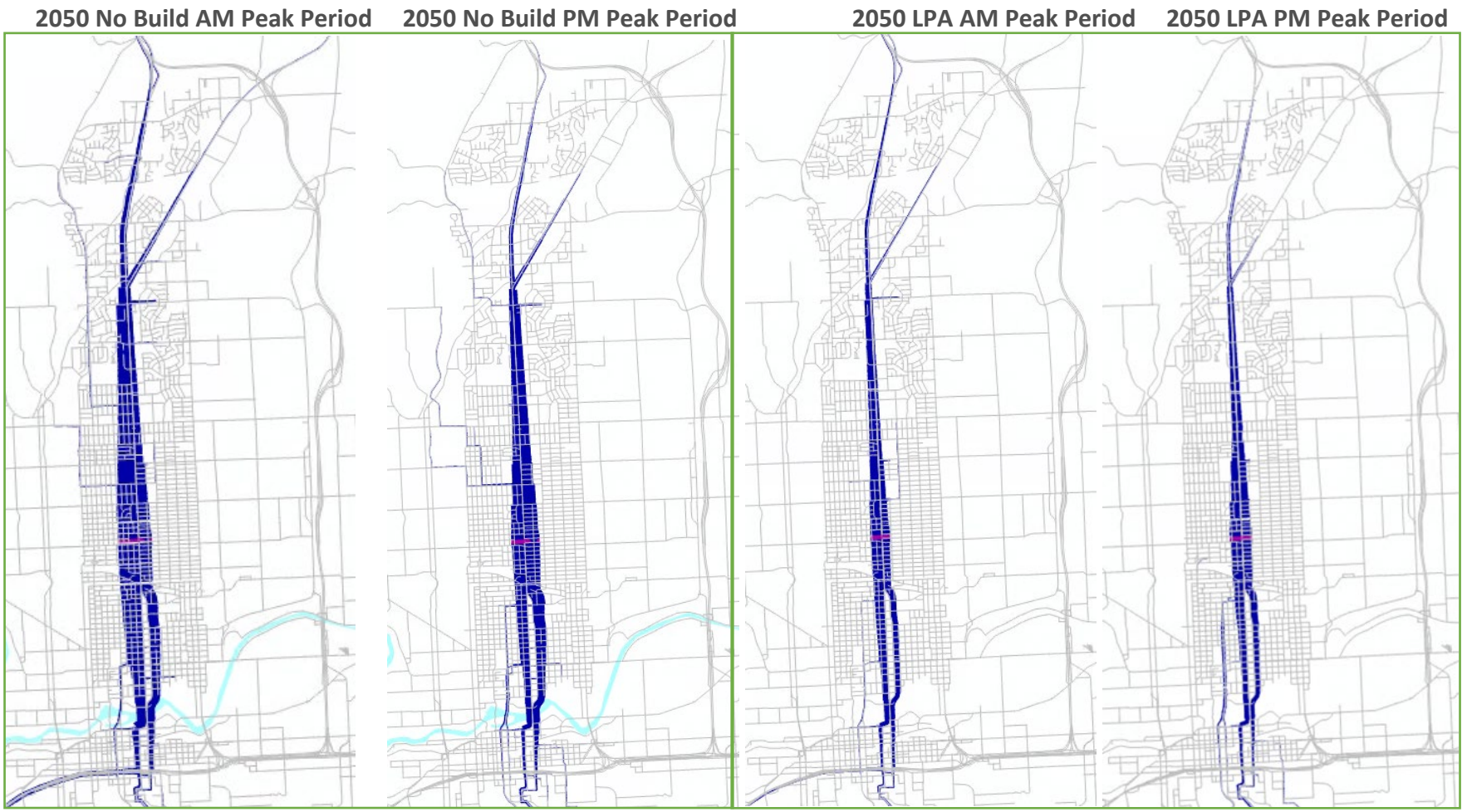


Figure 9: 2050 No Build and 2050 LPA AM/PM Peak Period Flow Bundle - South of Lincoln Road – Segment 4

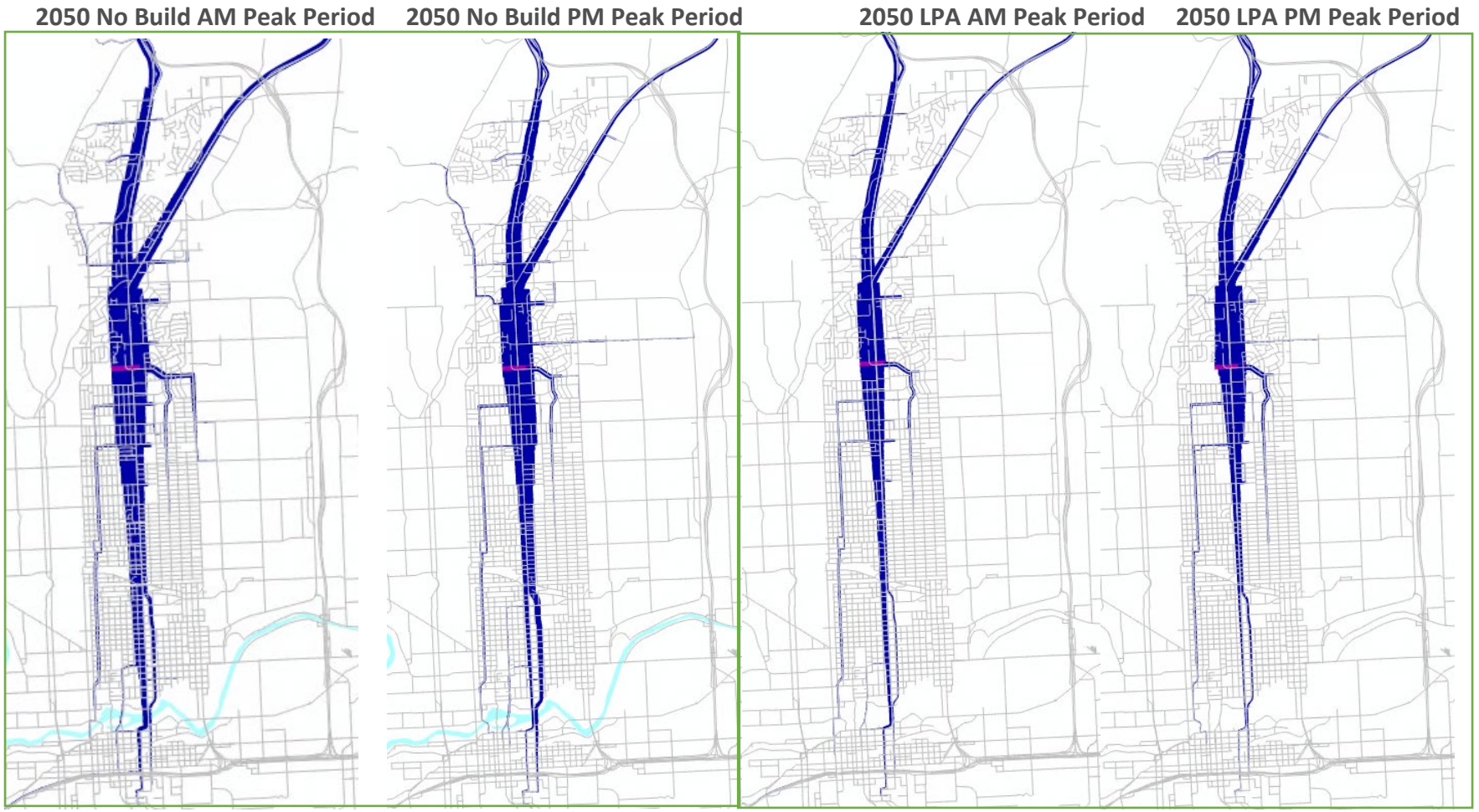


Figure 10: 2050 No Build and 2050 LPA AM/PM Peak Period Flow - North of Hawthorne Road – Segment 5

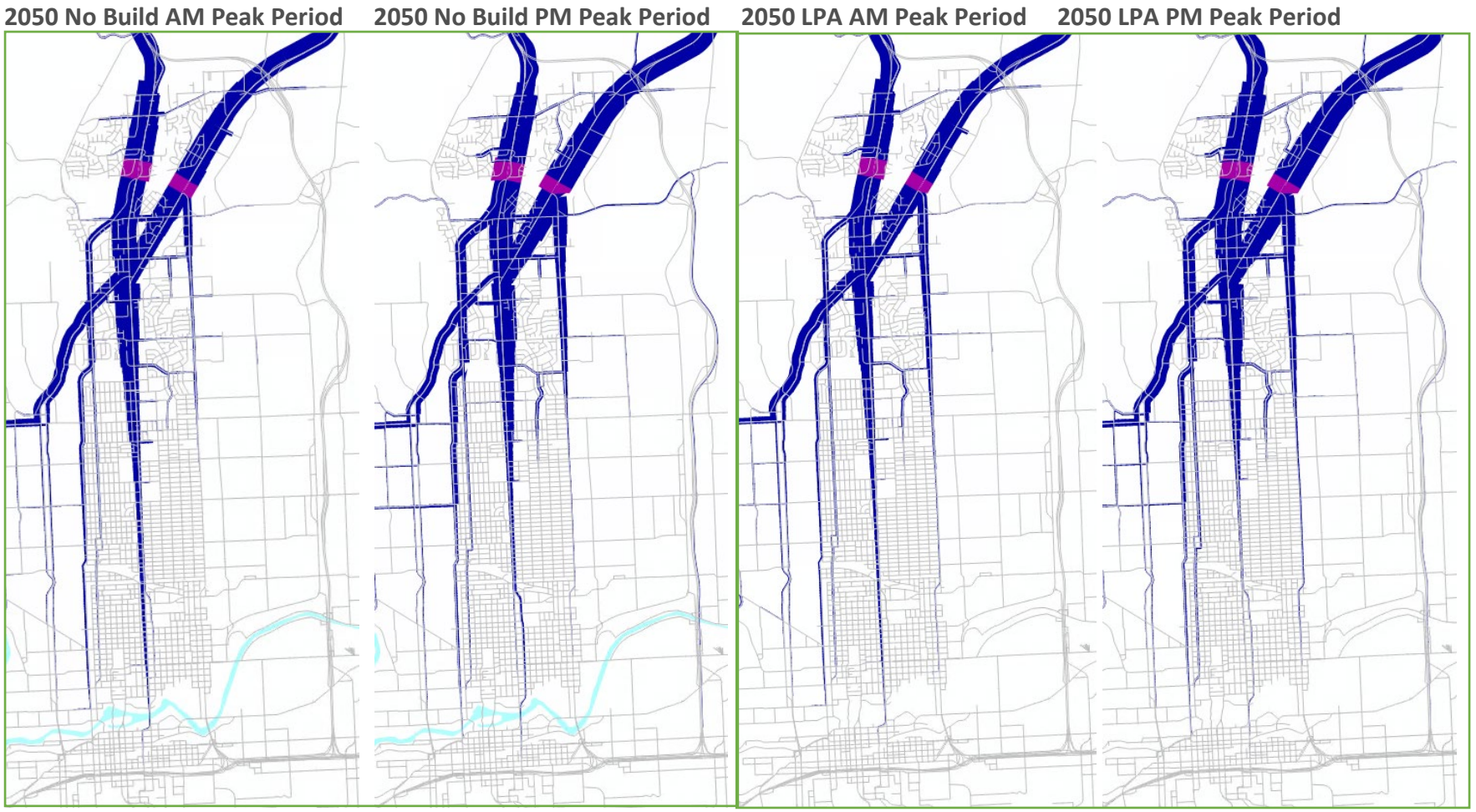


Figure 11: 2050 No Build and 2050 LPA AM/PM Peak Period Flow Bundle - Full Corridor Travel (Spokane River to the "Y")

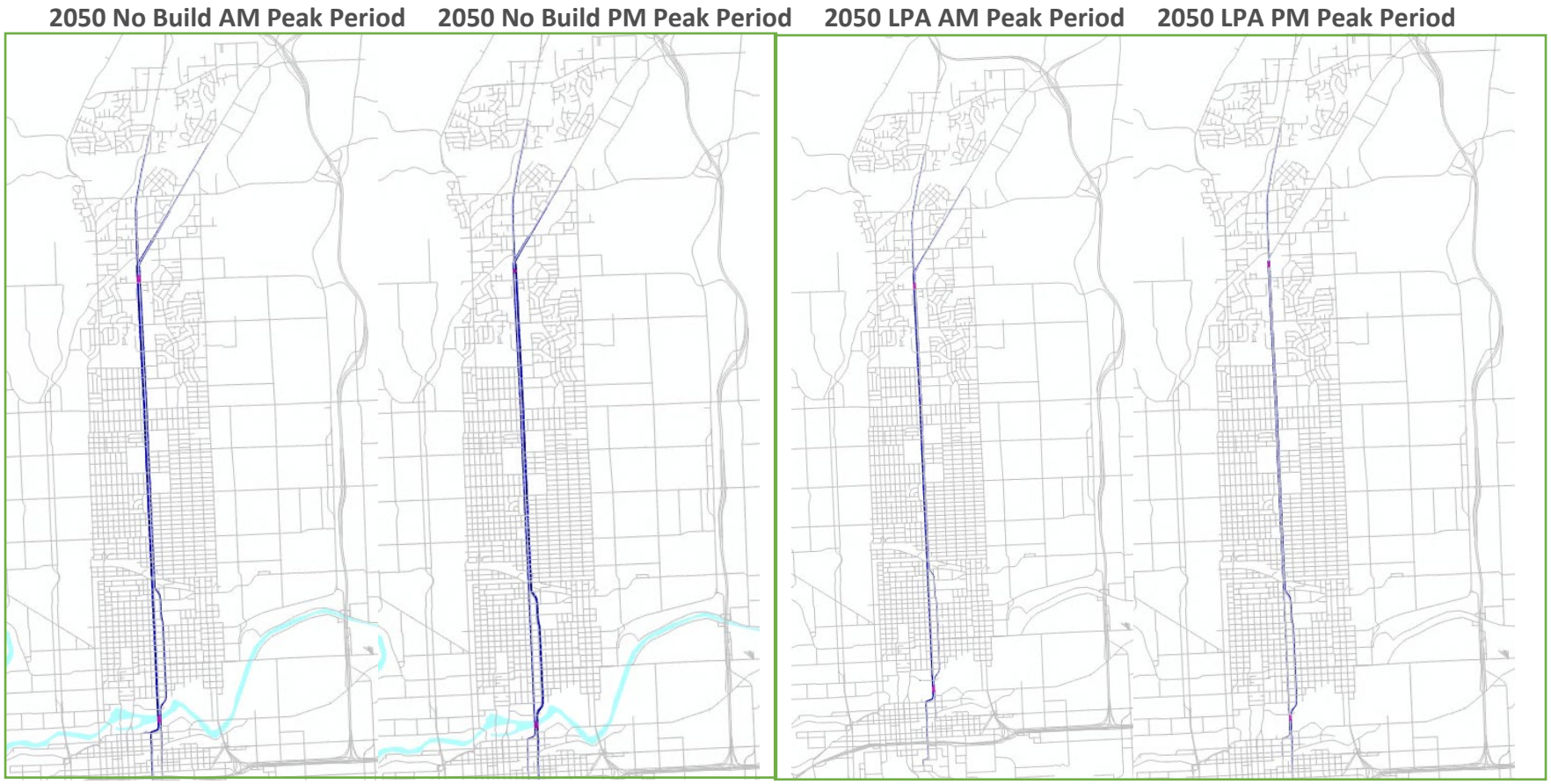
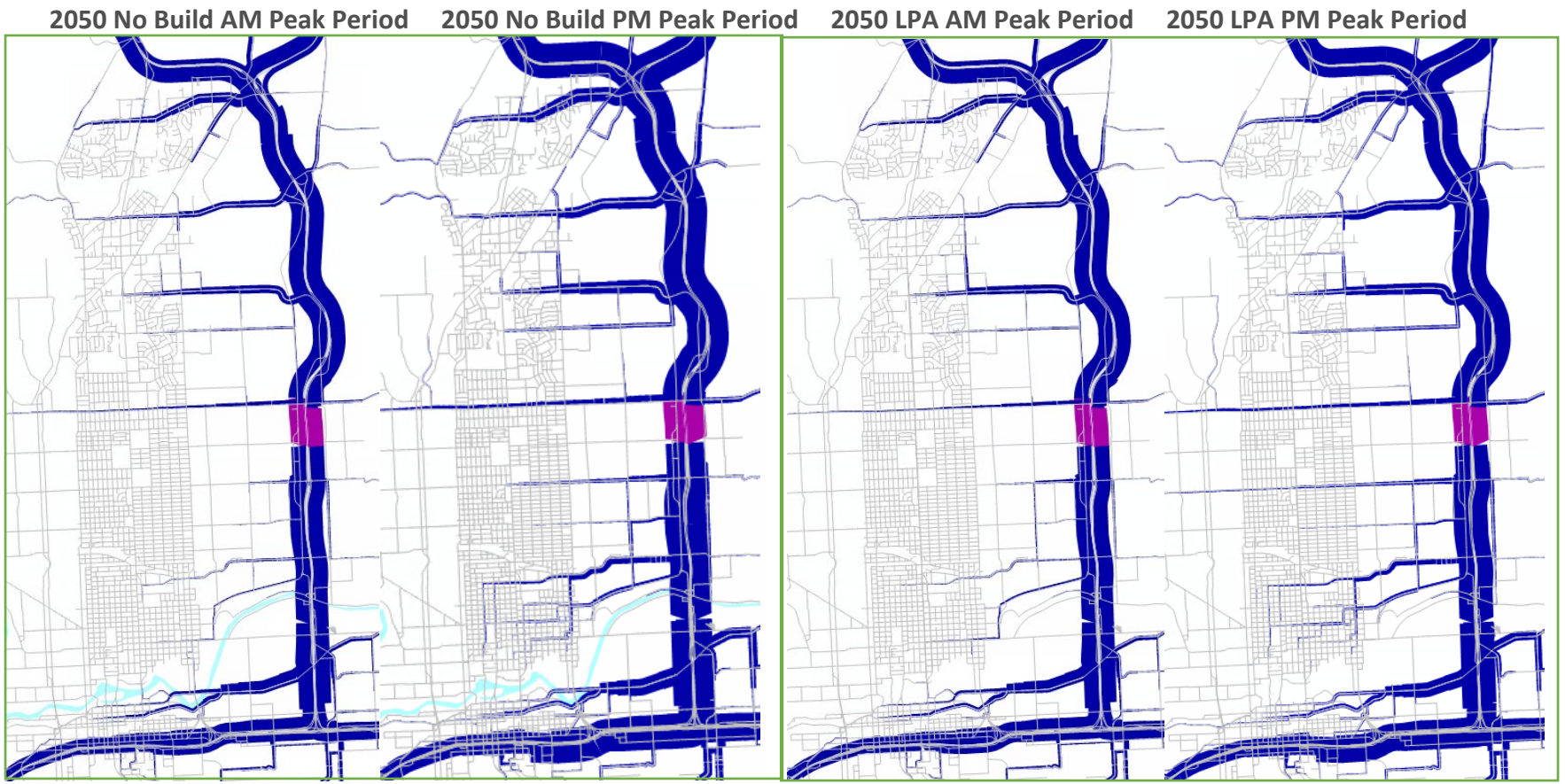


Figure 12: 2050 No Build and 2050 LPA AM/PM Peak Period Flow Bundle - NSC (South of Francis Avenue)



4.3 Regional Travel Congestion

Regional vehicle congestion was calculated to illustrate the overall impact of each scenario on the roadways and travel patterns. Volume to Capacity (V/C) ratios on roadway segments were used as a relative measure of Level of Service (LOS) to identify the roadways that are forecast to perform poorly. **Figure 13** illustrates the regional comparison of PM peak period congestion for the 2050 No Build and LPA scenarios.

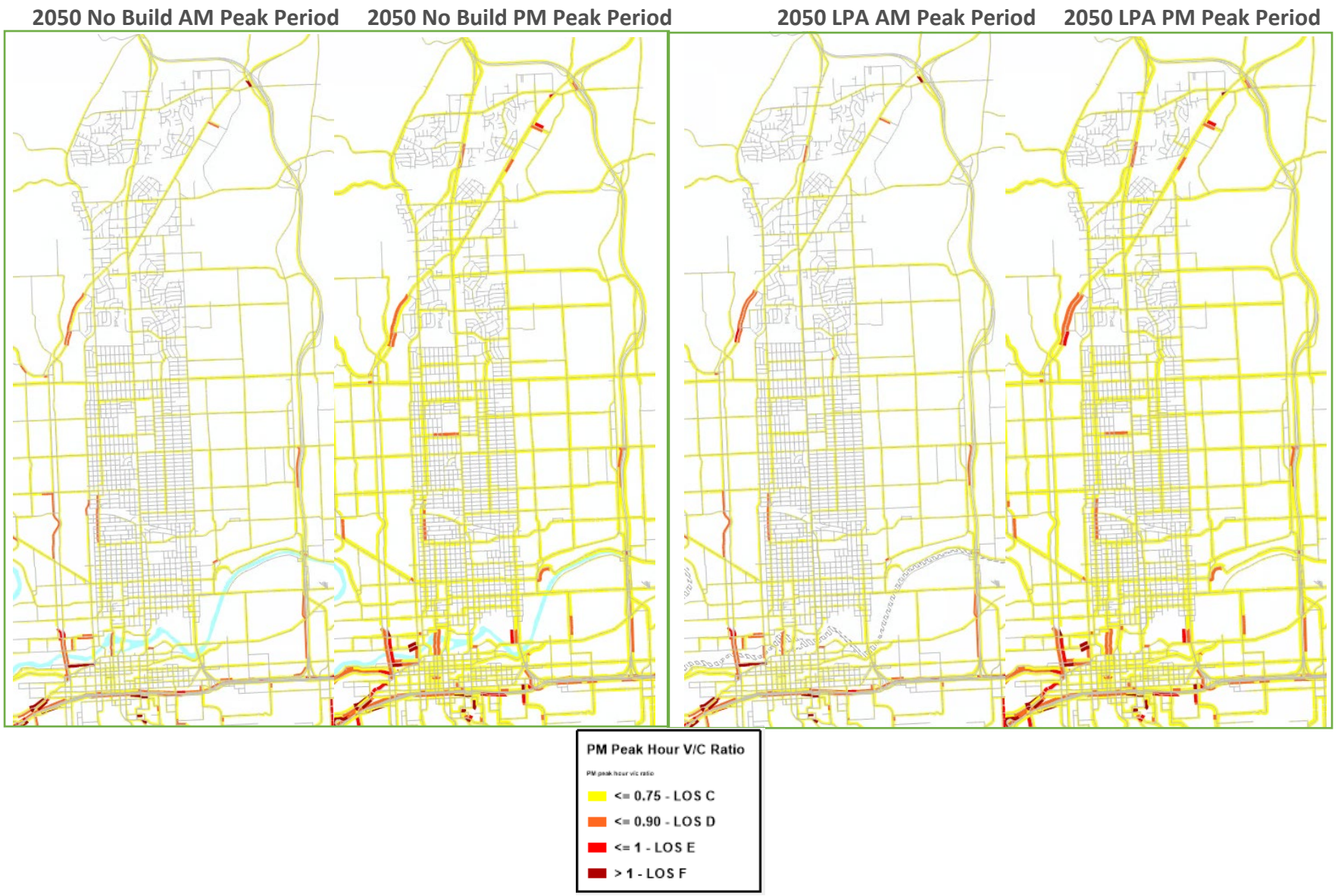
In both the 2050 No Build and 2050 LPA scenarios, primary identified locations of roadway congestion include:

- A bottleneck on the Maple Street Bridge north of the Spokane River
- Country Homes Boulevard is slightly congested west of Wall Street
- Minor congestion on parallel arterials around the Spokane River

In the 2050 LPA scenario, the following comparison is observed:

- The 2050 LPA scenarios present similar congestion levels across the region as the 2050 No Build scenario, with minor increases in congestion experienced on parallel arterials west of Division Street. It should be noted that in areas with slight increases in anticipated congestion all facilities are expected to operate at acceptable levels of service.
    - A potential reason for increased congestion (i.e. traffic volumes) on parallel arterials is directly related to the reduced capacity on Division Street, resulting in a redistribution of traffic from Division Street onto parallel arterials. As mentioned, there are no changes in congestion which are anticipated to exceed acceptable levels of service.

Figure 13: 2050 No Build and 2050 LPA AM/PM Peak Period Congestion Comparison



4.4 Regional Mode Split

Mode split is the percentage of travelers using a particular mode (e.g. single-occupant vehicle, high-occupant vehicle, transit, or non-motorized). In this study, the transit and non-motorized mode split percentages are an important component in evaluating the sustainability of the transportation system. **Table 6** summarizes the daily transit and non-motorized mode splits for the 2022 and the 2050 No Build and LPA scenarios. The travel statistics identified in this table are for the entire region, not just for the Division Street study area. As summarized in **Table 6:**

- Drive alone and shared-ride vehicular trips encompass most of the trips in the region for all scenarios, ranging between 87.6% and 87.9%.
- The 2050 No Build scenarios indicate a reduction in auto mode split and an increase in non-auto mode split when compared with the 2022 Existing scenario. This shift is additionally noted between the 2050 LPA scenario when compared with the 2050 No Build scenario.
- The 2050 LPA scenario increases the total number of daily transit trips by approximately 7,000 trips compared to the 2050 No Build scenario.
    - The primary reason for this is the revision of Route 25 coded as a BRT route with shorter headways than 2022 Existing Route 25. The details on increased ridership, within the region and on Route 25 are detailed in *Section 4.5*
- The 2050 LPA scenario decreases the total number of daily non-motorized trips by approximately 1,500 trips compared to the 2050 No Build scenario.
    - Reviewing the reduction of non-motorized trips in conjunction with transit trips, illustrates an increase in non-auto trips, resulting in a conclusion that the increase in transit service picks up (or reduces) some of the No Build scenario non-motorized trips.
    - As a second conclusion, the model is not capable of estimating non-motorized trips at this fine of a level.
- Transit mode split appears to be approximately 3 percent for the future year alternatives, similar to the 2022 Existing scenario. With an increase in 0.3% when comparing the 2050 LPA scenario against the 2050 No Build scenario.
    - The primary reason for this is the revision of Route 25 coded as a BRT route with shorter headways than 2022 Existing Route 25. Additionally, the bus-only lane for the BRT scenario allows for reduced congestion for buses, thus increasing schedule reliability and travel times person travel on Route 25 when compared with the 2050 No Build scenario. The details on increased ridership, within the region and on Route 25 are detailed in *Section 4.5*.

Table 6: Average Daily Regional Travel Mode Split

Description	2022 Existing	2050 No Build	2050 LPA
Person Trips			
Drive Alone Person Trips	1,488,320	1,943,840	1,941,890
Shared Ride Person Trips	807,740	1,051,190	1,051,310
Auto Person Trips (Drive Alone + Shared Ride)	**2,296,060**	**2,995,030**	**2,993,200**
Transit Person Trips	70,930	100,640	107,630
Non-Motorized Person Trips	245,800	316,950	315,420
Non-Auto Person Trips (Transit + Non-Motorized)	**316,730**	**417,590**	**423,050**
Total Person Trips	**2,612,790**	**3,412,620**	**3,416,250**
Mode Split			
Drive Alone Mode Split	57.0%	57.0%	56.8%
Shared Ride Mode Split	30.9%	30.8%	30.8%
Auto Mode Split (Drive Alone + Shared Ride)	**87.9%**	**87.8%**	**87.6%**
Transit Mode Split	2.7%	2.9%	3.2%
Non-Motorized Mode Split	9.4%	9.3%	9.2%
Non-Auto Mode Split (Transit + Non-Motorized)	**12.1%**	**12.2%**	**12.4%**

4.5 Transit Ridership

Transit ridership for the average weekday conditions was obtained from the travel demand model and compared to available Swiftly data. The transit ridership by direction for Route 25 (the existing year Division Street transit route) and Division BRT (the future year build scenario transit route) as summarized in **Table 7** for the 2022 existing and 2050 No Build and LPA scenarios indicate:

- The 2050 No Build scenario observes an increase in ridership of over 200 percent compared to the 2022 Existing scenario.
  - The primary growth in transit ridership between the 2022 Existing scenario and the 2050 No Build scenario is directly related to the regional growth in the transit system outside of Route 25
- The 2050 LPA scenario observes an increase in ridership of approximately 12 percent compared to the 2050 No Build scenario.
  - The primary reason for this is the revision of Route 25 coded as a BRT route with shorter headways than 2022 Existing Route 25.
- In the 2050 LPA scenarios, the increase in regional ridership is greater than the increase in Route 25 ridership.
  - The most likely reason for this comparison is that the improvements made to Route 25 increase ridership on regional routes connecting to Route 25, likely on east-west routes.
- The vehicle trip equivalency for the 2050 LPA scenarios, expressed as a ratio of boardings/auto occupancy, represents the equivalent of 1/10th of a full lane of peak hour traffic compared to the 2050 No Build scenario.
  - This is an important measure, because this represents the estimated number of vehicles removed from the roadway due solely to the increase in transit ridership.

Table 7: Average Daily Transit Ridership (Boardings) and Park and Ride Parking Space Capacity

Measurement/Segment	2022	2050 No Build	2050 LPA
Total System			
Average Daily Regional Ridership	50,920	74,290	78,890
Total Route 25			
Average Daily Ridership	2,410	7,385	8,305
Average Daily Growth (Compared to Existing)	-	206%	-
Average Daily Growth (Compared to the 2050 No Build scenario)	-	-	12%
Average Daily Reduction in Autos (Boardings/Auto Occupancy)	1,030	3,150	3,545
Average Daily Vehicle Trip Equivalency (Calculated as Boardings/Auto Occupancy) *Auto Occupancy Estimated at 2.34 Persons per Vehicle*	440	1,340	1,510
Peak Hour Route 25 Ridership % of Transit Ridership in a Peak Hour	11.45%	11.45%	11.45%
Estimated Peak Hour Reduction in Autos (Peak Single Hour Boardings/Auto Occupancy) *Auto Occupancy Estimated at 2.34 Persons per Vehicle*	120	360	405
Estimated Peak Hour Travel Lane Equivalency *Assumed lane Equivalency at 900 vehicles per lane*	0.1	0.4	0.5
Park and Ride			
Park and Ride Location	Hastings	Hastings	Mead Transit Center
Park and Ride Parking Space Capacity	135	135	100

4.6 Travel Time and Speed

Travel times and speeds for the Division Street corridor were obtained from the travel demand model on a segment-by-segment basis and then summed for the entire corridor. The travel times and speeds summarized in this section are for the general-purpose travel lanes, meaning auto vehicle travel times and speeds, and not directly transit travel times and speeds. The path for comparing travel time is defined as Riverside Avenue downtown between the transit plaza and Division Street, Division Street/Ruby Street between Riverside Avenue and Hastings Road, and Hastings Road between Division Street and the future Mead Transit Center. As a note, the downtown transit route and existing transit path does not follow this path fully, with diversions downtown and a brief diversion onto Newport Highway at the "Y", however this section of the memorandum is reviewing travel times for vehicular travel on Division Street, and not necessarily along the transit route.

As a secondary analysis, the BRT can be assumed to be traveling at the free-flow condition travel times and speeds in **Table 8** and **Table 9**, to provide a best-case analysis for the BAT lane. Using this assumption, the improvement in travel time when comparing the free-flow conditions to the 2050 LPA or 2050 No Build conditions is directly related to the improved travel time experienced by the bus in the 2050 LPA scenario. This assumption is qualified by the understanding that the SRTC travel demand model is not a simulation model and does not estimate varying delays at signals. Knowing this, all three scenarios assume the same delay due to signals.

The travel times and speeds are summarized by direction and by analysis segment in **Table 8** (travel times) and **Table 9** (speeds) for the 2022 existing and 2050 No Build and LPA scenarios. As summarized in **Table 8** and **Table 9**, there are several general conclusions which can be made related to travel times and speeds:

- In the 2050 No Build scenario, the northbound AM and PM Peak Hour and southbound AM and PM Peak Hour travel times are equal to or higher than the 2022 Existing scenario.
- The travel times for the free-flow conditions range from 1.6 to 3.4 minutes faster than the congested travel times in the 2050 LPA scenario, indicating that the bus travel time is up to 18% faster than the general-purpose lanes (calculated as 15.4 minutes versus 18.8 minutes in the PM Peak Hour Northbound/Eastbound direction).
- The 2050 No Build scenario average travel speeds for the corridor are similar to the 2022 Existing scenario speeds, however the 2050 No Build scenario has a slower average speed than the 2022 Existing scenario in the northbound direction, and a higher average speed than the 2022 Existing scenario in the southbound direction.
- The travel speeds for the free-flow conditions range from 3.3 to 6.6 MPH faster than the congested travel speeds in the 2050 LPA scenario, indicating that the bus travel speed is up to 22% faster than the general-purpose lanes (calculated as 36.5 MPH versus 30 MPH in the PM Peak Hour Northbound/Eastbound direction).
- The 2050 LPA scenario travel speeds are less than the 2050 No Build scenario travel speeds, with the 2050 LPA scenario having a longer travel time on average than the 2050 No Build scenario.
    - The likely reason for this slight decrease in travel speeds in the 2050 LPA scenario compared to the 2050 No Build scenario is due to several factors, including the mode shift from auto (drive alone and shared ride) travel to non-auto (transit and non-motorized) travel, as well as the reduction in available capacity on Division Street due to the reduction of one lane.
- Another general conclusion that can be made is that the speeds in the AM peak hour are typically faster than the PM peak hour for all segments and scenarios in both the northbound and southbound directions.
    - The most logical explanation for this general conclusion is the greater amount of traffic in the PM peak hour when compared with the AM peak hour, thus lowering speeds and increasing travel times in the PM peak hour when compared with the AM peak hour.

Table 8: Average AM and PM Peak Hour Vehicular Travel Time (Minutes) by Segment

Segment	Vehicular Travel Time (Minutes)			
	Free-Flow	2022	2050 No Build	2050 LPA
AM Peak Hour				
Northbound/Eastbound				
1. Riverside Avenue, Transit Plaza to Division Street	1.0	1.1	1.1	1.1
2. Division Street/Ruby Street, Riverside Avenue to Cataldo Avenue	0.9	0.9	0.9	0.9
3. Division Street/Ruby Street, Cataldo Avenue to Euclid Avenue	2.8	3.0	3.0	3.3
4. Division Street, Euclid Avenue to Francis Avenue	3.4	3.5	3.5	3.6
5. Division Street, Francis Avenue to Newport Highway ("Y")	2.6	2.8	2.9	3.0
6. Division Street, Newport Highway ("Y") to Hastings Road	2.5	2.6	2.7	2.7
7. Hastings Road, Division Street to Newport Highway/Future Mead Park and Ride	2.2	2.3	2.4	2.4
Total Northbound	15.4	16.3	16.5	17.0
Southbound/Westbound				
7. Hastings Road, Newport Highway/Future Mead Park and Ride to Division Street	2.2	2.2	2.3	2.3
6. Newport Highway, Hastings Road to "Y"	2.5	2.8	3.2	3.3
5. Division Street, "Y" to Francis Avenue	2.6	2.9	3.2	3.5
4. Division Street, Francis Avenue to Euclid Avenue	3.4	3.6	3.8	4.0
3. Division Street, Euclid Avenue to Cataldo Avenue	2.4	2.7	2.9	3.1
2. Division Street, Cataldo Avenue to Riverside Avenue	1.3	1.3	1.4	1.4
1. Riverside Avenue, Division Street to Transit Plaza	1.0	1.1	1.2	1.2
Total Southbound	15.4	16.7	18.1	18.8
PM Peak Hour				
Northbound/Eastbound				
1. Riverside Avenue, Transit Plaza to Division Street	1.0	1.1	1.2	1.2
2. Division Street/Ruby Street, Riverside Avenue to Cataldo Avenue	0.9	1.1	1.1	1.1
3. Division Street/Ruby Street, Cataldo Avenue to Euclid Avenue	2.8	3.2	3.1	3.6
4. Division Street, Euclid Avenue to Francis Avenue	3.4	3.7	3.7	3.8
5. Division Street, Francis Avenue to Newport Highway ("Y")	2.6	3.1	3.1	3.4
6. Division Street, Newport Highway ("Y") to Hastings Road	2.5	3.3	3.3	3.4
7. Hastings Road, Division Street to Newport Highway/Future Mead Park and Ride	2.2	2.3	2.4	2.3
Total Northbound	15.4	17.8	18.0	18.8
Southbound/Westbound				
7. Hastings Road, Newport Highway/Future Mead Park and Ride to Division Street	2.2	2.3	2.4	2.4
6. Newport Highway, Hastings Road to "Y"	2.5	2.7	2.8	2.8
5. Division Street, "Y" to Francis Avenue	2.6	2.9	2.9	3.1
4. Division Street, Francis Avenue to Euclid Avenue	3.4	3.6	3.6	3.7
3. Division Street, Euclid Avenue to Cataldo Avenue	2.4	2.7	2.7	2.8
2. Division Street, Cataldo Avenue to Riverside Avenue	1.3	1.5	1.5	1.5
1. Riverside Avenue, Division Street to Transit Plaza	1.0	1.1	1.2	1.2
Total Southbound	15.4	16.8	17.1	17.5

Table 9: Average AM and PM Peak Hour Vehicular Speed by Segment

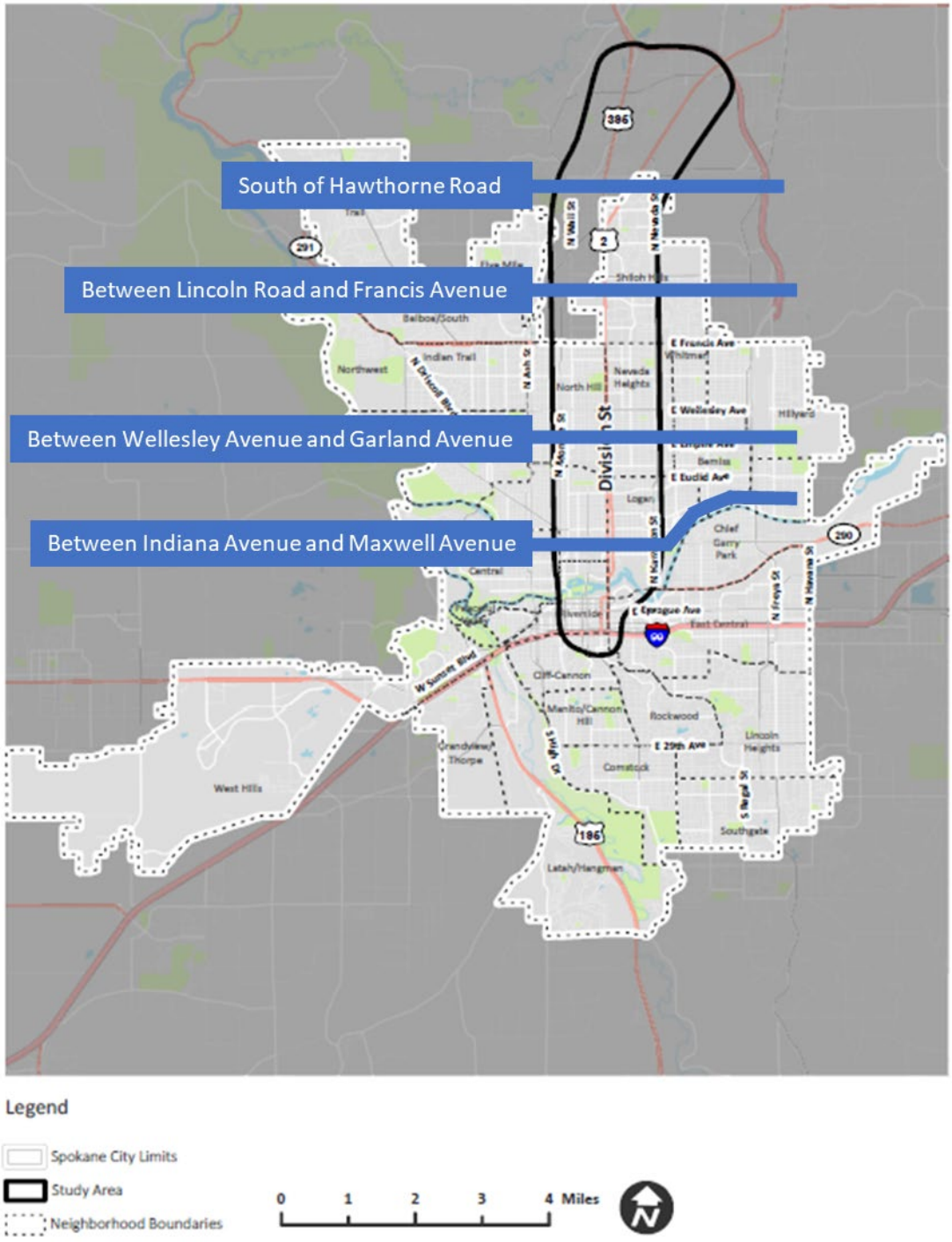
Segment	Vehicular Travel Speed (MPH)			
	Free-Flow	2022	2050 No Build	2050 LPA
AM Peak Hour				
Northbound/Eastbound				
1. Riverside Avenue, Transit Plaza to Division Street	30.0	27.9	27.4	27.4
2. Division Street/Ruby Street, Riverside Avenue to Cataldo Avenue	28.9	27.5	27.2	27.9
3. Division Street/Ruby Street, Cataldo Avenue to Euclid Avenue	30.3	28.3	28.2	25.7
4. Division Street, Euclid Avenue to Francis Avenue	35.0	33.7	33.7	32.8
5. Division Street, Francis Avenue to Newport Highway ("Y")	40.6	37.8	37.8	36.3
6. Division Street, Newport Highway ("Y") to Hastings Road	47.9	45.6	44.8	44.6
7. Hastings Road, Division Street to Newport Highway/Future Mead Park and Ride	35.0	33.7	32.2	32.2
Total Northbound	36.5	34.6	34.2	33.2
Southbound/Westbound				
7. Hastings Road, Newport Highway/Future Mead Park and Ride to Division Street	35.0	33.8	32.9	33.0
6. Newport Highway, Hastings Road to "Y"	47.9	36.2	37.2	36.2
5. Division Street, "Y" to Francis Avenue	40.6	32.5	33.5	31.2
4. Division Street, Francis Avenue to Euclid Avenue	35.0	30.8	31.5	30.2
3. Division Street, Euclid Avenue to Cataldo Avenue	35.0	29.0	29.3	27.2
2. Division Street, Cataldo Avenue to Riverside Avenue	29.7	27.5	26.2	26.2
1. Riverside Avenue, Division Street to Transit Plaza	30.0	27.3	25.6	25.6
Total Southbound	37.3	31.7	31.9	30.7
PM Peak Hour				
Northbound/Eastbound				
1. Riverside Avenue, Transit Plaza to Division Street	30.0	26.9	24.8	24.8
2. Division Street/Ruby Street, Riverside Avenue to Cataldo Avenue	28.9	22.9	22.4	23.6
3. Division Street/Ruby Street, Cataldo Avenue to Euclid Avenue	30.3	26.5	26.8	23.6
4. Division Street, Euclid Avenue to Francis Avenue	35.0	32.1	32.2	31.3
5. Division Street, Francis Avenue to Newport Highway ("Y")	40.6	34.8	34.5	32.0
6. Division Street, Newport Highway ("Y") to Hastings Road	47.9	36.5	36.6	35.6
7. Hastings Road, Division Street to Newport Highway/Future Mead Park and Ride	35.0	33.0	32.2	32.6
Total Northbound	36.5	31.6	31.3	30.0
Southbound/Westbound				
7. Hastings Road, Newport Highway/Future Mead Park and Ride to Division Street	35.0	33.0	32.0	32.1
6. Newport Highway, Hastings Road to "Y"	47.9	43.8	43.2	42.7
5. Division Street, "Y" to Francis Avenue	40.6	37.2	37.2	35.4
4. Division Street, Francis Avenue to Euclid Avenue	35.0	32.9	32.9	31.9
3. Division Street, Euclid Avenue to Cataldo Avenue	35.0	31.4	31.6	29.4
2. Division Street, Cataldo Avenue to Riverside Avenue	29.7	25.4	24.2	24.4
1. Riverside Avenue, Division Street to Transit Plaza	30.0	27.7	26.5	26.5
Total Southbound	37.3	34.2	33.8	32.9

4.7 Screenline Comparison

A screenline comparison measures the combined vehicular and person travel which crosses the screenline. Four east-west screenlines were developed for this project to calculate total north-south regional travel. The four screenlines analyzed are illustrated in **Figure 14**. Average daily north-south vehicular travel at the four project screenlines is summarized in **Table 10**, and PM peak hour north-south vehicular travel is summarized in **Table 11,** for the 2022 existing and 2050 No Build and LPA scenarios. Additional detailed screenline supporting data is provided in **Attachment A** (Table A1 for average daily travel, and Table A2 for PM peak hour travel).

The screenline analysis includes a planning level Volume to Capacity (V/C) analysis of the roadways, which is based solely on V/C ratios. The reasoning behind selecting V/C ratio is because the SRTC model provides demand model volumes, which has the capability of generating volumes over roadway capacity. This phase of analysis is reviewing true demands of vehicles and not simulated vehicle routing operational analysis, which would be constrained by roadway capacity. This methodology provides an indicator of anticipated roadway performance. Actual roadway performance and LOS will be determined by an intersection level operational analysis.

Figure 14: Screenline Locations



As detailed in **Table 10**:

- Total Screenlines
    - In the 2050 No Build scenario, the overall north-south vehicular travel in the region grows by an average of 48 percent compared to the 2022 Existing scenario
    - The 2050 LPA scenario shows a reduction in traffic of just around 1 percent compared to the 2050 No Build scenario.
        - This reduction is directly related to shared-ride and mode shift to transit
- Total Screenlines without NSC *(meaning excluding the NSC from the total summary of volumes)*
    - In the 2050 No Build scenario, the overall north-south vehicular travel in the region declines by an average of 2 percent compared to the 2022 Existing scenario
    - The 2050 LPA scenario declines in volume by approximately 2 percent compared to the 2050 No Build scenario
    - Most of the screenlines in the 2050 No Build scenario show a decrease in arterial V/C when compared to the 2022 Existing scenario.
        - This improvement is directly related to the exclusion of the NSC volumes, indicating that the NSC carries more than the future north-south travel growth.
- Total Screenlines without NSC and without parallel arterials *(meaning Division Street/Ruby Street only)*
    - In the 2050 No Build scenario, the overall north-south vehicular travel in the region increases by an average of 1 percent compared to the 2022 Existing scenario
    - The 2050 LPA scenario shows an approximate 17 percent reduction compared to the 2050 No Build scenario.
        - This reduction is directly related to shared-ride and mode shift to transit, as well as the reduction in capacity at this location causing diversion of traffic away from Division Street/Ruby Street.

As detailed in **Table 11**:

- Total Screenlines with NSC
    - In the 2050 No Build scenario, the overall north-south vehicular travel in the region grows by an average of 40 percent compared to the 2022 Existing scenario
    - The 2050 LPA scenario shows a slight reduction of 1 percent compared to the 2050 No Build scenario.
- Total Screenlines without NSC *(meaning excluding the NSC from the total summary of volumes)*
    - In the 2050 No Build scenario, the overall north-south vehicular travel in the region declines by an average of 2 percent compared to the 2022 Existing scenario
    - The 2050 LPA scenarios show a 2 percent decline in volume compared to the 2050 No Build scenario.
- Total Screenlines without NSC and without parallel arterials *(meaning Division Street/Ruby Street only)*
    - In the 2050 No Build scenario, the overall north-south vehicular travel in the region increases by an average of 3 percent compared to the 2022 Existing scenario
    - There is an overall reduction in volume in the 2050 LPA scenario compared to the 2022 Existing scenario and the 2050 No Build scenario.
    - The 2050 LPA scenario shows a roughly 15 percent reduction compared to the 2050 No Build scenario.
        - This reduction is directly related to shared-ride and mode shift to transit
    - The screenline between Indiana Avenue and Maxwell Avenue in the 2050 LPA scenario sees the greatest reduction in travel when compared with the No Build alternative, with a reduction of approximately 26%.
        - This is directly related to the reduction in additional capacity on Ruby Street throughout the couplet, compared to the mainline north of the couplet.

Table 10: Average Daily Screenline Comparison (Vehicular Travel)

Measure	Capacity			Daily Volumes			Volume/Capacity Ratio		
	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA
Total Screenline: Average Daily Vehicular Travel									
Between Indiana Avenue and Maxwell Avenue	345,000	480,000	450,750	220,780	317,320	313,840	0.64	0.66	0.70
Between Wellesley Avenue and Garland Avenue	258,000	393,000	381,750	152,350	240,000	237,700	0.59	0.61	0.62
Between Lincoln Road and Francis Avenue	378,000	378,000	366,750	129,860	188,350	184,940	0.34	0.50	0.50
South of Hawthorne Road	313,500	313,500	313,500	104,990	155,360	156,770	0.33	0.50	0.50
Overall (Four Screenlines Combined)	**1,294,500**	**1,564,500**	**1,512,750**	**607,980**	**901,030**	**893,250**	**0.47**	**0.58**	**0.59**
Between Indiana Avenue and Maxwell Avenue	*Comparison of 2050 No Build to 2022, and 2050 Build to 2050 No Build*				44%	-1%			
Between Wellesley Avenue and Garland Avenue					58%	-1%			
Between Lincoln Road and Francis Avenue					45%	-2%			
South of Hawthorne Road					48%	1%			
Overall (Four Screenlines Combined)					**48%**	**-1%**			
Total Screenline: Average Daily Vehicular Travel *Without NSC (Meaning that the summary of north-south links eliminates the NSC, to focus solely on arterials)*									
Between Indiana Avenue and Maxwell Avenue	345,000	345,000	315,750	220,780	219,600	215,470	0.64	0.64	0.68
Between Wellesley Avenue and Garland Avenue	258,000	258,000	246,750	152,350	142,280	139,330	0.59	0.55	0.56
Between Lincoln Road and Francis Avenue	243,000	243,000	231,750	118,010	121,370	117,230	0.49	0.50	0.51
South of Hawthorne Road	178,500	178,500	178,500	92,020	87,260	87,940	0.52	0.49	0.49
Overall (Four Screenlines Combined)	**1,024,500**	**1,024,500**	**972,750**	**583,160**	**570,510**	**559,970**	**0.57**	**0.56**	**0.58**
Between Indiana Avenue and Maxwell Avenue	*Comparison of 2050 No Build to 2022, and 2050 Build to 2050 No Build*				-1%	-2%			
Between Wellesley Avenue and Garland Avenue					-7%	-2%			
Between Lincoln Road and Francis Avenue					3%	-3%			
South of Hawthorne Road					-5%	1%			
Overall (Four Screenlines Combined)					**-2%**	**-2%**			
Total Screenline: Average Daily Vehicular Travel *Division Street/Ruby Street Only (Meaning that the summary of north-south links only includes Division Street and Ruby Street)*									
Between Indiana Avenue and Maxwell Avenue	76,000	76,000	46,750	52,090	50,840	38,050	0.69	0.67	0.81
Between Wellesley Avenue and Garland Avenue	58,000	58,000	46,750	42,320	41,050	34,930	0.73	0.71	0.75
Between Lincoln Road and Francis Avenue	58,000	58,000	46,750	37,380	38,320	30,500	0.64	0.66	0.65
South of Hawthorne Road	42,000	42,000	42,000	25,190	27,930	27,720	0.60	0.67	0.66
Overall (Four Screenlines Combined)	**234,000**	**234,000**	**182,250**	**156,980**	**158,140**	**131,200**	**0.67**	**0.68**	**0.72**
Between Indiana Avenue and Maxwell Avenue	*Comparison of 2050 No Build to 2022, and 2050 Build to 2050 No Build*				-2%	-25%			
Between Wellesley Avenue and Garland Avenue					-3%	-15%			
Between Lincoln Road and Francis Avenue					3%	-20%			
South of Hawthorne Road					11%	-1%			
Overall (Four Screenlines Combined)					**1%**	**-17%**			

Table 11: PM Peak Hour Screenline Comparison (Vehicular Travel)

Measure	Capacity			PM Peak Hour Volumes			Volume/Capacity Ratio		
	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA
Total Screenline: PM Peak Hour Vehicular Travel									
Between Indiana Avenue and Maxwell Avenue	40,700	52,700	49,900	21,920	30,170	29,670	0.54	0.57	0.59
Between Wellesley Avenue and Garland Avenue	33,400	45,400	42,700	15,130	22,150	21,910	0.45	0.49	0.51
Between Lincoln Road and Francis Avenue	42,500	42,500	41,000	12,900	17,980	17,610	0.30	0.42	0.43
South of Hawthorne Road	33,650	33,650	33,650	10,420	14,400	14,550	0.31	0.43	0.43
Overall (Four Screenlines Combined)	**150,250**	**174,250**	**167,250**	**60,370**	**84,700**	**83,740**	**0.40**	**0.49**	**0.50**
Between Indiana Avenue and Maxwell Avenue	*Comparison of 2050 No Build to 2022, and 2050 Build to 2050 No Build*				38%	-2%			
Between Wellesley Avenue and Garland Avenue					46%	-1%			
Between Lincoln Road and Francis Avenue					39%	-2%			
South of Hawthorne Road					38%	1%			
Overall (Four Screenlines Combined)					**40%**	**-1%**			
Total Screenline: PM Peak Hour Vehicular Travel *Without NSC (Meaning that the summary of north-south links eliminates the NSC, to focus solely on arterials)*									
Between Indiana Avenue and Maxwell Avenue	40,700	40,700	37,900	21,920	22,110	21,570	0.54	0.54	0.57
Between Wellesley Avenue and Garland Avenue	33,400	33,400	30,700	15,130	14,090	13,810	0.45	0.42	0.45
Between Lincoln Road and Francis Avenue	30,500	30,500	29,000	11,720	12,180	11,760	0.38	0.40	0.41
South of Hawthorne Road	21,650	21,650	21,650	9,130	8,490	8,590	0.42	0.39	0.40
Overall (Four Screenlines Combined)	**126,250**	**126,250**	**119,250**	**57,900**	**56,870**	**55,730**	**0.46**	**0.45**	**0.47**
Between Indiana Avenue and Maxwell Avenue	*Comparison of 2050 No Build to 2022, and 2050 Build to 2050 No Build*				1%	-2%			
Between Wellesley Avenue and Garland Avenue					-7%	-2%			
Between Lincoln Road and Francis Avenue					4%	-3%			
South of Hawthorne Road					-7%	1%			
Overall (Four Screenlines Combined)					**-2%**	**-2%**			
Total Screenline: PM Peak Hour Vehicular Travel *Division Street/Ruby Street Only (Meaning that the summary of north-south links only includes Division Street and Ruby Street)*									
Between Indiana Avenue and Maxwell Avenue	8,800	8,800	6,000	5,170	5,100	3,760	0.59	0.58	0.63
Between Wellesley Avenue and Garland Avenue	6,600	6,600	5,100	4,200	4,140	3,620	0.64	0.63	0.71
Between Lincoln Road and Francis Avenue	6,600	6,600	5,100	3,710	3,890	3,250	0.56	0.59	0.64
South of Hawthorne Road	4,700	4,700	4,700	2,500	2,870	2,900	0.53	0.61	0.62
Overall (Four Screenlines Combined)	**26,700**	**26,700**	**20,900**	**15,580**	**16,000**	**13,530**	**0.58**	**0.60**	**0.65**
Between Indiana Avenue and Maxwell Avenue	*Comparison of 2050 No Build to 2022, and 2050 Build to 2050 No Build*				-1%	-26%			
Between Wellesley Avenue and Garland Avenue					-1%	-13%			
Between Lincoln Road and Francis Avenue					5%	-16%			
South of Hawthorne Road					15%	1%			
Overall (Four Screenlines Combined)					**3%**	**-15%**			

While comparing the 2050 LPA scenario to the 2050 No Build scenario, a diversion of vehicular trips from Division Street to parallel arterials was observed. The diversion occurred because 1) when capacity is reduced on Division Street, some trips destined for locations not along Division Street modify their trip to a facility which has available capacity for additional trips – meaning they find the path of least resistance and 2) the increase in transit services on Division Street attract person trips out of vehicles and onto buses further reducing the Division Street vehicular volume. Additionally, when comparing the 2050 No Build scenario with the 2022 Existing scenario, the development of the NSC changes the distribution of regional north-south vehicular travel. The total forecast volume on the NSC is expected to exceed the growth in north-south vehicle trips in the study corridor, thus reducing north-south volumes on parallel arterials throughout Spokane, including Division Street, to below the 2022 Existing scenario in many locations.

Detailed daily and pm peak hour traffic flows on all north-south arterials crossing each of the east-west screenlines are summarized in **Attachment A** (Table A1 and Table A2). Of the major north-south arterials crossing the screenlines, Division Street, Ruby Street, Hamilton Street, Perry Street, Nevada Street, Crestline Street, Market Street, and Greene Street tend to have lower volumes in the future year scenarios.

To get an understanding of the mode shift of person trips across these screenlines, **Table 12** summarizes average daily north-south motorized person travel at the four project screenlines. As a note, the model does not assign non-motorized trips, thus walk and bike trips are not summarized in this analysis. Additional detailed screenline supporting data is provided in **Attachment A**.

As detailed in **Table 12**:

- Average daily vehicle trips in the 2050 LPA scenario reduces on all Screenlines by an average of 17% when compared to the 2050 No Build scenario, where average daily person trips in the 2050 LPA scenarios reduce on all Screenlines by an average of 17% compared to the 2050 No Build scenario.
    - The similar reduction in vehicle and person trips potentially indicates that the trips served on Division Street that remain in vehicles may not shift noticeably between single occupant and multi-occupant vehicles. This is likely due to the fact that the congestion remains consistent between the 2050 No Build and 2050 LPA scenarios, and there is no identified reason to change behavior for vehicular auto occupancy.

Table 12: Average Daily Screenline Comparison (Person Trips)

Measure	2022 Existing	2050 No Build	2050 LPA
Average Daily Vehicle Traffic *(Division Street/Ruby Street Only) - (Excluding Parallel Arterials) - (Excluding NSC)*			
Between Indiana Avenue and Maxwell Avenue	52,090	50,840	38,050
Between Wellesley Avenue and Garland Avenue	42,320	41,050	34,930
Between Lincoln Road and Francis Avenue	37,380	38,320	30,500
South of Hawthorne Road	25,190	27,930	27,720
Overall (Four Screenlines Combined)	**156,980**	**158,140**	**131,200**
Between Indiana Avenue and Maxwell Avenue		-2%	-25%
Between Wellesley Avenue and Garland Avenue		-3%	-15%
Between Lincoln Road and Francis Avenue		3%	-20%
South of Hawthorne Road		11%	-1%
Overall (Four Screenlines Combined)		**1%**	**-17%**
Daily Motorized Person Trips (Drive Alone, Shared Ride, Truck, Transit) *(Division Street/Ruby Street Only) - (Excluding Parallel Arterials) - (Excluding NSC)*			
Between Indiana Avenue and Maxwell Avenue	63,580	60,610	45,310
Between Wellesley Avenue and Garland Avenue	53,190	49,400	42,050
Between Lincoln Road and Francis Avenue	47,260	46,870	37,400
South of Hawthorne Road	33,210	35,580	35,250
Overall (Four Screenlines Combined)	**197,080**	**192,480**	**160,100**
Between Indiana Avenue and Maxwell Avenue		-5%	-25%
Between Wellesley Avenue and Garland Avenue		-7%	-15%
Between Lincoln Road and Francis Avenue		-1%	-20%
South of Hawthorne Road		7%	-1%
Overall (Four Screenlines Combined)		**-2%**	**-17%**

4.8 Land Use Geographical Area Vehicular Travel Analysis

Vehicular travel statistics for each geographical area are summarized to understand the impact that land use has on vehicular travel. The primary land use geographical area travel statistic for review is calculated as vehicle miles of travel by varying metrics. As a note, the SRTC travel demand model assumes that hotel resident trips are calculated as home trips, and thus hotel room trips are included in all home-based trip calculations. All of the land use geographical area vehicular travel statistics are calculated based on the trips beginning or ending within the land use geographical areas, as follows:

- **Daily VMT:** A summary of drive alone and shared ride automobile trips, multiplied by their trip length
- **Daily VMT per Service Population:** A summary of daily VMT, divided by the zonal service population
    - The service population calculation includes home residents, hotel visitors, and employees
        - Home residents are estimated using the 2016 to 2020 household size of 2.28 for the City of Spokane, as obtained from www.census.gov.
        - Hotel visitors are estimated using the assumption of 2.28 visitors per occupied room, with a hotel occupancy of 60 percent, resulting in an average population of 1.37 visitors per available hotel room
    - This metric allows you to see if the average length of trips is changing based on the changes in land use.
- **Daily Home-Based VMT:** A summary of drive alone and shared ride automobile trips which begin or end at a home (meaning the trip starts at a home and ends at another location, such as a grocery store, or the trip begins somewhere other than a home and the home is the destination for that trip),

- **Daily Home-Based VMT per Capita:** A summary of daily home-based VMT, divided by the zonal population.
    - The per capita calculation includes home residents and hotel visitors.
    - This metric allows you to see if the trips with ends at a home are changing length based on the changes in land use.
- **Daily Non-Home-Based VMT:** A summary of drive alone and shared ride automobile trips which do not begin or end at a home, multiplied by their trip length
- **Daily Non-Home-Based VMT per Employee:** A summary of daily non-home-based VMT, divided by the zonal employment.
    - For this metric, there are no trips that begin or end at a home
    - This metric allows you to see if the trips with no trip ends at a home are changing length based on the changes in land use.

Table 13 summarizes the daily VMT values for each of the geographical areas for the 2022 existing and 2050 No Build and LPA scenarios, as well as an overall combined scenario average. A complete land use geographical area performance summary is included in **Attachment B**. As detailed in **Table 13**:

- **Daily VMT** for each of the geographical areas increases in the 2050 scenarios compared to the 2022 Existing scenario, with the 2050 LPA scenario lower than the 2050 No Build scenario
    - The reason for the greater daily VMT occurring in the 2050 scenarios is directly related to the increase in housing and employment densities along the corridor, thus increasing trips in all modes, including vehicular trips.
- **Daily VMT per service population** (household population + hotel population + employment) for 2022 is similar to the 2050 No Build and 2050 LPA scenarios resulting in lower VMT per service population. The combined average of VMT per Service Population is lower in the 2050 scenarios than in the 2022 Existing scenario by under 1/2 mile
    - The most likely reason for the lower VMT per service population in the 2050 scenarios is the density of housing and employment in the 2050 scenarios when compared with the 2022 land use.
- **Daily Home-Based VMT** for each of the geographical areas increases in the 2050 scenarios compared to the 2022 Existing scenario.
    - The reason for the greatest daily home-based VMT occurring in the 2050 TOD scenarios is directly related to the increase in housing and employment densities along the corridor, thus increasing trips in all modes, including vehicular trips.
- **Daily Home-Based VMT per capita** for the 2022 Existing scenario is similar to the 2050 scenarios.
- **Daily Non-Home-Based VMT** for each of the geographical areas increases in the 2050 scenarios compared to the 2022 Existing scenario
    - The likely reason for the daily non-home-based VMT occurring in the 2050 scenarios is directly related to the increase in housing and employment densities along the corridor, thus increasing trips in all modes, including vehicular trips.
- **Daily Non-Home-Based VMT per employee** the 2022 Existing scenario is nearly identical to the 2050 scenarios, with some scenarios increasing and some scenarios decreasing when comparing the 2050 scenarios to the 2022 scenario.
    - The combined average of Non-Home-VMT per employee is lower in the 2050 LPA scenario than in the 2050 No Build scenario by 0.1 mile
    - The likely reason for the lower non-home-based VMT per employee in the 2050 LPA scenario when compared with the 2050 No Build scenario is due to increase in transit usage for the service population along the corridor.

Table 13: Average Daily Land Use Geographical Area Vehicle Miles Traveled

Metric	Land Use Geographical area	2022	2050	
		Existing	No Build	LPA
Daily VMT (Drive Alone + Shared Ride)	1. North Bank	153,920	170,210	169,150
	2. Foothills	33,390	33,600	33,310
	3. Empire/Garland	17,310	19,680	19,550
	4. Northtown	104,770	122,530	120,670
	5. Rowan	78,090	105,410	104,530
	6. Francis/Lyons	102,700	113,430	112,540
	7. Lincoln	114,540	126,610	126,020
	8. The Y	209,880	267,330	266,540
	9. Whitworth	65,450	99,850	98,560
	10. Mead	13,710	130,790	130,480
	11. Hastings	88,550	138,930	137,870
	12. Nevada Junction	142,810	159,250	158,810
	Combined Total	1,125,140	1,487,610	1,478,030
Daily VMT per Service Population (Drive Alone + Shared Ride) (Population + Employment)	1. North Bank	30.0	29.3	29.1
	2. Foothills	44.2	42.9	42.5
	3. Empire/Garland	14.7	15.7	15.6
	4. Northtown	30.4	33.3	32.8
	5. Rowan	28.0	28.7	28.5
	6. Francis/Lyons	19.1	19.1	18.9
	7. Lincoln	25.4	24.8	24.7
	8. The Y	28.2	27.9	27.9
	9. Whitworth	19.4	22.4	22.1
	10. Mead	26.6	31.3	31.2
	11. Hastings	36.5	32.9	32.6
	12. Nevada Junction	50.3	45.9	45.8
	Combined Average	28.3	28.5	28.3
Daily Home-Based VMT (Drive Alone + Shared Ride)	1. North Bank	17,440	21,860	21,890
	2. Foothills	1,710	1,750	1,720
	3. Empire/Garland	6,810	6,990	6,920
	4. Northtown	8,800	9,630	9,490
	5. Rowan	2,190	2,300	2,270
	6. Francis/Lyons	22,230	25,070	24,740
	7. Lincoln	17,730	19,980	19,790
	8. The Y	30,810	67,590	66,970
	9. Whitworth	15,740	17,780	17,620
	10. Mead	420	31,810	31,600
	11. Hastings	14,120	34,250	33,490
	12. Nevada Junction	0	1,740	1,720
	Combined Average	137,750	240,530	238,000
Daily Home-Based VMT per Capita (Drive Alone + Shared Ride) (Population)	1. North Bank	11.8	12.7	12.7
	2. Foothills	10.5	10.7	10.6
	3. Empire/Garland	6.6	6.7	6.7
	4. Northtown	5.6	5.9	5.8
	5. Rowan	5.8	5.8	5.7
	6. Francis/Lyons	6.3	6.3	6.2
	7. Lincoln	6.3	6.4	6.4
	8. The Y	7.7	12.1	12.0
	9. Whitworth	7.5	8.0	8.0
	10. Mead	9.1	9.8	9.8
	11. Hastings	12.3	14.2	13.9
	12. Nevada Junction	0.0	51.0	50.7
	Combined Average	7.5	9.4	9.3

Metric	Land Use Geographical area	2022	2050	
		Existing	No Build	LPA
Daily Non-Home-Based Vehicle VMT (Drive Alone + Shared Ride)	1. North Bank	35,300	38,980	38,980
	2. Foothills	15,420	16,360	16,370
	3. Empire/Garland	3,870	4,420	4,410
	4. Northtown	42,360	50,950	50,360
	5. Rowan	17,920	22,660	22,390
	6. Francis/Lyons	30,560	34,480	34,370
	7. Lincoln	39,470	45,090	44,910
	8. The Y	61,920	76,670	76,260
	9. Whitworth	14,860	24,720	24,440
	10. Mead	17,370	45,050	44,940
	11. Hastings	30,430	44,350	43,960
	12. Nevada Junction	45,000	54,210	53,740
	Combined Average	354,770	458,120	455,330
Daily Non-Home-Based Vehicle VMT per Employee (Drive Alone + Shared Ride) (Employment)	1. North Bank	9.7	9.5	9.5
	2. Foothills	26.0	26.4	26.4
	3. Empire/Garland	25.3	20.4	20.3
	4. Northtown	22.7	24.8	24.5
	5. Rowan	7.4	6.9	6.8
	6. Francis/Lyons	16.7	17.4	17.4
	7. Lincoln	23.1	22.4	22.3
	8. The Y	18.1	19.2	19.1
	9. Whitworth	11.7	11.0	10.9
	10. Mead	37.0	47.7	47.6
	11. Hastings	23.8	24.4	24.2
	12. Nevada Junction	15.8	15.8	15.6
	Combined Average	16.5	17.2	17.1

An associated metric of shared ride auto occupancy was calculated along with the land use geographical areas. **Table 14** summarizes the daily shared-ride auto occupancy values for each of the geographical areas for the 2022 Existing and 2050 No Build and LPA scenarios. A complete land use geographical area performance summary is included in **Attachment B**. As detailed in **Table 14**:

- Daily Shared Ride auto occupancy for the 2022 Existing scenario is higher than the 2050 scenarios, and the 2050 LPA is less than the 2050 No Build scenario.
  - This result is likely due to the shared ride auto trips in the future being converted to transit or non-motorized trips within the system

Table 14: Average Daily Shared Ride Auto Occupancy by Geographical area

Metric	Land Use Geographical area	2022	2050	
		Existing	No Build	LPA
Shared Ride Auto Occupancy	1. North Bank	2.31	2.32	2.32
	2. Foothills	2.50	2.51	2.50
	3. Empire/Garland	2.19	2.25	2.23
	4. Northtown	2.41	2.42	2.41
	5. Rowan	2.28	2.26	2.26
	6. Francis/Lyons	2.29	2.32	2.31
	7. Lincoln	2.36	2.36	2.35
	8. The Y	2.39	2.36	2.35
	9. Whitworth	2.27	2.29	2.28
	10. Mead	2.46	2.30	2.28
	11. Hastings	2.36	2.32	2.35
	12. Nevada Junction	2.42	2.40	2.39
	Combined Average	2.36	2.35	2.34

5 CONCLUSION

This technical memorandum details scenario comparisons using the SRTC model as the primary tool for analysis. In Section 4 of this memorandum, detailed performance metrics were primarily related to regional travel performance, mode shares, transit ridership, travel times and speeds, regional north-south travel comparisons, and location-based travel analysis. There are four notable "big picture" outcomes, including:

- The 2050 No Build scenario experiences diversion away from North-South arterials to the North South Corridor when compared with the 2022 Existing scenario
- The 2050 LPA scenario experiences diversion away from Division Street to parallel arterials when compared with the 2050 No Build scenario
- The 2050 No Build scenario experiences an increase in transit ridership on Route 25 of almost 5,000 riders when compared with the 2022 Existing scenario (2,410 riders in the 2022 Existing scenario and a forecast of 7,385 riders in the 2050 No Build scenario)
- The 2050 LPA scenario experiences an additional increase in transit ridership on Route 25 of almost 1,000 riders when compared with the 2050 No Build scenario (7,385 riders in the 2050 No Build scenario and a forecast of 8,305 riders in the 2050 LPA scenario.

Additional analysis conclusions include:

Regional Travel Statistics

- When comparing the 2050 No Build scenario to the 2022 Existing scenario, there is an increase of VMT, VHT, and VHD in the Spokane Region and project study area.
- When comparing the 2050 LPA scenario with the 2050 No Build scenario, there is relatively no change in regional statistics, while the study area results in a decrease of VMT of 2%, VHT of 1%, and VHD of 6%.

Flow Bundle Analysis

- For each of the segment locations, both the AM and PM peak periods show little traffic coming from/going to eastbound on I-90, because within the model it is more efficient in 2050 to use the future NSC for this movement.
- *NSC Travel:* Traffic from north Spokane (north of Francis Avenue) uses the NSC for travel to/from east and west of Spokane via I-90. Additional traffic to/from downtown Spokane via 2nd Avenue uses the NSC for travel through the region.

Regional Travel Congestion

- The 2050 LPA scenario presents similar congestion levels across the region as the 2050 No Build scenario, with minor additional congestion on parallel arterials west of Division Street.
- The 2050 LPA scenario shows a slight increase in congestion on Division Street north of Lincoln Road.

Regional Mode Split

- Drive alone and shared-ride vehicular trips encompass most of the trips in the region, approximately 88% in all scenarios.
- Non-Auto mode split (the combination of transit and non-motorized trips) increase from 12.1 percent in the 2022 Existing scenario, to 12.2 percent in the 2050 No Build scenario, to 12.4 percent in the 2050 LPA scenario.
- The 2050 LPA scenario increases the total number of daily transit trips compared to the 2050 No Build scenario.

Transit Ridership

- The 2050 No Build scenario, which reflects baseline transit service in the 2022 model, observes an increase in ridership of over 100 percent compared to the 2022 Existing scenario.
- The 2050 LPA scenario observes an increase in ridership of approximately 12 percent compared to the 2050 No Build scenario.

Travel Time and Speed

- The 2050 No Build scenario average travel times for the corridor are similar to the 2022 Existing scenario travel times, and the 2050 No Build scenario average travel speeds for the corridor are equal to or greater than the 2022 Existing scenario speeds.
- Travel times for the free-flow conditions operate at up to 18 percent faster than the congested general purpose lanes. Speeds for the free-flow conditions operate at up to 22 percent faster than the congested general purpose lanes. These measures indicate that the BRT lane and associated bus service can observe a travel time savings of up to 18 percent in the 2050 LPA scenario.
- The 2050 LPA scenario travel speeds are less than the 2050 No Build scenario travel speed
- The travel times and speeds remain relatively unchanged between the 2050 scenarios in comparison with the 2022 Existing scenario.
- Another general conclusion that can be made is that the speeds in the AM peak hour are typically faster than the PM peak hour for all segments and scenarios in both the northbound and southbound directions.

Screenline Comparison

- *Total Screenlines with NSC:* In the 2050 No Build scenario, the overall north-south travel in the region grows by an average of 48 percent compared to the 2022 Existing scenario, and the 2050 LPA scenario show a roughly 1 percent reduction compared to the 2050 No Build scenario.
- *Total Screenlines without NSC (meaning excluding the NSC from the total summary of volumes):* In the 2050 No Build scenario, the overall north-south travel on the combined parallel arterials declines by a combined 2 percent compared to the 2022 Existing scenario. When comparing the 2050 LPA scenario to the 2050 No Build scenario, the overall north-south travel in the region for all scenarios is forecast to lead to a further reduction of 2 percent in trips.
- *Total Screenlines without NSC and without parallel arterials (meaning Division Street/Ruby Street only):* In the 2050 No Build scenario, the overall average daily north-south traffic on Division Street/Ruby Street is 2 percent lower than in the 2022 Existing scenario. In the 2050 LPA scenario Division Street/Ruby Street traffic is reduced by approximately 25 percent compared to the 2050 No Build scenario.

Land Use Geographical Area Travel Analysis

- **Daily VMT** for each of the geographical areas increases in the 2050 scenarios compared to the 2022 Existing scenario, and is the greatest in the 2050 No Build scenario
- **Daily VMT per service population** (household population + hotel population + employment) for 2022 is similar to the 2050 No Build and LPA scenarios resulting in similar VMT per service population.
- **Daily Home-Based VMT** for each of the geographical areas increases in the 2050 scenarios compared to the 2022 Existing scenario, and is the greatest in the 2050 No Build scenario
- **Daily Home-Based VMT per capita** for the 2022 Existing scenario is lower than the 2050 No Build and 2050 LPA scenarios
- **Daily Non-Home-Based VMT** for each of the geographical areas increases in the 2050 scenarios compared to the 2022 Existing scenario, and is the greatest in the 2050 No Build scenario
- **Daily Non-Home-Based VMT per employee** the 2022 Existing scenario is lower than the 2050 LPA scenario, with the 2050 LPA scenario lower on average than the 2050 No Build scenario.
- **Daily Shared Ride auto occupancy** for the 2022 Existing scenario is higher than all 2050 scenarios.

ATTACHMENT A –DETAILED SCREENLINE DATA

Table A1: Detailed Screenline Volumes and Comparisons – Average Daily Volumes

Measure/Location	Capacity			Volumes			V/C Ratio		
	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA
Screenlines (Total North-South Corridor)									
Between Indiana Avenue and Maxwell Avenue									
Ash	28,000	28,000	28,000	24,200	24,820	25,070	0.86	0.89	0.9
Maple	28,000	28,000	28,000	26,100	27,020	27,430	0.93	0.97	0.98
Monroe	40,000	40,000	40,000	17,000	17,200	18,450	0.43	0.43	0.46
Post	12,500	12,500	12,500	4,600	4,930	5,370	0.37	0.39	0.43
Howard	18,000	18,000	18,000	2,400	2,610	3,200	0.13	0.15	0.18
Washington	37,500	37,500	37,500	15,200	17,060	19,420	0.41	0.45	0.52
Division	38,000	38,000	23,375	26,700	25,880	20,750	0.7	0.68	0.89
Ruby	38,000	38,000	23,375	25,390	24,960	17,300	0.67	0.66	0.74
Hamilton	40,000	40,000	40,000	30,330	30,270	32,110	0.76	0.76	0.8
Perry	25,000	25,000	25,000	9,870	10,030	11,380	0.39	0.4	0.46
Greene	40,000	40,000	40,000	38,990	34,820	34,990	0.97	0.87	0.87
NSC	-	135,000	135,000	-	97,720	98,370	NA	0.72	0.73
Total Screenline (Including NSC)	345,000	480,000	450,750	220,780	317,320	313,840	0.64	0.66	0.7
Total Screenline (Including NSC) - Growth (%)					44%	-1%			
Total Screenline (Arterials Only - Without NSC)	345,000	345,000	315,750	220,780	219,600	215,470	0.64	0.64	0.68
Total Screenline (Arterials Only - Without NSC) - Growth (%)					-1%	-2%			
Total Screenline - Change in Arterial Traffic					-1,180	-4,130			

Measure/Location	Capacity			Volumes			V/C Ratio		
	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA
Screenlines (Total North-South Corridor)									
Between Wellesley Avenue and Garland Avenue									
Ash	19,000	19,000	19,000	16,100	16,130	16,270	0.85	0.85	0.86
Maple	19,000	19,000	19,000	15,300	15,370	15,690	0.81	0.81	0.83
Monroe	37,500	37,500	37,500	15,100	16,410	16,470	0.4	0.44	0.44
Wall	12,500	12,500	12,500	6,700	6,440	7,190	0.54	0.52	0.58
Division	58,000	58,000	46,750	42,320	41,050	34,930	0.73	0.71	0.75
Addison	12,500	12,500	12,500	5,540	5,010	5,640	0.44	0.4	0.45
Nevada	37,500	37,500	37,500	22,970	21,950	22,430	0.61	0.59	0.6
Perry	16,000	16,000	16,000	2,720	1,570	1,780	0.17	0.1	0.11
Crestline	18,000	18,000	18,000	12,800	9,130	9,340	0.71	0.51	0.52
Market	28,000	28,000	28,000	12,800	9,220	9,590	0.46	0.33	0.34
NSC	-	135,000	135,000	-	97,720	98,370	NA	0.72	0.73
Total Screenline (Including NSC)	258,000	393,000	381,750	152,350	240,000	237,700	0.59	0.61	0.62
Total Screenline (Including NSC) - Growth (%)					58%	-1%			
Total Screenline (Arterials Only - Without NSC)	258,000	258,000	246,750	152,350	142,280	139,330	0.59	0.55	0.56
Total Screenline (Arterials Only - Without NSC) - Growth (%)					-7%	-2%			
Total Screenline - Change in Arterial Traffic					-10,070	-2,950			
Between Lincoln Road and Francis Avenue									
Country Homes	40,000	40,000	40,000	24,980	24,470	25,180	0.62	0.61	0.63
Wall	25,000	25,000	25,000	7,780	8,750	8,940	0.31	0.35	0.36
Division	58,000	58,000	46,750	37,380	38,320	30,500	0.64	0.66	0.65
Standard	16,000	16,000	16,000	5,240	5,300	6,590	0.33	0.33	0.41
Nevada	40,000	40,000	40,000	23,120	23,100	23,620	0.58	0.58	0.59
Crestline	18,000	18,000	18,000	7,350	4,880	5,230	0.41	0.27	0.29
Market	19,000	19,000	19,000	8,630	6,450	6,890	0.45	0.34	0.36
Freya	27,000	27,000	27,000	3,530	10,100	10,280	0.13	0.37	0.38
NSC	135,000	135,000	135,000	11,850	66,980	67,710	0.09	0.5	0.5
Total Screenline (Including NSC)	378,000	378,000	366,750	129,860	188,350	184,940	0.34	0.5	0.5
Total Screenline (Including NSC) - Growth (%)					45%	-2%			
Total Screenline (Arterials Only - Without NSC)	243,000	243,000	231,750	118,010	121,370	117,230	0.49	0.5	0.51
Total Screenline (Arterials Only - Without NSC) - Growth (%)					3%	-3%			
Total Screenline - Change in Arterial Traffic					3,360	-4,140			

Measure/Location	Capacity			Volumes			V/C Ratio		
	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA
Screenlines (Total North-South Corridor)									
South of Hawthorne Road									
Wall	37,500	37,500	37,500	16,850	12,300	13,820	0.45	0.33	0.37
Division	42,000	42,000	42,000	25,190	27,930	27,720	0.6	0.67	0.66
Newport	42,000	42,000	42,000	25,190	25,510	25,260	0.6	0.61	0.6
Nevada	40,000	40,000	40,000	18,240	18,550	18,110	0.46	0.46	0.45
Market	17,000	17,000	17,000	6,550	2,970	3,030	0.39	0.17	0.18
NSC	135,000	135,000	135,000	12,970	68,100	68,830	0.1	0.5	0.51
Total Screenline (Including NSC)	313,500	313,500	313,500	104,990	155,360	156,770	0.33	0.5	0.5
Total Screenline (Including NSC) - Growth (%)					48%	1%			
Total Screenline (Arterials Only - Without NSC)	178,500	178,500	178,500	92,020	87,260	87,940	0.52	0.49	0.49
Total Screenline (Arterials Only - Without NSC) - Growth (%)					-5%	1%			
Total Screenline - Change in Arterial Traffic					-4,760	680			

Figure A1: Average Daily Capacities and Volumes Between Indiana Avenue and Maxwell Avenue

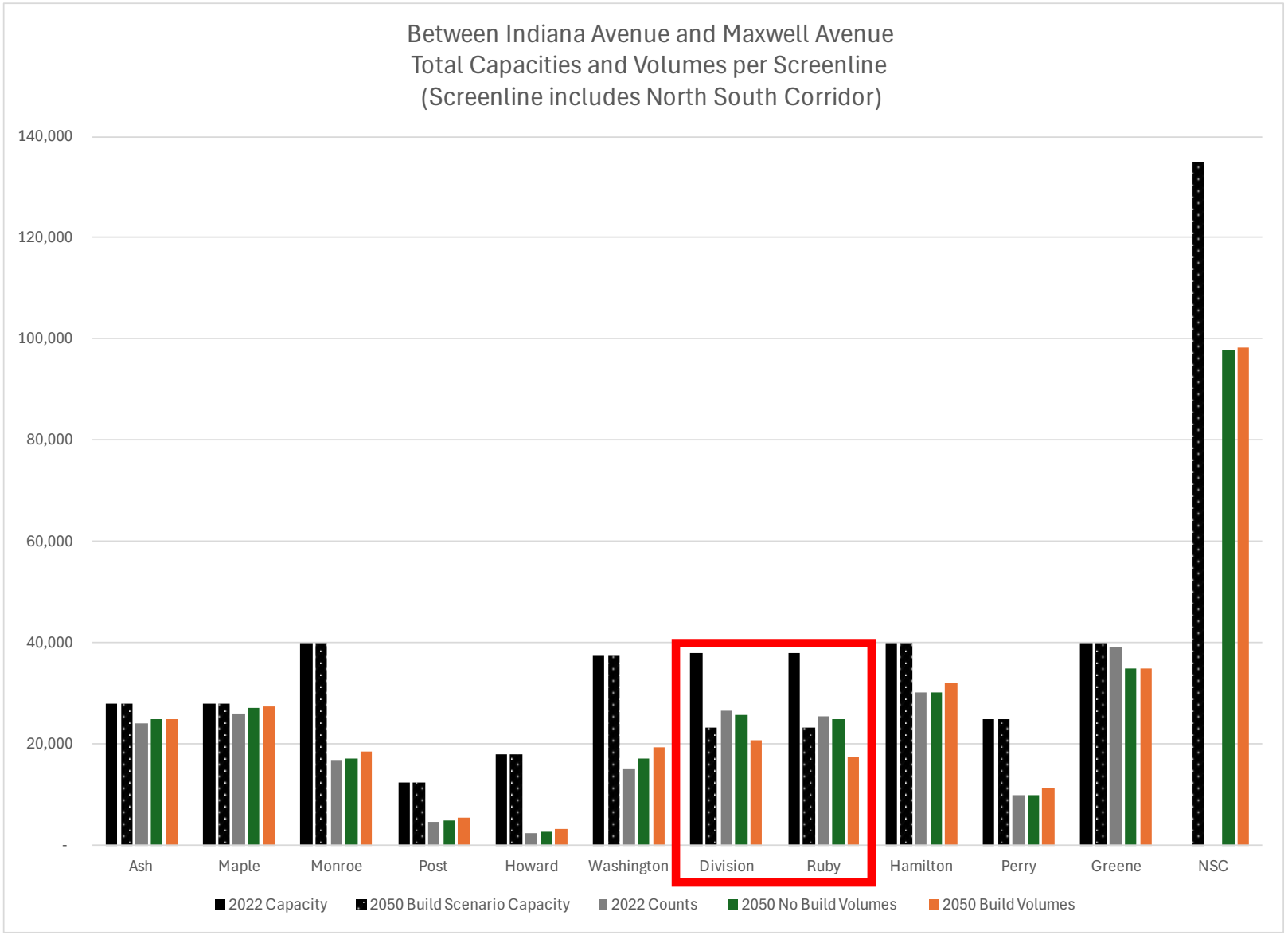


Figure A2: Average Daily Capacities and Volumes Between Indiana Avenue and Maxwell Avenue – (Excluding NSC)

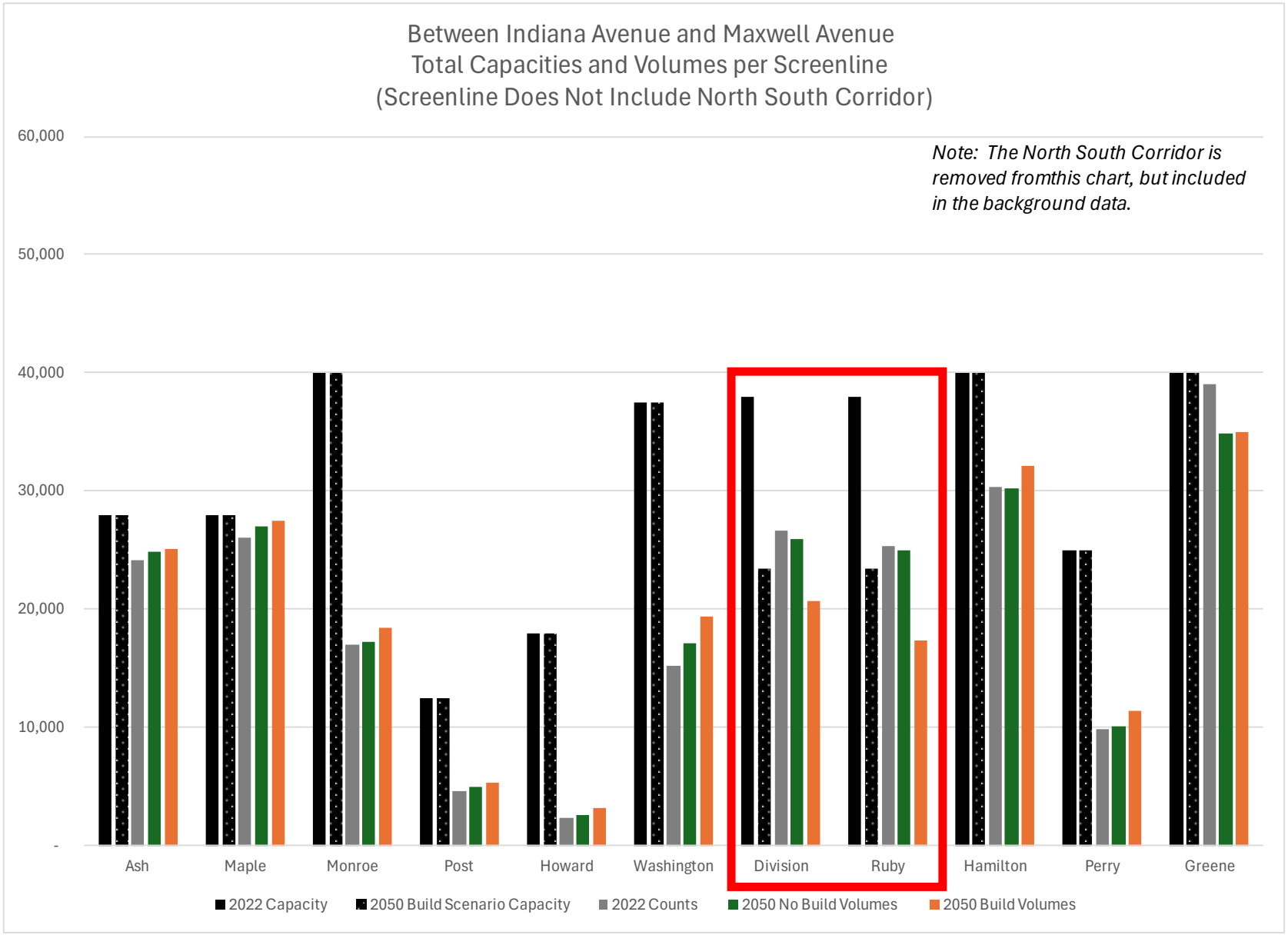


Figure A3: Average Daily Capacities and Volumes Between Wellesley Avenue and Garland Avenue

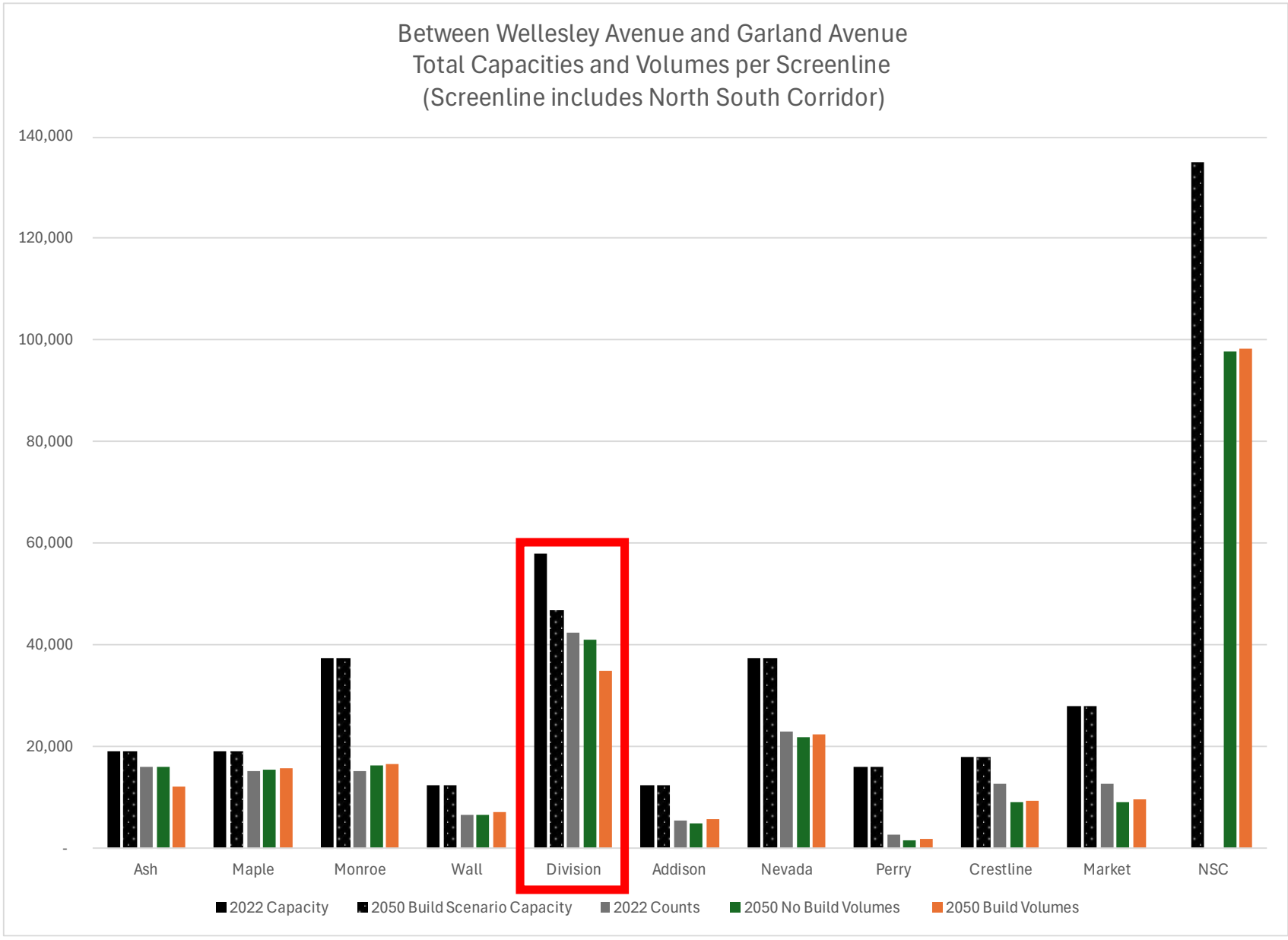


Figure A4: Average Daily Capacities and Volumes Between Wellesley Avenue and Garland Avenue – (Excluding NSC)

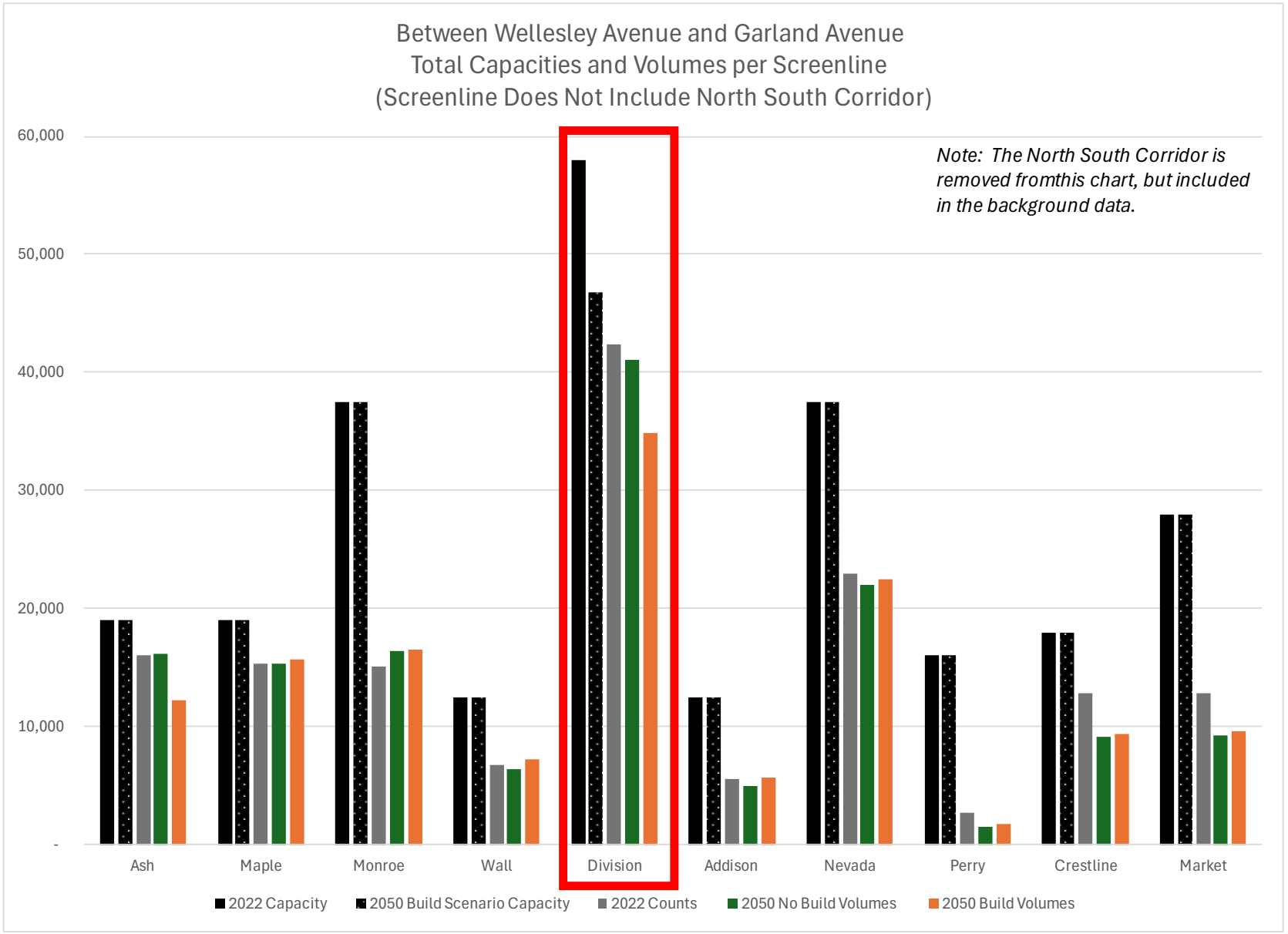


Figure A5: Average Daily Capacities and Volumes Between Lincoln Road and Francis Avenue

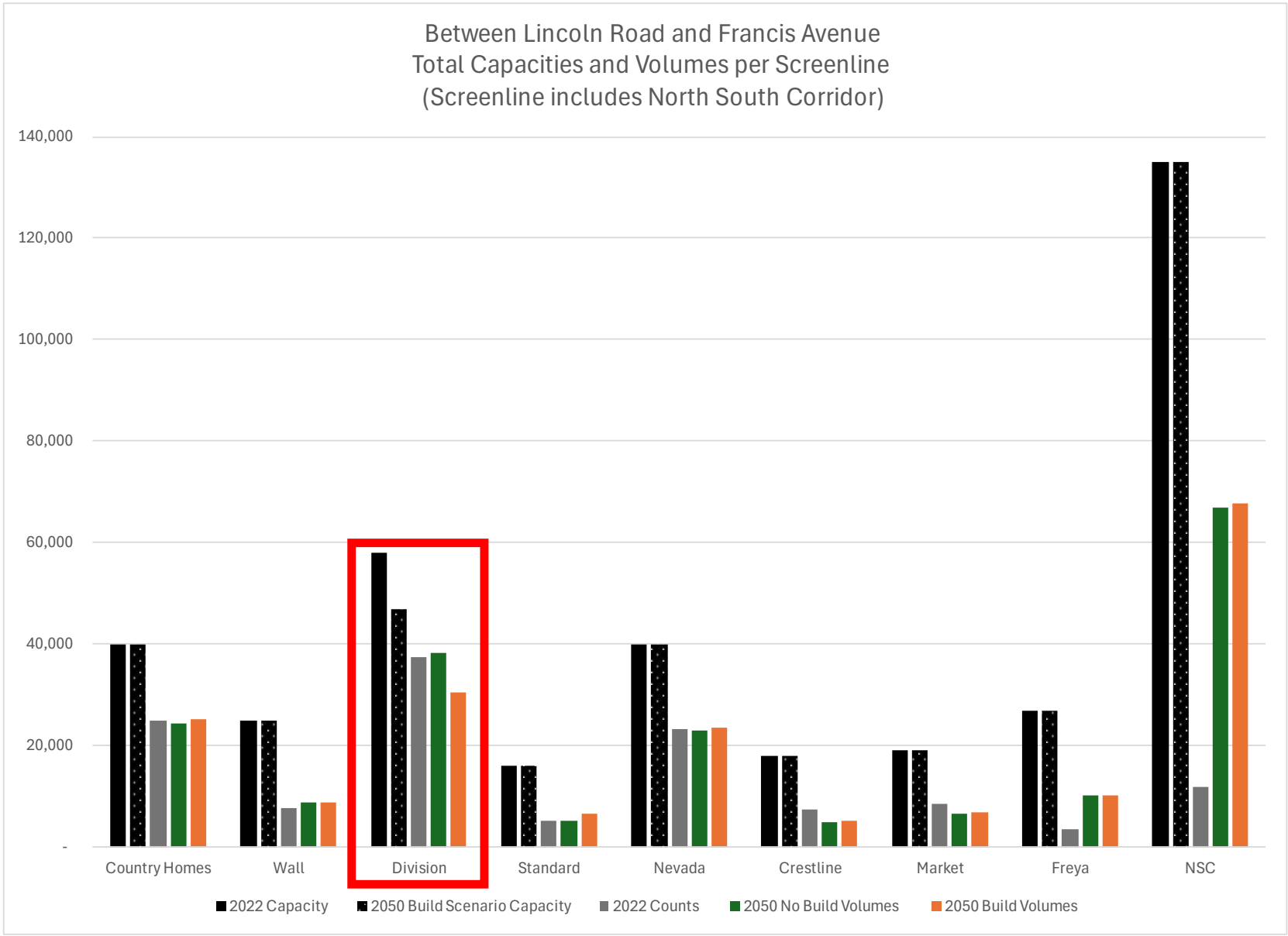


Figure A6: Average Daily Capacities and Volumes Between Lincoln Road and Francis Avenue – (Excluding NSC)

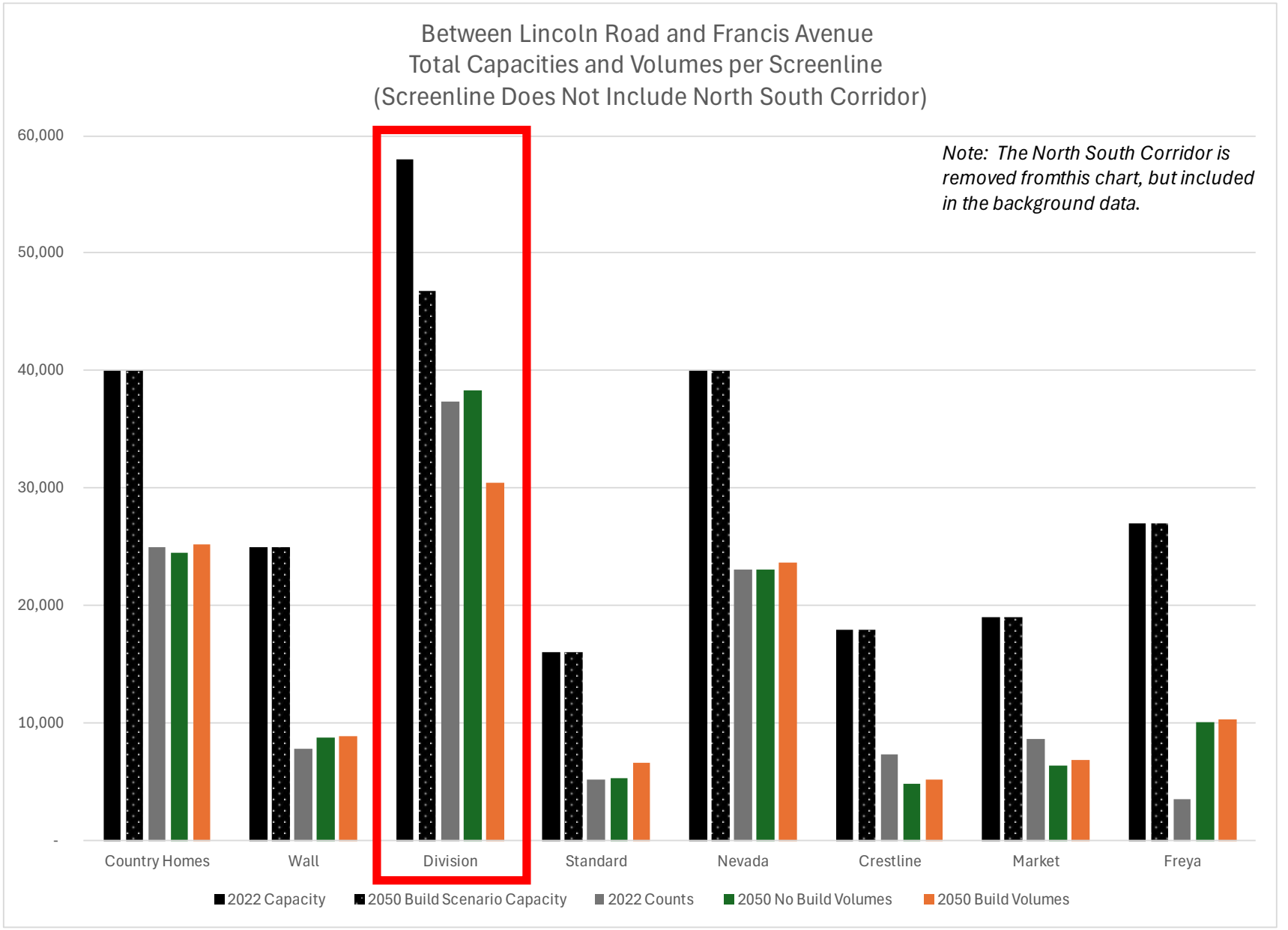


Figure A7: Average Daily Capacities and Volumes South of Hawthorne Road

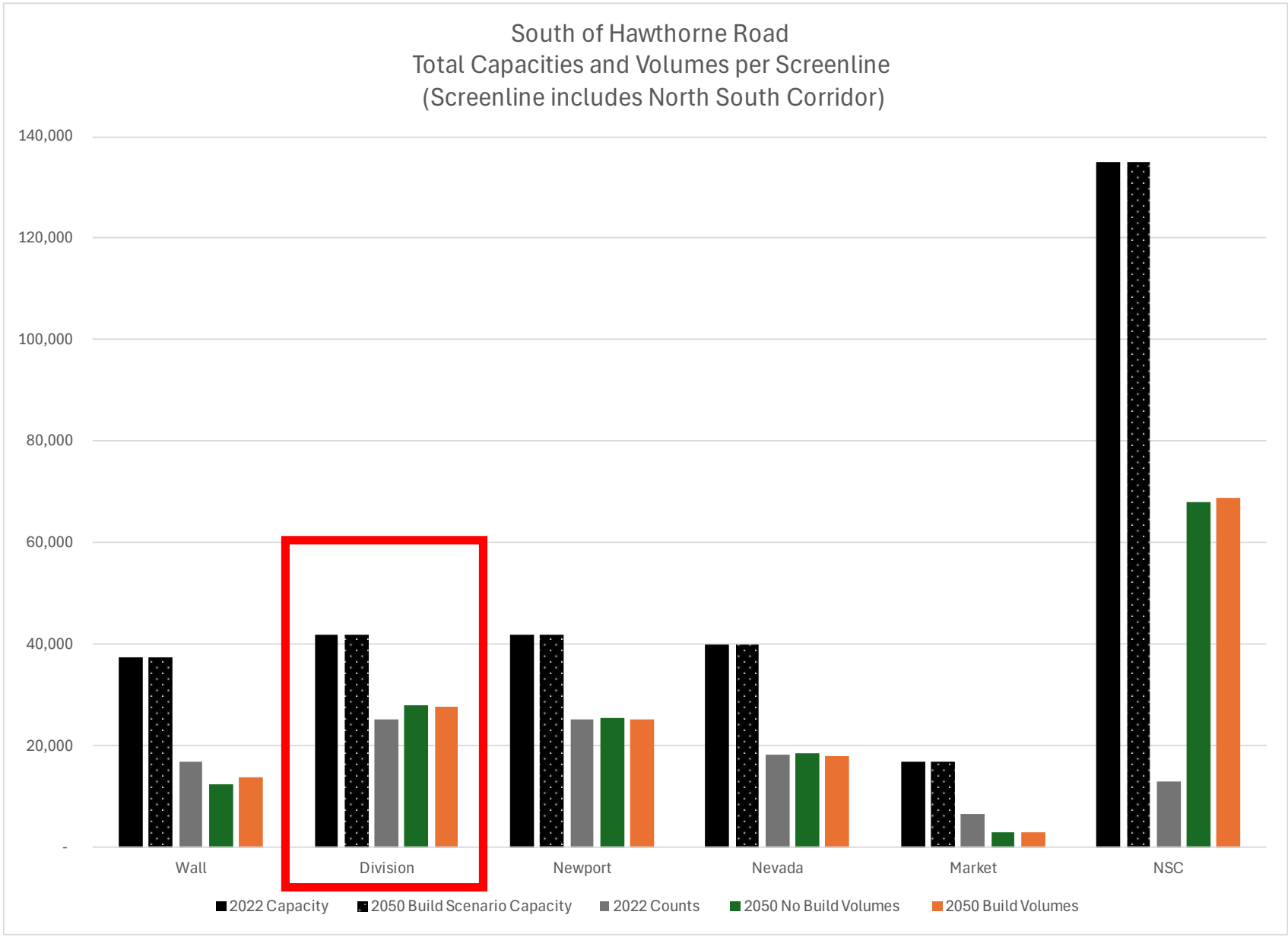


Figure A8: Average Daily Capacities and Volumes South of Hawthorne Road – (Excluding NSC)

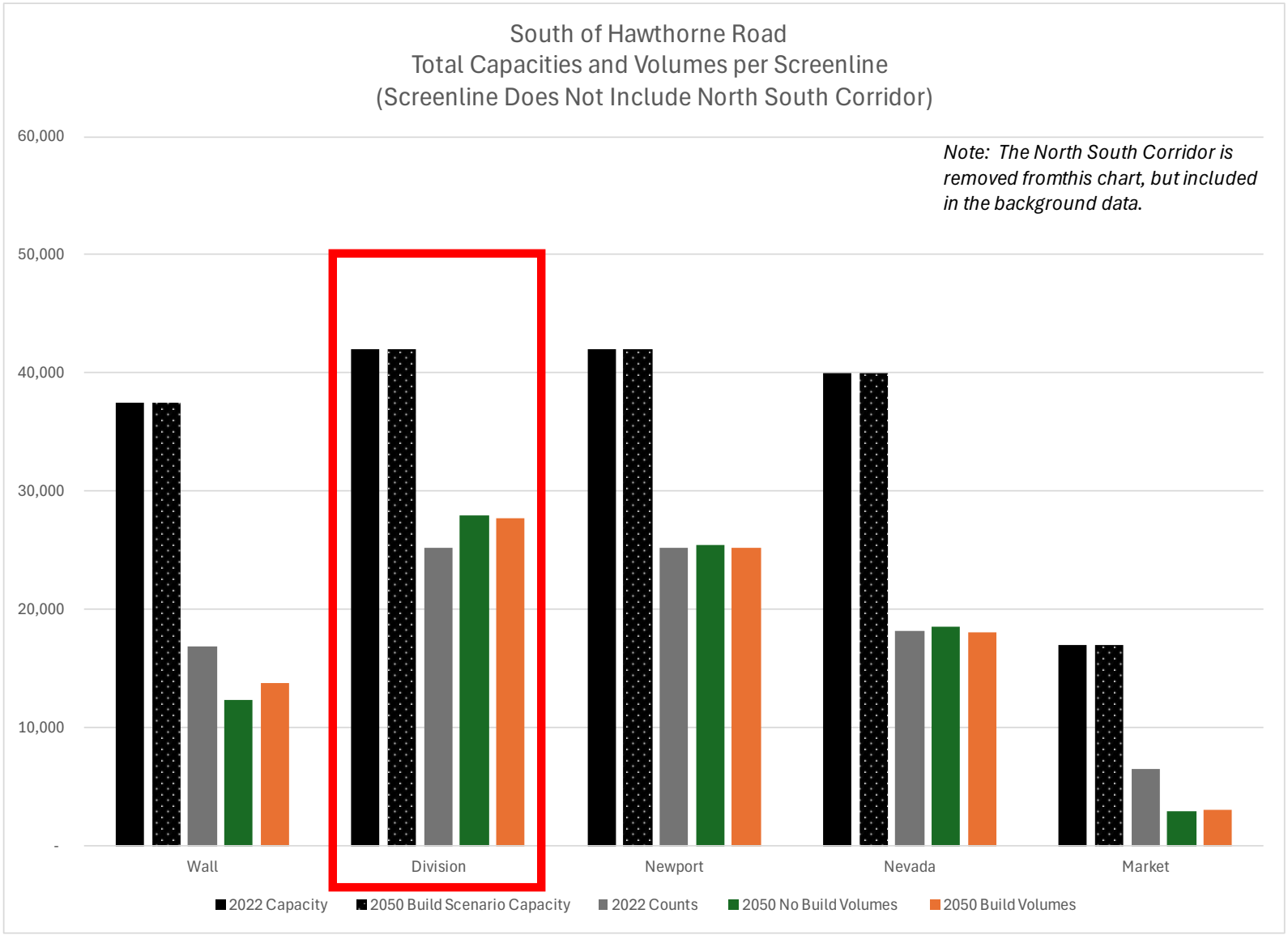


Figure A9: Average Daily Capacities and Volumes Screenline Comparison

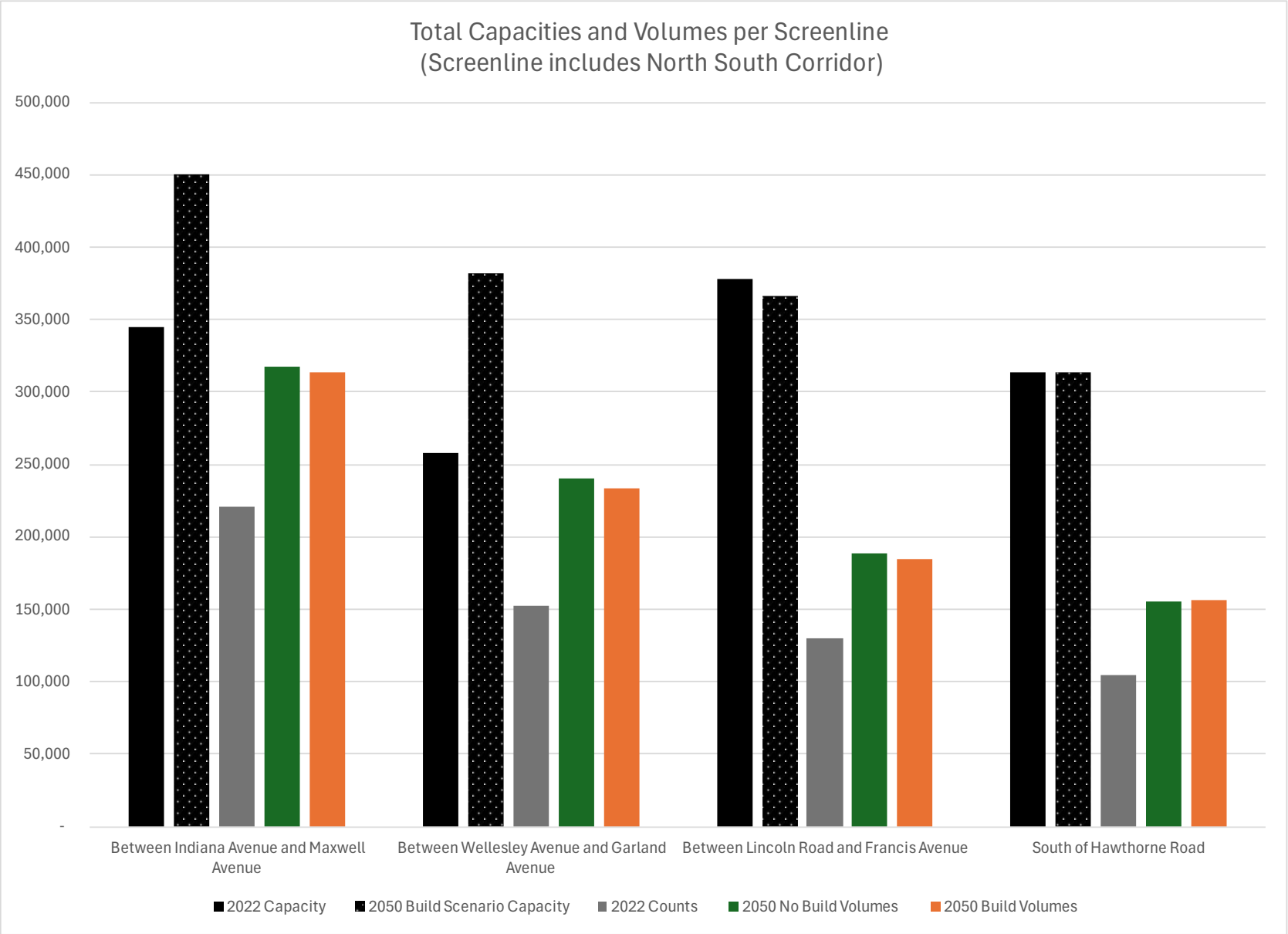


Figure A10: Average Daily Capacities and Volumes Screenline Comparison – (Excluding NSC)

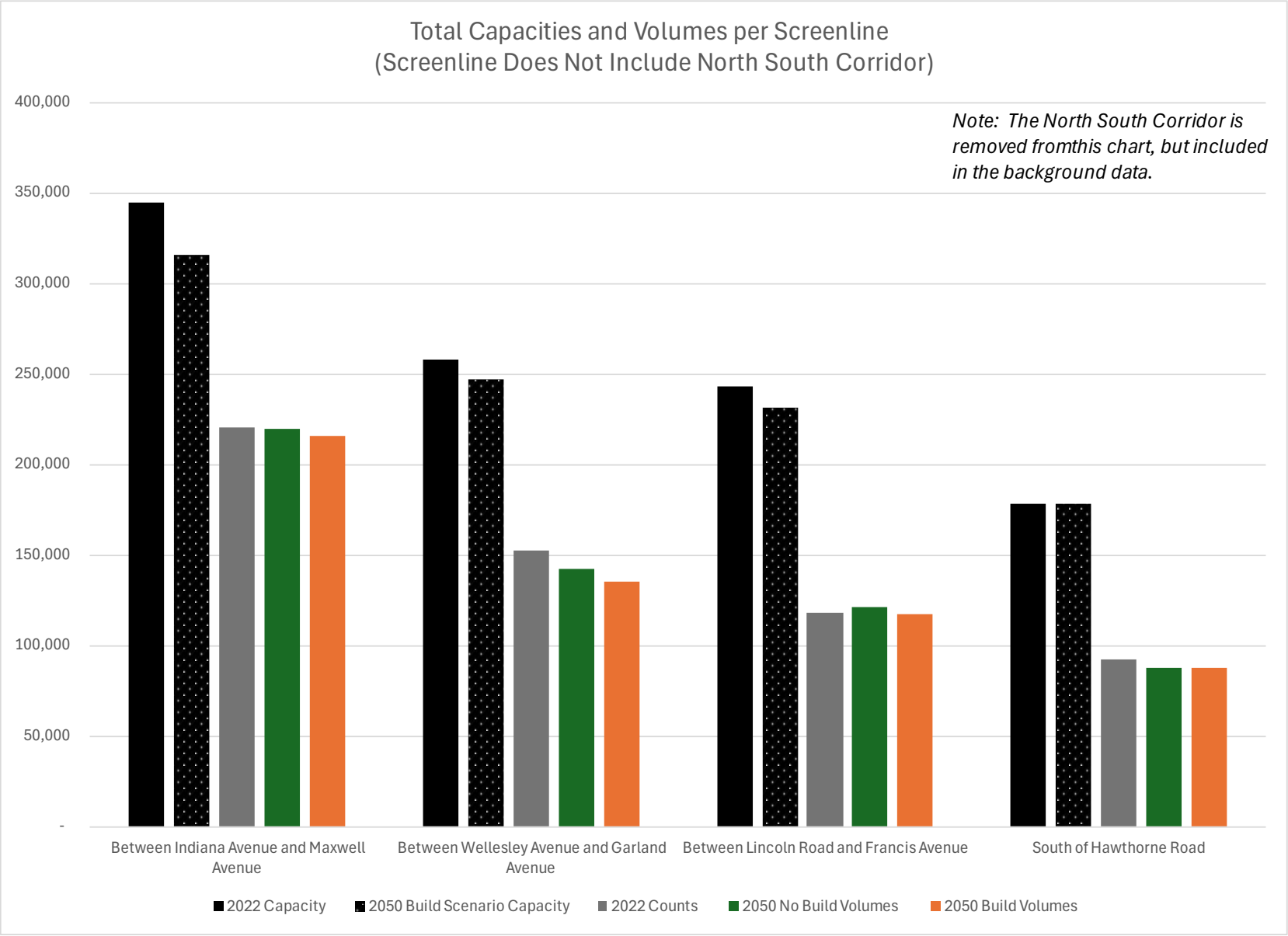


Table A2: Detailed Screenline Volumes and Comparisons – PM Peak Hour Volumes

Measure/Location	Capacity			Volumes			V/C Ratio		
	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA
Screenlines (Total North-South Corridor)									
Between Indiana Avenue and Maxwell Avenue									
Ash	3,300	3,300	3,300	2,400	2,510	2,520	0.73	0.76	0.76
Maple	3,300	3,300	3,300	2,590	2,730	2,760	0.78	0.83	0.84
Monroe	4,700	4,700	4,700	1,690	1,580	1,630	0.36	0.34	0.35
Post	2,000	2,000	2,000	460	490	530	0.23	0.25	0.27
Howard	1,800	1,800	1,800	240	260	370	0.13	0.14	0.21
Washington	4,400	4,400	4,400	1,510	1,750	1,950	0.34	0.4	0.44
Division	4,400	4,400	3,600	2,650	2,630	2,180	0.6	0.6	0.61
Ruby	4,400	4,400	2,400	2,520	2,470	1,580	0.57	0.56	0.66
Hamilton	4,400	4,400	4,400	3,010	3,100	3,280	0.68	0.7	0.75
Perry	3,600	3,600	3,600	980	840	990	0.27	0.23	0.28
Greene	4,400	4,400	4,400	3,870	3,750	3,780	0.88	0.85	0.86
NSC	-	12,000	12,000	-	8,060	8,100	NA	0.67	0.68
Total Screenline (Including NSC)	40,700	52,700	49,900	21,920	30,170	29,670	0.54	0.74	0.59
Total Screenline (Including NSC) - Growth (%)					38%	-2%			
Total Screenline (Arterials Only - Without NSC)	40,700	40,700	37,900	21,920	22,110	21,570	0.54	0.54	0.57
Total Screenline (Arterials Only - Without NSC) - Growth (%)					1%	-2%			
Total Screenline - Change in Arterial Traffic					190	-540			

Measure/Location	Capacity			Volumes			V/C Ratio		
	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA
Screenlines (Total North-South Corridor)									
Between Wellesley Avenue and Garland Avenue									
Ash	2,200	2,200	2,200	1,600	1,650	1,670	0.73	0.75	0.76
Maple	2,200	2,200	2,200	1,520	1,500	1,520	0.69	0.68	0.69
Monroe	4,400	4,400	4,400	1,500	1,570	1,570	0.34	0.36	0.36
Wall	2,000	2,000	2,000	670	660	700	0.34	0.33	0.35
Division	6,600	6,600	5,100	4,200	4,140	3,620	0.64	0.63	0.71
Addison	1,800	1,800	1,800	550	480	530	0.31	0.27	0.29
Nevada	4,400	4,400	4,400	2,280	2,250	2,300	0.52	0.51	0.52
Perry	1,800	1,800	1,800	270	110	120	0.15	0.06	0.07
Crestline	3,600	3,600	2,400	1,270	850	870	0.35	0.24	0.36
Market	4,400	4,400	4,400	1,270	880	910	0.29	0.2	0.21
NSC	-	12,000	12,000	-	8,060	8,100	NA	0.67	0.68
Total Screenline (Including NSC)	33,400	45,400	42,700	15,130	22,150	21,910	0.45	0.66	0.51
Total Screenline (Including NSC) - Growth (%)					46%	-1%			
Total Screenline (Arterials Only - Without NSC)	33,400	33,400	30,700	15,130	14,090	13,810	0.45	0.42	0.45
Total Screenline (Arterials Only - Without NSC) - Growth (%)					-7%	-2%			
Total Screenline - Change in Arterial Traffic					-1,040	-280			
Between Lincoln Road and Francis Avenue									
Country Homes	4,400	4,400	4,400	2,480	2,430	2,510	0.56	0.55	0.57
Wall	4,400	4,400	4,400	770	900	830	0.18	0.2	0.19
Division	6,600	6,600	5,100	3,710	3,890	3,250	0.56	0.59	0.64
Standard	1,800	1,800	1,800	520	510	640	0.29	0.28	0.36
Nevada	4,700	4,700	4,700	2,300	2,300	2,260	0.49	0.49	0.48
Crestline	1,800	1,800	1,800	730	540	610	0.41	0.3	0.34
Market	4,400	4,400	4,400	860	620	670	0.2	0.14	0.15
Freya	2,400	2,400	2,400	350	990	990	0.15	0.41	0.41
NSC	12,000	12,000	12,000	1,180	5,800	5,850	0.1	0.48	0.49
Total Screenline (Including NSC)	42,500	42,500	41,000	12,900	17,980	17,610	0.3	0.42	0.43
Total Screenline (Including NSC) - Growth (%)					39%	-2%			
Total Screenline (Arterials Only - Without NSC)	30,500	30,500	29,000	11,720	12,180	11,760	0.38	0.4	0.41
Total Screenline (Arterials Only - Without NSC) - Growth (%)					4%	-3%			
Total Screenline - Change in Arterial Traffic					460	-420			

Measure/Location	Capacity			Volumes			V/C Ratio		
	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA	2022	2050 No Build	2050 LPA
Screenlines (Total North-South Corridor)									
South of Hawthorne Road									
Wall	4,400	4,400	4,400	1,670	1,150	1,290	0.38	0.26	0.29
Division	4,700	4,700	4,700	2,500	2,870	2,900	0.53	0.61	0.62
Newport	5,650	5,650	5,650	2,500	2,500	2,470	0.44	0.44	0.44
Nevada	4,700	4,700	4,700	1,810	1,660	1,610	0.39	0.35	0.34
Market	2,200	2,200	2,200	650	310	320	0.3	0.14	0.15
NSC	12,000	12,000	12,000	1,290	5,910	5,960	0.11	0.49	0.5
Total Screenline (Including NSC)	33,650	33,650	33,650	10,420	14,400	14,550	0.31	0.43	0.43
Total Screenline (Including NSC) - Growth (%)					38%	1%			
Total Screenline (Arterials Only - Without NSC)	21,650	21,650	21,650	9,130	8,490	8,590	0.42	0.39	0.4
Total Screenline (Arterials Only - Without NSC) - Growth (%)					-7%	1%			
Total Screenline - Change in Arterial Traffic					-640	100			

Figure A11: PM Peak Hour Capacities and Volumes Between Indiana Avenue and Maxwell Avenue

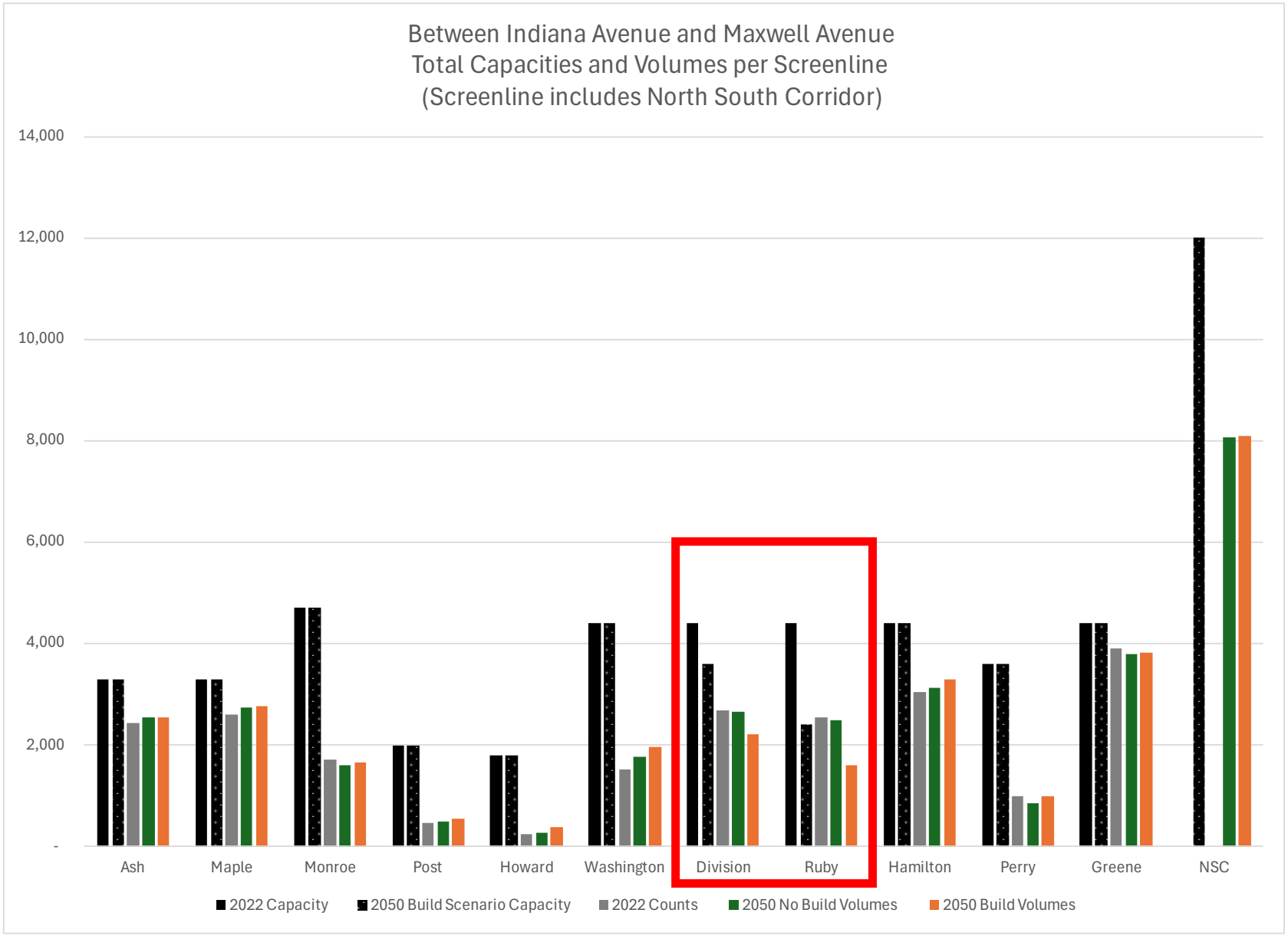


Figure A12: PM Peak Hour Capacities and Volumes Between Indiana Avenue and Maxwell Avenue – (Excluding NSC)

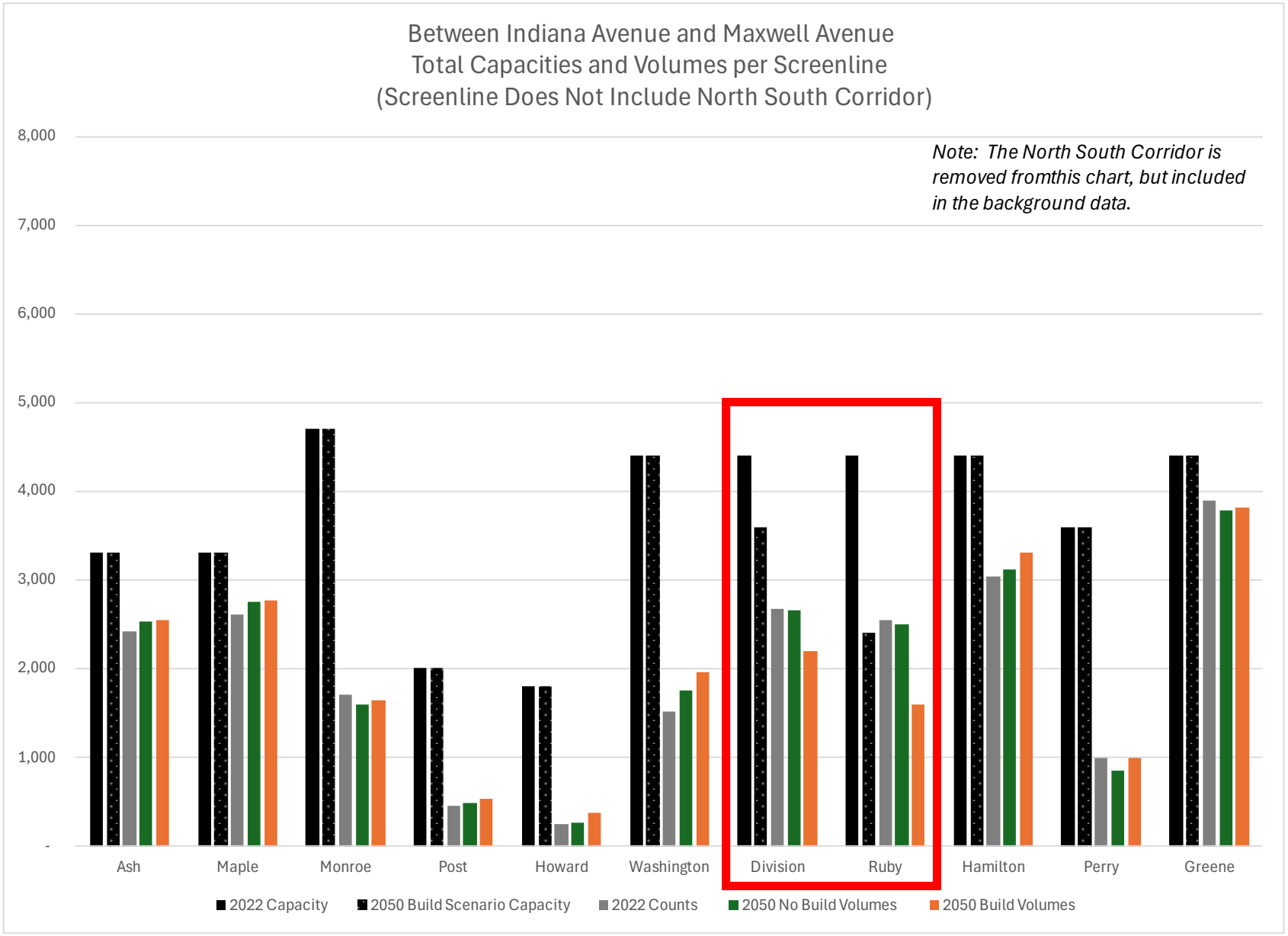


Figure A13: PM Peak Hour Capacities and Volumes Between Wellesley Avenue and Garland Avenue

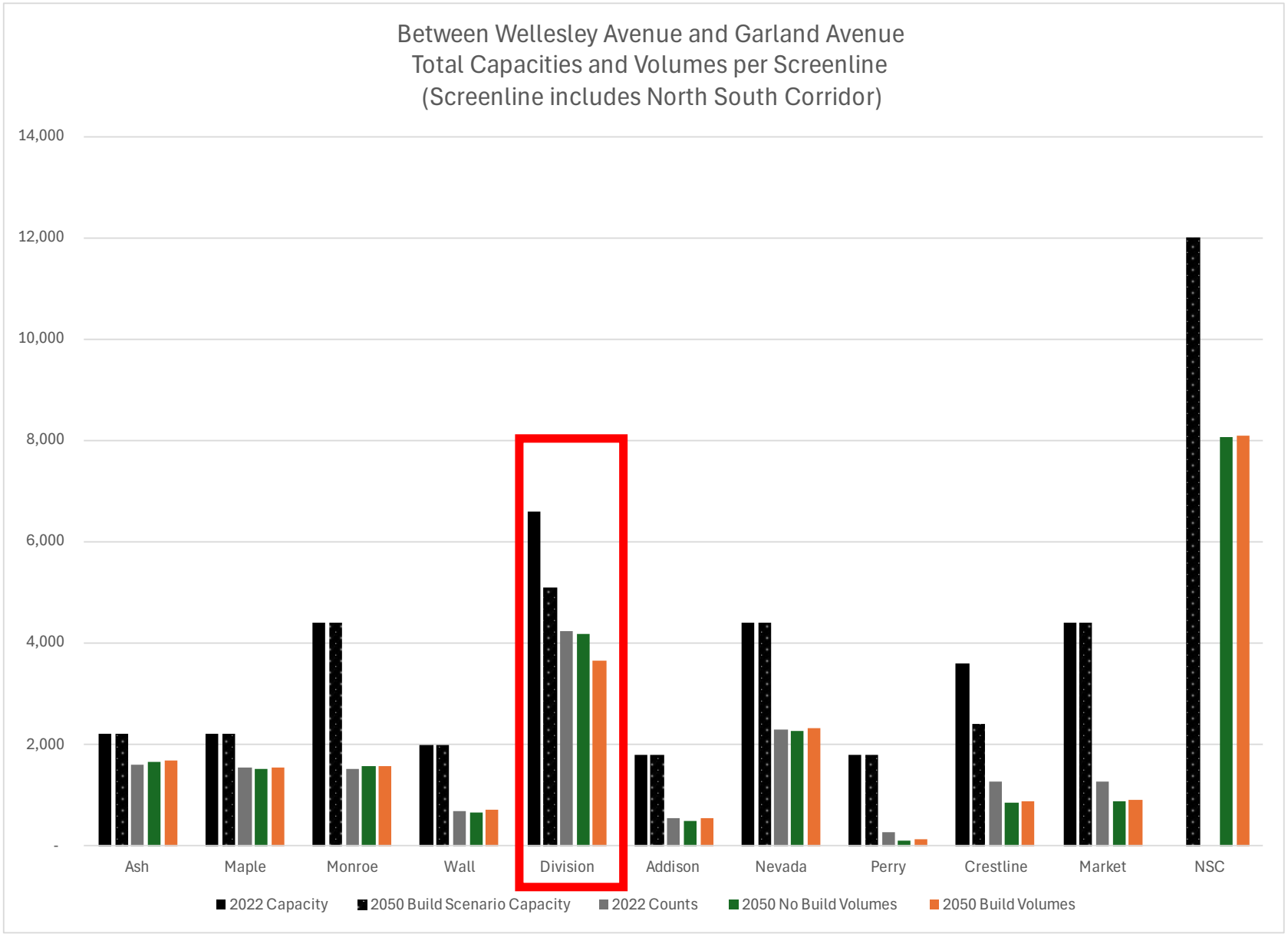


Figure A14: PM Peak Hour Capacities and Volumes Between Wellesley Avenue and Garland Avenue – (Excluding NSC)

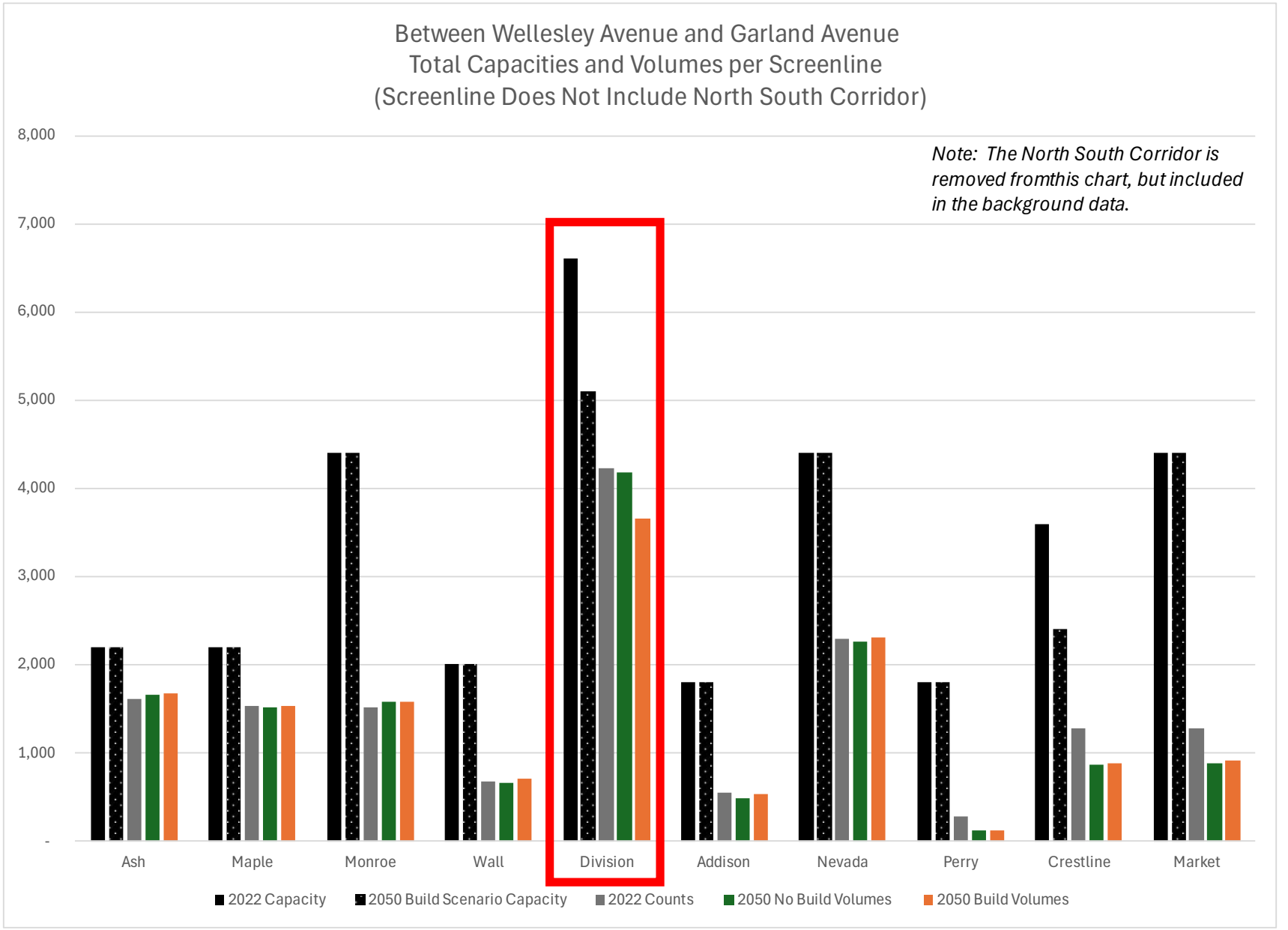


Figure A15: PM Peak Hour Capacities and Volumes Between Lincoln Road and Francis Avenue

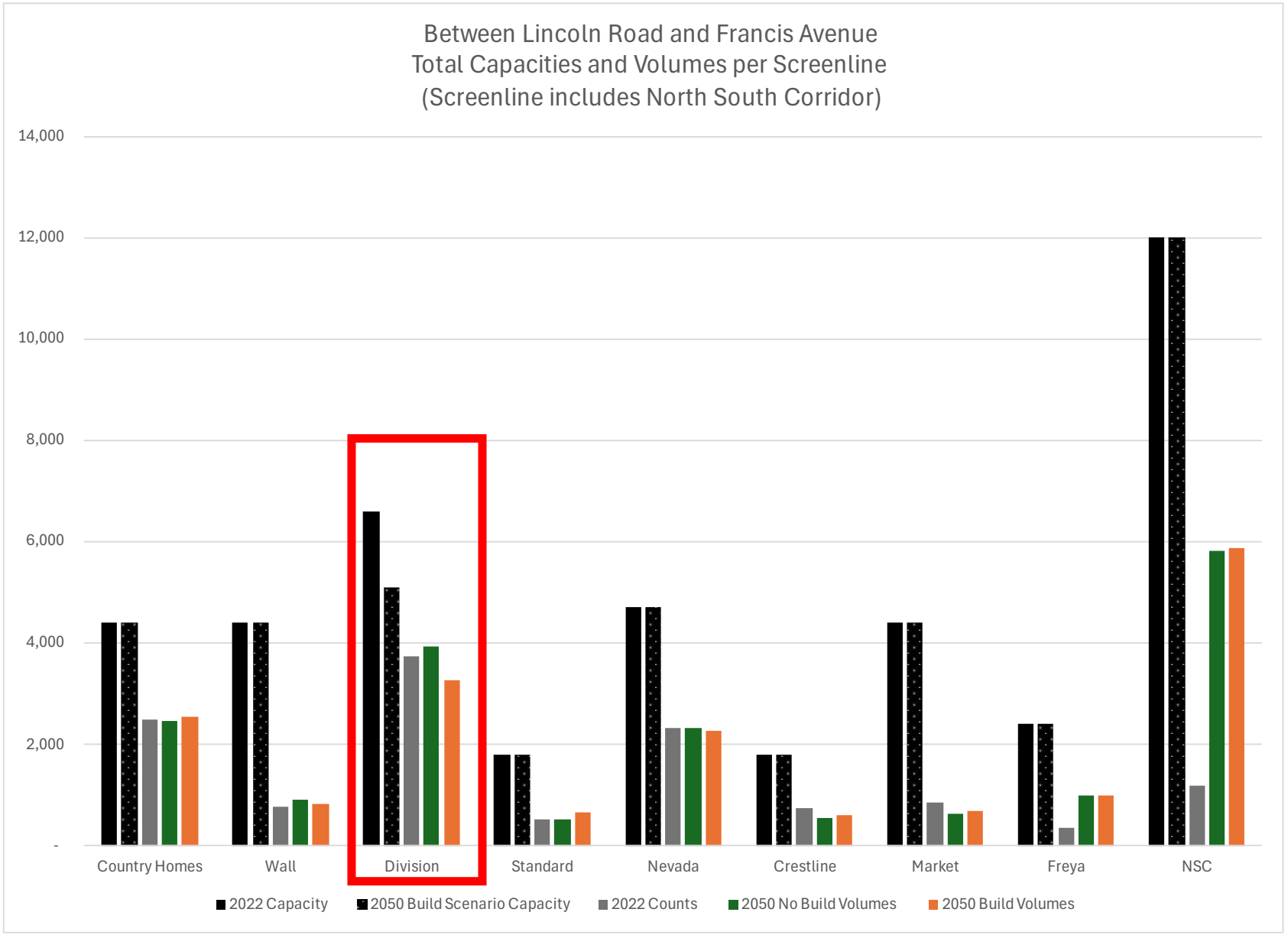


Figure A16: PM Peak Hour Capacities and Volumes Between Lincoln Road and Francis Avenue – (Excluding NSC)

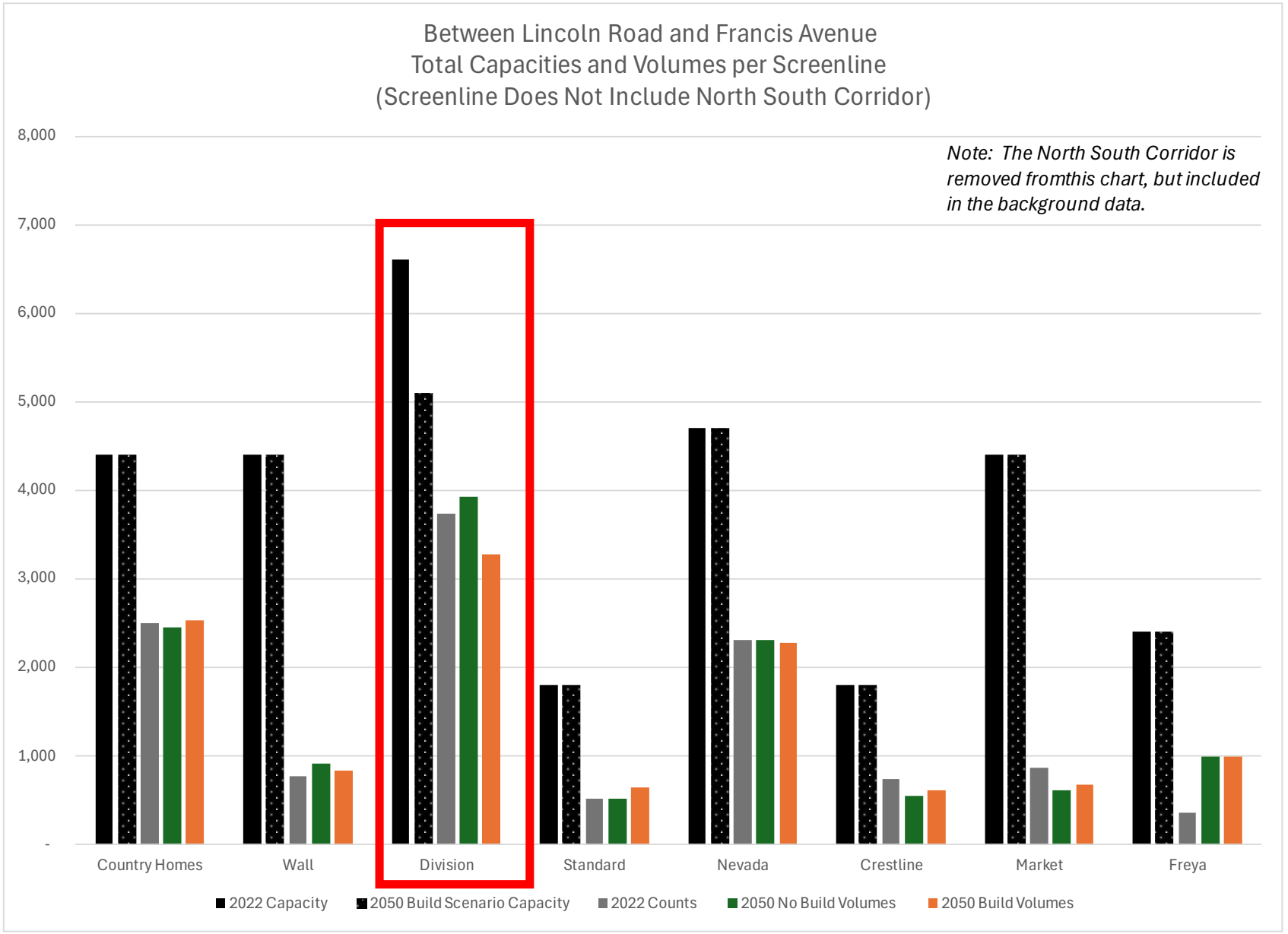


Figure A17: PM Peak Hour Capacities and Volumes South of Hawthorne Road

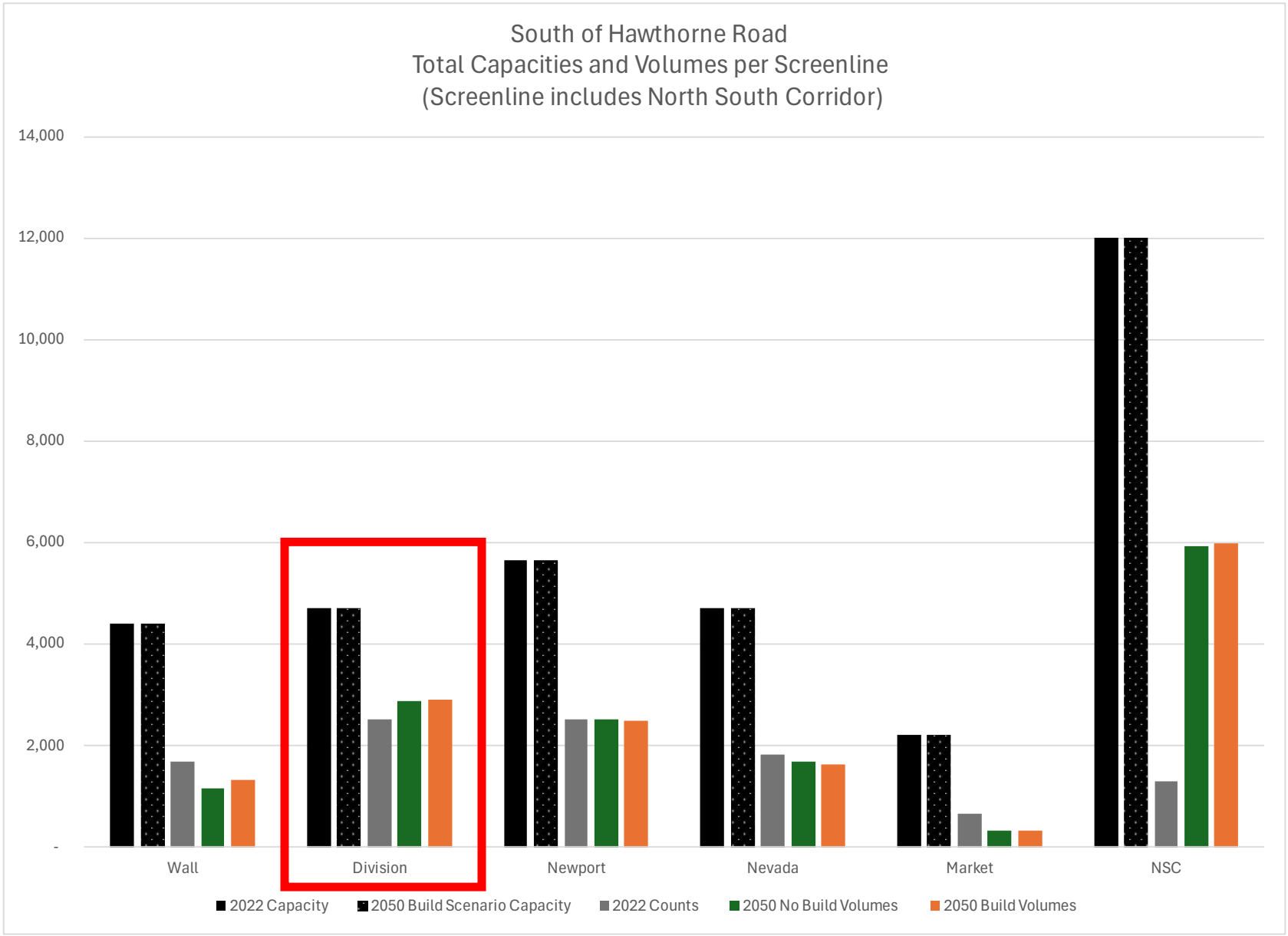


Figure A18: PM Peak Hour Capacities and Volumes South of Hawthorne Road – (Excluding NSC)

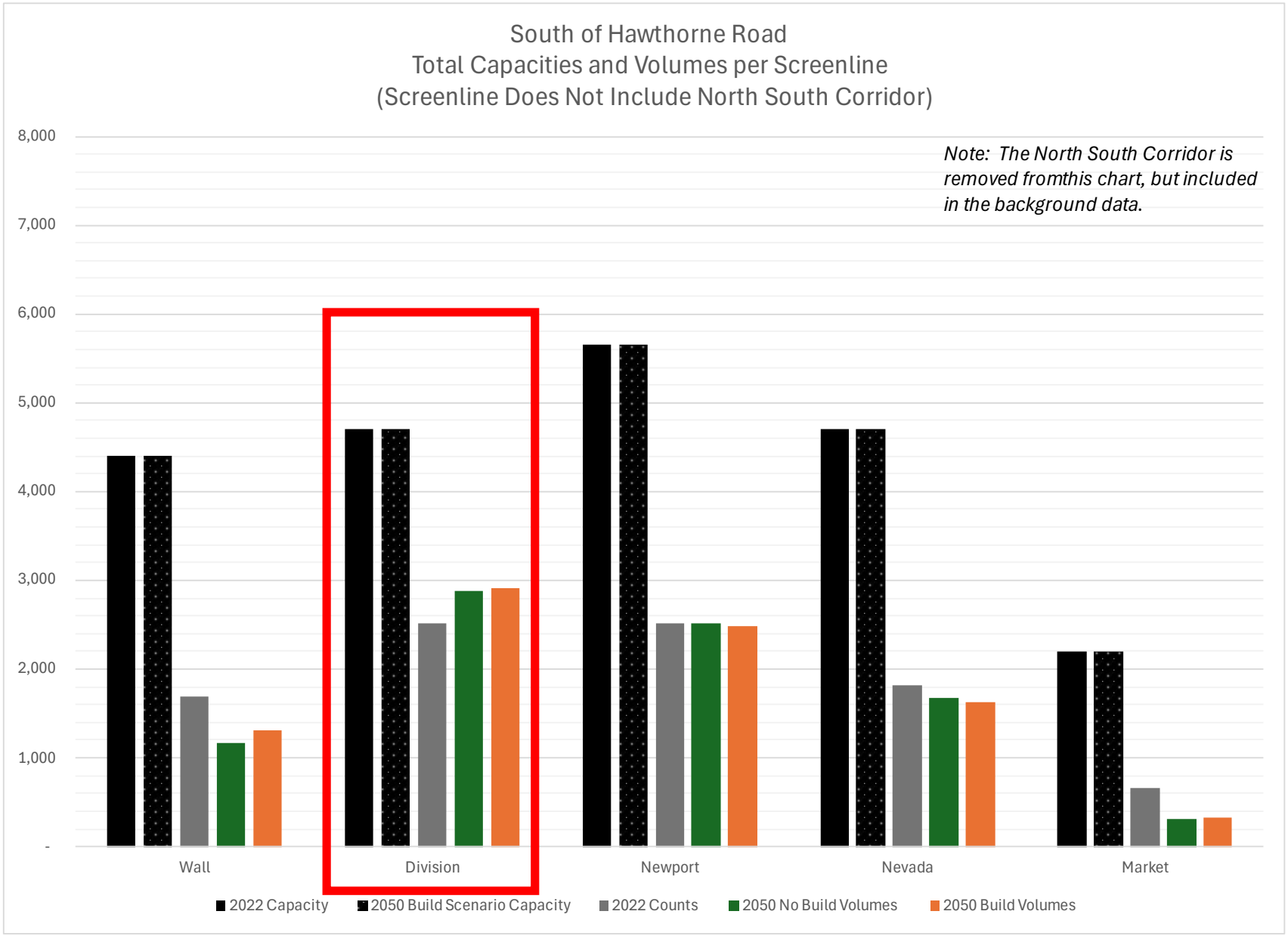


Figure A19: PM Peak Hour Capacities and Volumes Screenline Comparison

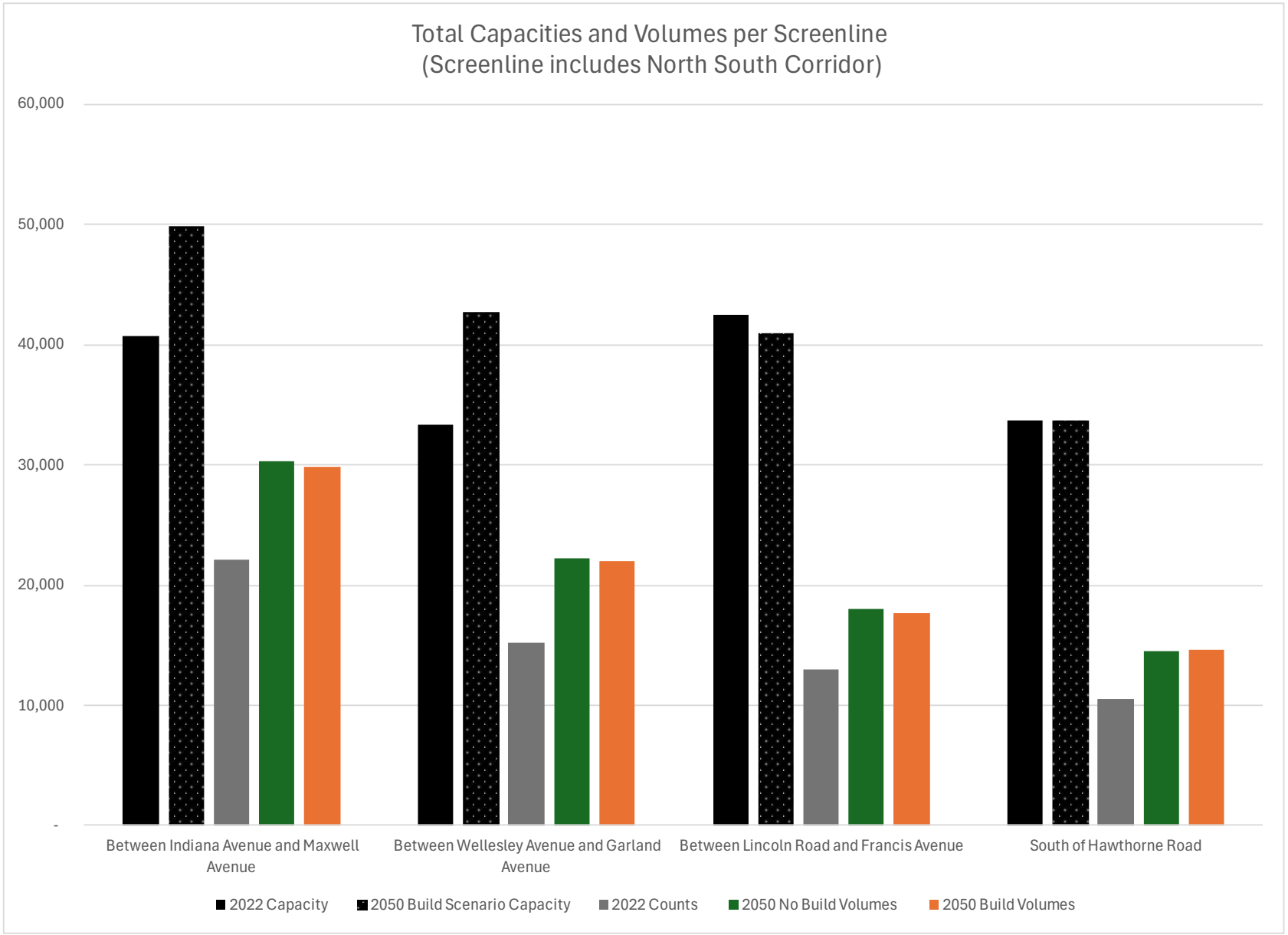
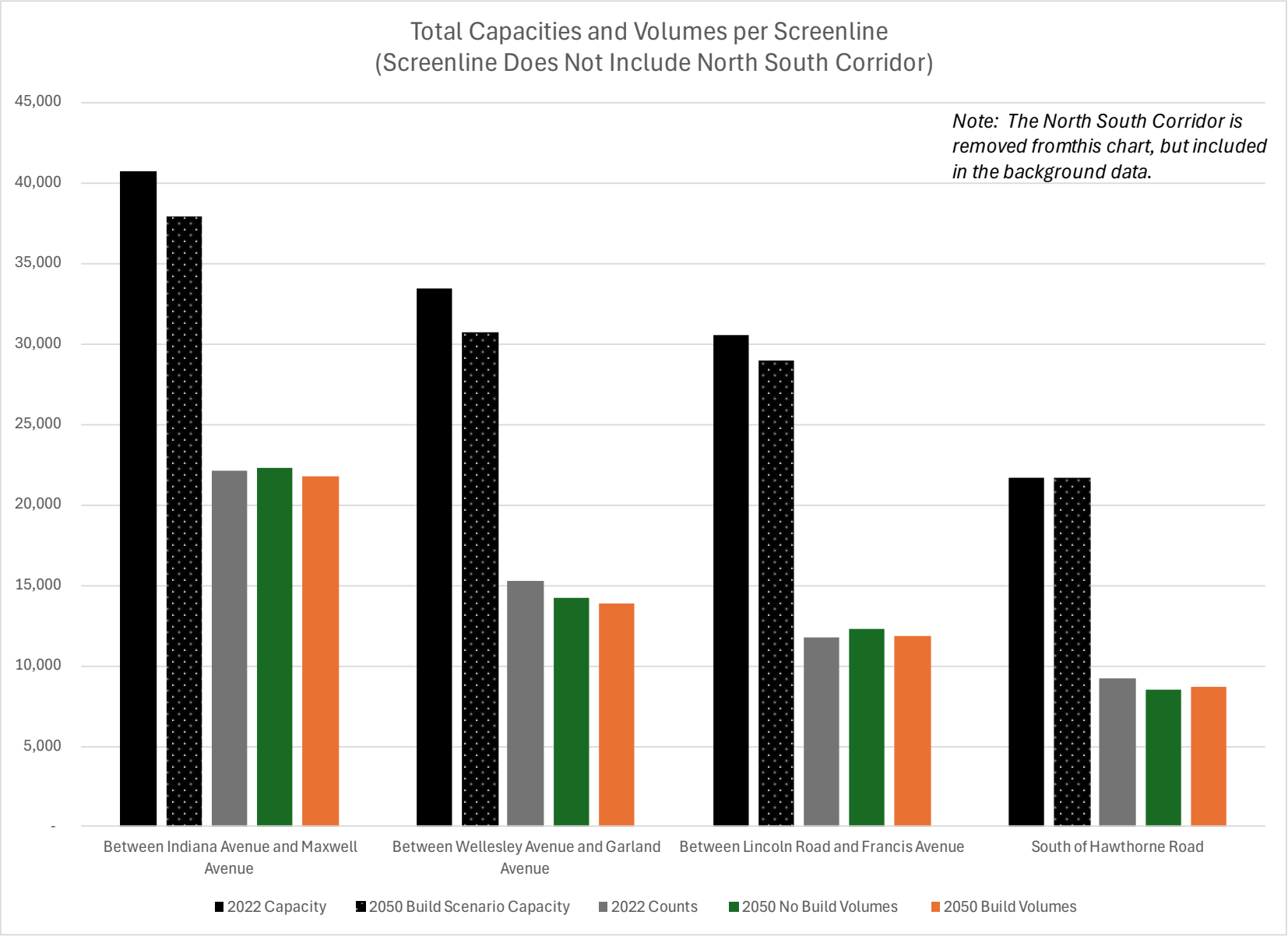


Figure A20: PM Peak Hour Capacities and Volumes Screenline Comparison – (Excluding NSC)



ATTACHMENT B –DETAILED LAND USE GEOGRAPHICAL AREA VEHICULAR TRAVEL ANALYSIS DATA

Table B1: Detailed Screenline Volumes and Comparisons – Average Daily Volumes

Location	Metric	2022	2050 No Build	2050 LPA
Node 1 - Ruby North Bank	Population (2.28 per Household, 1.37 per Hotel Room)	1,472	1,720	1,720
	Dwelling Units (Single Family + Multi-Family)	79	114	114
	Hotel Rooms	943	1,066	1,066
	Employment	3,655	4,093	4,093
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	37,501	41,537	41,291
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	153,924	170,206	169,146
	Average Vehicle Trip Length	4.1	4.1	4.1
	Daily Home-Based Person Trips (Drive Alone)	6,543	7,463	7,449
	Daily Home-Based Person Trips (Shared Ride)	2,838	3,342	3,342
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	9,381	10,804	10,791
	Daily Home-Based Person Miles Traveled (Drive Alone)	14,156	17,490	17,490
	Daily Home-Based Person Miles Traveled (Shared Ride)	7,590	10,144	10,222
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	17,436	21,858	21,893
	Daily Home-Based Person Trip Length	2.3	2.6	2.6
	Daily Non-Home-Based Person Trips (Drive Alone)	9,511	10,319	10,299
	Daily Non-Home-Based Person Trips (Shared Ride)	5,417	5,902	5,896
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	14,927	16,222	16,195
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	25,664	28,425	28,393
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	22,285	24,511	24,591
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	35,295	38,980	38,985
	Daily Non-Home-Based Person Trip Length	2.1	2.1	2.1
	DA Person Trips	31,538	34,932	34,704
	SR Person Trips	13,799	15,339	15,295
	SR Auto Occupancy	2.31	2.32	2.32
	Daily VMT per Service Population	30.02	29.28	29.10
	Daily Home-Based VMT/Capita	11.8	12.7	12.7
	Daily Non-Home-Based VMT/Employee	9.7	9.5	9.5

Location	Metric	2022	2050 No Build	2050 LPA
Node 2 - Foothills	Population (2.28 per Household, 1.37 per Hotel Room)	163	163	163
	Dwelling Units (Single Family + Multi-Family)	35	35	35
	Hotel Rooms	61	61	61
	Employment	592	620	620
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	9,745	10,101	10,004
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	33,391	33,599	33,309
	Average Vehicle Trip Length	3.4	3.3	3.3
	Daily Home-Based Person Trips (Drive Alone)	553	558	556
	Daily Home-Based Person Trips (Shared Ride)	233	238	236
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	786	795	792
	Daily Home-Based Person Miles Traveled (Drive Alone)	1,426	1,459	1,440
	Daily Home-Based Person Miles Traveled (Shared Ride)	706	721	709
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	1,708	1,746	1,723
	Daily Home-Based Person Trip Length	2.7	2.7	2.7
	Daily Non-Home-Based Person Trips (Drive Alone)	3,999	4,198	4,181
	Daily Non-Home-Based Person Trips (Shared Ride)	2,309	2,429	2,423
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	6,308	6,627	6,603
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	11,495	12,274	12,248
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	9,820	10,273	10,326
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	15,420	16,364	16,375
	Daily Non-Home-Based Person Trip Length	2.2	2.2	2.2
	DA Person Trips	7,983	8,292	8,209
	SR Person Trips	4,409	4,541	4,492
	SR Auto Occupancy	2.50	2.51	2.50
	Daily VMT per Service Population	44.23	42.91	42.54
	Daily Home-Based VMT/Capita	10.5	10.7	10.6
	Daily Non-Home-Based VMT/Employee	26.0	26.4	26.4

Location	Metric	2022	2050 No Build	2050 LPA
Node 3 - Empire/Garland	Population (2.28 per Household, 1.37 per Hotel Room)	1,028	1,040	1,040
	Dwelling Units (Single Family + Multi-Family)	451	456	456
	Hotel Rooms	0	0	0
	Employment	153	217	217
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	4,729	5,238	5,236
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	17,311	19,677	19,551
	Average Vehicle Trip Length	3.7	3.8	3.7
	Daily Home-Based Person Trips (Drive Alone)	1,834	1,872	1,867
	Daily Home-Based Person Trips (Shared Ride)	693	713	710
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	2,527	2,585	2,577
	Daily Home-Based Person Miles Traveled (Drive Alone)	5,755	5,929	5,872
	Daily Home-Based Person Miles Traveled (Shared Ride)	2,306	2,376	2,346
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	6,809	6,985	6,925
	Daily Home-Based Person Trip Length	3.2	3.2	3.2
	Daily Non-Home-Based Person Trips (Drive Alone)	899	1,035	1,034
	Daily Non-Home-Based Person Trips (Shared Ride)	530	609	608
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	1,429	1,644	1,642
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	2,771	3,224	3,202
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	2,415	2,700	2,694
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	3,874	4,425	4,411
	Daily Non-Home-Based Person Trip Length	2.2	2.2	2.2
	DA Person Trips	3,935	4,381	4,374
	SR Person Trips	1,737	1,927	1,921
	SR Auto Occupancy	2.19	2.25	2.23
	Daily VMT per Service Population	14.66	15.65	15.55
	Daily Home-Based VMT/Capita	6.6	6.7	6.7
	Daily Non-Home-Based VMT/Employee	25.3	20.4	20.3

Location	Metric	2022	2050 No Build	2050 LPA
Node 4 - Northtown	Population (2.28 per Household, 1.37 per Hotel Room)	1,580	1,627	1,627
	Dwelling Units (Single Family + Multi-Family)	693	705	705
	Hotel Rooms	0	14	14
	Employment	1,868	2,056	2,056
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	29,212	30,670	30,564
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	104,769	122,529	120,672
	Average Vehicle Trip Length	3.6	4.0	3.9
	Daily Home-Based Person Trips (Drive Alone)	2,525	2,671	2,654
	Daily Home-Based Person Trips (Shared Ride)	915	991	983
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	3,439	3,662	3,637
	Daily Home-Based Person Miles Traveled (Drive Alone)	7,664	8,298	8,180
	Daily Home-Based Person Miles Traveled (Shared Ride)	2,751	3,214	3,160
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	8,805	9,626	9,489
	Daily Home-Based Person Trip Length	3.0	3.1	3.1
	Daily Non-Home-Based Person Trips (Drive Alone)	10,971	11,356	11,338
	Daily Non-Home-Based Person Trips (Shared Ride)	6,335	6,871	6,839
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	17,305	18,227	18,178
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	31,022	36,864	36,388
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	27,357	34,094	33,727
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	42,364	50,949	50,364
	Daily Non-Home-Based Person Trip Length	2.2	2.2	2.2
	DA Person Trips	23,957	25,046	24,966
	SR Person Trips	12,676	13,615	13,510
	SR Auto Occupancy	2.41	2.42	2.41
	Daily VMT per Service Population	30.39	33.27	32.76
	Daily Home-Based VMT/Capita	5.6	5.9	5.8
	Daily Non-Home-Based VMT/Employee	22.7	24.8	24.5

Location	Metric	2022	2050 No Build	2050 LPA
Node 5 - Rowan	Population (2.28 per Household, 1.37 per Hotel Room)	381	397	397
	Dwelling Units (Single Family + Multi-Family)	167	174	174
	Hotel Rooms	0	0	0
	Employment	2,411	3,271	3,271
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	19,119	24,365	24,339
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	78,094	105,411	104,529
	Average Vehicle Trip Length	4.1	4.3	4.3
	Daily Home-Based Person Trips (Drive Alone)	640	668	665
	Daily Home-Based Person Trips (Shared Ride)	233	244	243
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	874	912	907
	Daily Home-Based Person Miles Traveled (Drive Alone)	1,901	1,992	1,962
	Daily Home-Based Person Miles Traveled (Shared Ride)	661	701	688
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	2,191	2,303	2,267
	Daily Home-Based Person Trip Length	2.9	3.0	2.9
	Daily Non-Home-Based Person Trips (Drive Alone)	5,012	6,047	6,041
	Daily Non-Home-Based Person Trips (Shared Ride)	2,819	3,443	3,430
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	7,832	9,489	9,470
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	13,060	16,446	16,219
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	11,087	14,039	13,910
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	17,916	22,664	22,388
	Daily Non-Home-Based Person Trip Length	2.1	2.1	2.1
	DA Person Trips	16,020	20,470	20,453
	SR Person Trips	7,076	8,795	8,764
	SR Auto Occupancy	2.28	2.26	2.26
	Daily VMT per Service Population	27.97	28.74	28.50
	Daily Home-Based VMT/Capita	5.8	5.8	5.7
	Daily Non-Home-Based VMT/Employee	7.4	6.9	6.8

Location	Metric	2022	2050 No Build	2050 LPA
Node 6 - Francis/Lyons	Population (2.28 per Household, 1.37 per Hotel Room)	3,540	3,964	3,964
	Dwelling Units (Single Family + Multi-Family)	1,519	1,705	1,705
	Hotel Rooms	56	56	56
	Employment	1,833	1,977	1,977
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	28,598	30,994	30,944
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	102,701	113,429	112,545
	Average Vehicle Trip Length	3.6	3.7	3.6
	Daily Home-Based Person Trips (Drive Alone)	6,141	6,836	6,792
	Daily Home-Based Person Trips (Shared Ride)	2,276	2,540	2,523
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	8,417	9,375	9,315
	Daily Home-Based Person Miles Traveled (Drive Alone)	19,211	21,652	21,346
	Daily Home-Based Person Miles Traveled (Shared Ride)	6,925	7,940	7,833
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	22,233	25,071	24,741
	Daily Home-Based Person Trip Length	3.1	3.2	3.1
	Daily Non-Home-Based Person Trips (Drive Alone)	8,263	8,897	8,885
	Daily Non-Home-Based Person Trips (Shared Ride)	4,691	5,127	5,118
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	12,954	14,024	14,002
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	22,255	25,057	24,880
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	19,021	21,895	21,887
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	30,556	34,484	34,367
	Daily Non-Home-Based Person Trip Length	2.1	2.2	2.2
	DA Person Trips	23,749	25,788	25,722
	SR Person Trips	11,111	12,091	12,047
	SR Auto Occupancy	2.29	2.32	2.31
	Daily VMT per Service Population	19.11	19.09	18.94
	Daily Home-Based VMT/Capita	6.3	6.3	6.2
	Daily Non-Home-Based VMT/Employee	16.7	17.4	17.4

Location	Metric	2022	2050 No Build	2050 LPA
Node 7 - Lincoln	Population (2.28 per Household, 1.37 per Hotel Room)	2,809	3,098	3,098
	Dwelling Units (Single Family + Multi-Family)	1,155	1,282	1,282
	Hotel Rooms	128	128	128
	Employment	1,707	2,014	2,014
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	30,444	33,226	33,193
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	114,537	126,610	126,017
	Average Vehicle Trip Length	3.8	3.8	3.8
	Daily Home-Based Person Trips (Drive Alone)	4,832	5,274	5,250
	Daily Home-Based Person Trips (Shared Ride)	1,803	1,983	1,975
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	6,635	7,258	7,226
	Daily Home-Based Person Miles Traveled (Drive Alone)	15,367	17,262	17,072
	Daily Home-Based Person Miles Traveled (Shared Ride)	5,561	6,427	6,373
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	17,725	19,982	19,788
	Daily Home-Based Person Trip Length	3.2	3.3	3.2
	Daily Non-Home-Based Person Trips (Drive Alone)	10,259	10,942	10,926
	Daily Non-Home-Based Person Trips (Shared Ride)	5,903	6,430	6,416
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	16,161	17,372	17,342
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	28,823	32,701	32,450
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	25,108	29,280	29,229
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	39,468	45,091	44,907
	Daily Non-Home-Based Person Trip Length	2.2	2.2	2.2
	DA Person Trips	24,912	27,293	27,232
	SR Person Trips	13,046	14,020	13,988
	SR Auto Occupancy	2.36	2.36	2.35
	Daily VMT per Service Population	25.36	24.77	24.65
	Daily Home-Based VMT/Capita	6.3	6.4	6.4
	Daily Non-Home-Based VMT/Employee	23.1	22.4	22.3

Location	Metric	2022	2050 No Build	2050 LPA
Node 8 - The Y	Population (2.28 per Household, 1.37 per Hotel Room)	4,022	5,575	5,575
	Dwelling Units (Single Family + Multi-Family)	1,656	2,337	2,337
	Hotel Rooms	180	180	180
	Employment	3,424	3,992	3,992
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	53,200	68,069	68,026
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	209,884	267,331	266,543
	Average Vehicle Trip Length	3.9	3.9	3.9
	Daily Home-Based Person Trips (Drive Alone)	7,955	15,985	15,914
	Daily Home-Based Person Trips (Shared Ride)	3,104	6,268	6,246
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	11,059	22,253	22,159
	Daily Home-Based Person Miles Traveled (Drive Alone)	26,688	58,245	57,585
	Daily Home-Based Person Miles Traveled (Shared Ride)	9,846	22,096	22,002
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	30,807	67,595	66,966
	Daily Home-Based Person Trip Length	3.3	3.6	3.6
	Daily Non-Home-Based Person Trips (Drive Alone)	17,475	19,425	19,408
	Daily Non-Home-Based Person Trips (Shared Ride)	9,867	11,323	11,298
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	27,342	30,749	30,707
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	45,184	54,768	54,234
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	40,018	51,754	51,654
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	61,924	76,668	76,257
	Daily Non-Home-Based Person Trip Length	2.1	2.2	2.2
	DA Person Trips	43,213	55,757	55,643
	SR Person Trips	23,874	29,098	29,044
	SR Auto Occupancy	2.39	2.36	2.35
	Daily VMT per Service Population	28.19	27.94	27.86
	Daily Home-Based VMT/Capita	7.7	12.1	12.0
	Daily Non-Home-Based VMT/Employee	18.1	19.2	19.1

Location	Metric	2022	2050 No Build	2050 LPA
Node 9 - Whitworth	Population (2.28 per Household, 1.37 per Hotel Room)	2,111	2,212	2,212
	Dwelling Units (Single Family + Multi-Family)	926	970	970
	Hotel Rooms	0	0	0
	Employment	1,267	2,247	2,247
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	14,830	21,274	21,166
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	65,450	99,845	98,564
	Average Vehicle Trip Length	4.4	4.7	4.7
	Daily Home-Based Person Trips (Drive Alone)	3,707	3,825	3,817
	Daily Home-Based Person Trips (Shared Ride)	1,400	1,490	1,488
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	5,106	5,316	5,305
	Daily Home-Based Person Miles Traveled (Drive Alone)	13,598	15,183	15,033
	Daily Home-Based Person Miles Traveled (Shared Ride)	4,863	5,960	5,903
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	15,744	17,781	17,620
	Daily Home-Based Person Trip Length	3.6	4.0	3.9
	Daily Non-Home-Based Person Trips (Drive Alone)	3,412	5,193	5,193
	Daily Non-Home-Based Person Trips (Shared Ride)	2,032	3,199	3,186
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	5,445	8,392	8,379
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	10,617	17,304	17,081
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	9,622	17,023	16,788
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	14,864	24,725	24,440
	Daily Non-Home-Based Person Trip Length	2.2	2.2	2.2
	DA Person Trips	12,242	17,628	17,517
	SR Person Trips	5,863	8,365	8,325
	SR Auto Occupancy	2.27	2.29	2.28
	Daily VMT per Service Population	19.38	22.39	22.10
	Daily Home-Based VMT/Capita	7.5	8.0	8.0
	Daily Non-Home-Based VMT/Employee	11.7	11.0	10.9

Location	Metric	2022	2050 No Build	2050 LPA
Node 10 - Mead	Dwelling Units (Single Family + Multi-Family)	46	3,238	3,238
	Hotel Rooms	20	1,420	1,420
	Employment	0	0	0
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	469	944	944
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	7,366	23,442	23,472
	Average Vehicle Trip Length	13,712	130,790	130,477
	Daily Home-Based Person Trips (Drive Alone)	1.9	5.6	5.6
	Daily Home-Based Person Trips (Shared Ride)	75	5,139	5,122
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	30	2,157	2,150
	Daily Home-Based Person Miles Traveled (Drive Alone)	105	7,297	7,273
	Daily Home-Based Person Miles Traveled (Shared Ride)	359	26,467	26,246
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	146	12,307	12,203
	Daily Home-Based Person Trip Length	419	31,814	31,599
	Daily Non-Home-Based Person Trips (Drive Alone)	4.8	5.3	5.3
	Daily Non-Home-Based Person Trips (Shared Ride)	3,151	7,143	7,150
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	2,052	4,917	4,909
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	5,202	12,061	12,059
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	12,444	30,099	29,939
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	12,125	34,410	34,195
	Daily Non-Home-Based Person Trip Length	17,372	45,050	44,938
	DA Person Trips	2.3	2.4	2.4
	SR Person Trips	5,759	18,510	18,500
	SR Auto Occupancy	3,952	11,350	11,335
	Daily VMT per Service Population	2.46	2.30	2.28
	Daily Home-Based VMT/Capita	26.63	31.27	31.20
	Daily Non-Home-Based VMT/Employee	9.1	9.8	9.8
	Population (2.28 per Household, 1.37 per Hotel Room)	37.0	47.7	47.6

Location	Metric	2022	2050 No Build	2050 LPA
Node 11 - Hastings	Population (2.28 per Household, 1.37 per Hotel Room)	1,147	2,412	2,412
	Dwelling Units (Single Family + Multi-Family)	503	1,058	1,058
	Hotel Rooms	0	0	0
	Employment	1,277	1,816	1,816
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	18,665	27,875	27,755
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	88,553	138,934	137,866
	Average Vehicle Trip Length	4.7	5.0	5.0
	Daily Home-Based Person Trips (Drive Alone)	2,504	5,403	5,364
	Daily Home-Based Person Trips (Shared Ride)	1,087	2,439	2,423
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	3,591	7,842	7,786
	Daily Home-Based Person Miles Traveled (Drive Alone)	11,987	28,652	28,076
	Daily Home-Based Person Miles Traveled (Shared Ride)	5,037	13,010	12,707
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	14,124	34,253	33,488
	Daily Home-Based Person Trip Length	4.7	5.3	5.2
	Daily Non-Home-Based Person Trips (Drive Alone)	6,057	7,959	7,968
	Daily Non-Home-Based Person Trips (Shared Ride)	3,806	5,219	5,210
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	9,863	13,178	13,178
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	21,536	30,138	30,032
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	20,970	33,016	32,702
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	30,429	44,352	43,962
	Daily Non-Home-Based Person Trip Length	2.3	2.3	2.3
	DA Person Trips	15,127	22,602	22,548
	SR Person Trips	8,341	12,246	12,225
	SR Auto Occupancy	2.36	2.32	2.35
	Daily VMT per Service Population	36.53	32.86	32.61
	Daily Home-Based VMT/Capita	12.3	14.2	13.9
	Daily Non-Home-Based VMT/Employee	23.8	24.4	24.2

Location	Metric	2022	2050 No Build	2050 LPA
Node 12 - Nevada Junction	Population (2.28 per Household, 1.37 per Hotel Room)	2	34	34
	Dwelling Units (Single Family + Multi-Family)	1	15	15
	Hotel Rooms	0	0	0
	Employment	2,840	3,436	3,436
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	31,372	34,270	34,250
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	142,811	159,250	158,811
	Average Vehicle Trip Length	4.6	4.6	4.6
	Daily Home-Based Person Trips (Drive Alone)	0	389	388
	Daily Home-Based Person Trips (Shared Ride)	0	149	148
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	0	538	536
	Daily Home-Based Person Miles Traveled (Drive Alone)	0	1,492	1,482
	Daily Home-Based Person Miles Traveled (Shared Ride)	0	584	580
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	0	1,736	1,724
	Daily Home-Based Person Trip Length	0.0	3.9	3.8
	Daily Non-Home-Based Person Trips (Drive Alone)	12,235	12,795	12,792
	Daily Non-Home-Based Person Trips (Shared Ride)	6,998	7,663	7,644
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	19,233	20,457	20,436
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	32,685	37,905	37,534
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	29,847	39,073	38,821
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	44,995	54,208	53,743
	Daily Non-Home-Based Person Trip Length	2.1	2.2	2.2
	DA Person Trips	25,437	27,912	27,897
	SR Person Trips	14,388	15,237	15,216
	SR Auto Occupancy	2.42	2.40	2.39
	Daily VMT per Service Population	50.25	45.89	45.77
	Daily Home-Based VMT/Capita	0.0	51.0	50.7
	Daily Non-Home-Based VMT/Employee	15.8	15.8	15.6

Location	Metric	2022	2050 No Build	2050 LPA
Combined	Population (2.28 per Household, 1.37 per Hotel Room)	18,301	25,480	25,480
	Dwelling Units (Single Family + Multi-Family)	7,205	10,271	10,271
	Hotel Rooms	1,368	1,505	1,505
	Employment	21,496	26,683	26,683
	Daily Vehicle Trip Ends (Origin + Destination) (Drive Alone + Shared Ride Vehicle Trips)	284,780	351,062	350,241
	Daily Vehicle VMT (Drive Alone + Shared Ride Vehicle Trips)	1,125,137	1,487,611	1,478,029
	Average Vehicle Trip Length	4.0	4.2	4.2
	Daily Home-Based Person Trips (Drive Alone)	37,308	56,083	55,838
	Daily Home-Based Person Trips (Shared Ride)	14,612	22,553	22,466
	Daily Home-Based Person Trips (Drive Alone + Shared Ride)	51,921	78,636	78,305
	Daily Home-Based Person Miles Traveled (Drive Alone)	118,113	204,120	201,783
	Daily Home-Based Person Miles Traveled (Shared Ride)	46,393	85,480	84,727
	Daily Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	137,749	240,527	238,000
	Daily Home-Based Person Trip Length	3.2	3.7	3.7
	Daily Non-Home-Based Person Trips (Drive Alone)	91,243	105,308	105,215
	Daily Non-Home-Based Person Trips (Shared Ride)	52,759	63,134	62,976
	Daily Non-Home-Based Person Trips (Drive Alone + Shared Ride)	144,002	168,442	168,191
	Daily Non-Home-Based Person Miles Traveled (Drive Alone)	257,556	325,205	322,601
	Daily Non-Home-Based Person Miles Traveled (Shared Ride)	229,675	312,066	310,523
	Daily Non-Home-Based Vehicle Miles Traveled (Drive Alone + Shared Ride)	354,770	458,120	455,335
	Daily Non-Home-Based Person Trip Length	2.2	2.2	2.2
	DA Person Trips	233,873	288,611	287,764
	SR Person Trips	120,272	146,625	146,161
	SR Auto Occupancy	2.36	2.35	2.34
	Daily VMT per Service Population	28.27	28.52	28.33
	Daily Home-Based VMT/Capita	7.5	9.4	9.3
	Daily Non-Home-Based VMT/Employee	16.5	17.2	17.1