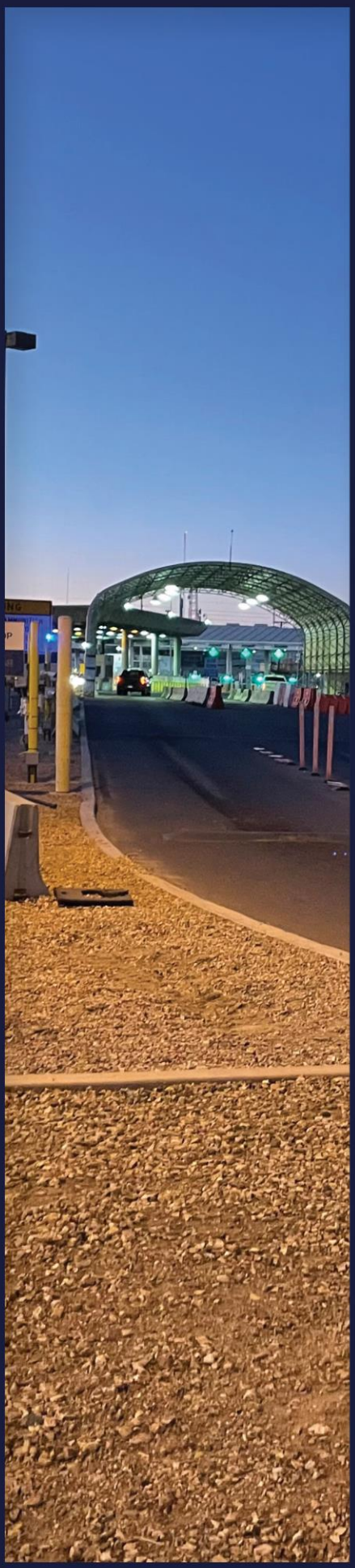
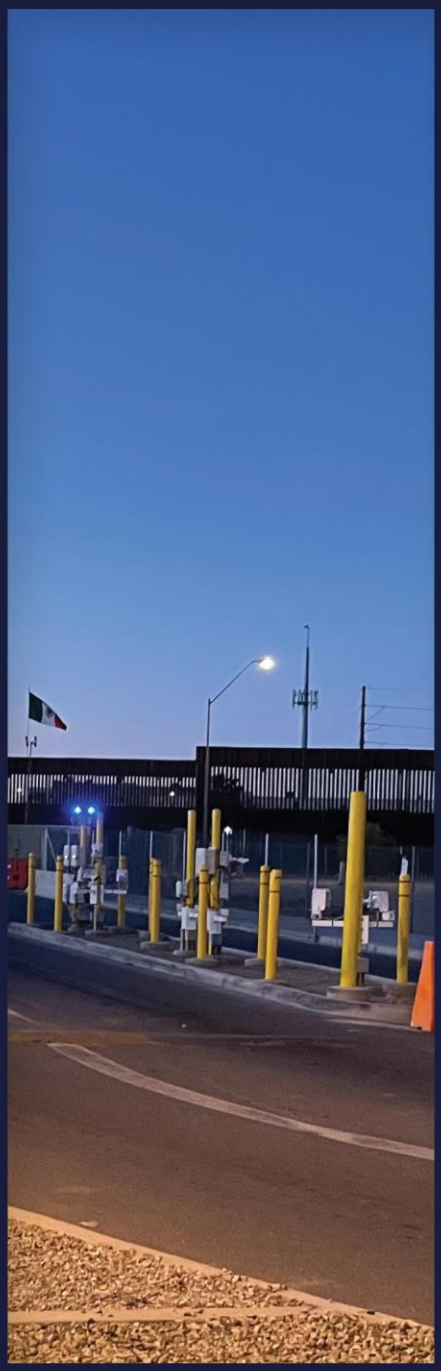
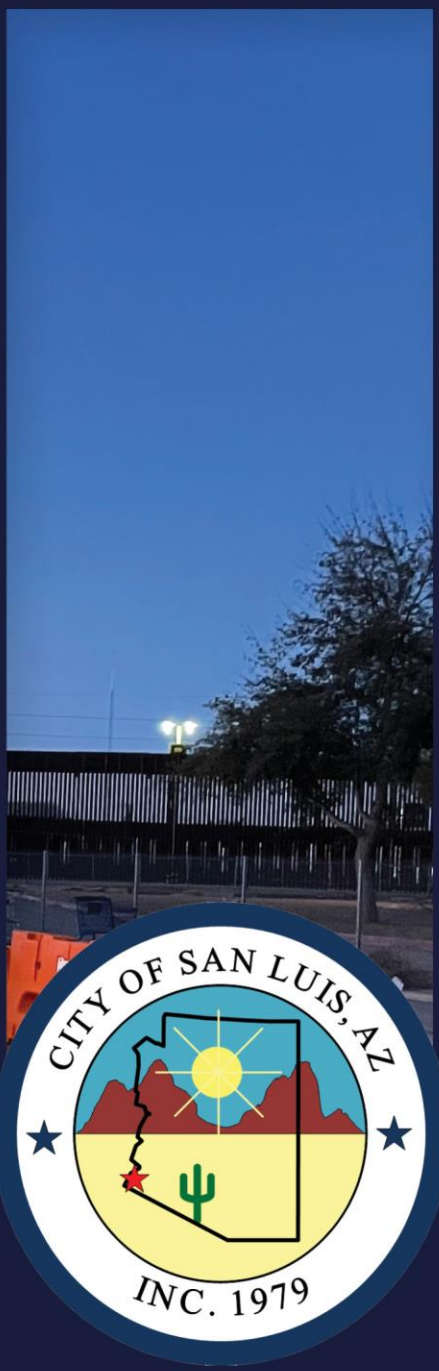






SAN LUIS POE IMPACT STUDY

DECEMBER 2022

Kimley»Horn

TABLE OF CONTENTS

LIST OF ACRONYMS

ADT	Average Daily Traffic
AM	Morning
GSA	General Services Administration
HAWK	High-Intensity Activated Crosswalk
HCM	Highway Capacity Manual
I-8	Interstate 8
LPR	License Plate Recognition
LOS	Level of Service
RPP	Residential Parking Permit
OD	Origin-Destination
PM	Afternoon
POE	Port of Entry
SR	State Route
TMC	Turning Movement Count

INTRODUCTION

INTRODUCTION

The City of San Luis (City) initiated the San Luis Port of Entry (POE) Impact Study to understand the impact on its downtown area stemming from the reconstruction and expansion of the San Luis I POE. The United States General Services Administration (GSA) will be investing $300 million in the San Luis I POE to double the number of processing lanes, from eight to 16, for those traveling from Mexico into the United States. Simultaneously, Mexico is reconstructing and expanding the POE for those traveling from the United States into Mexico.

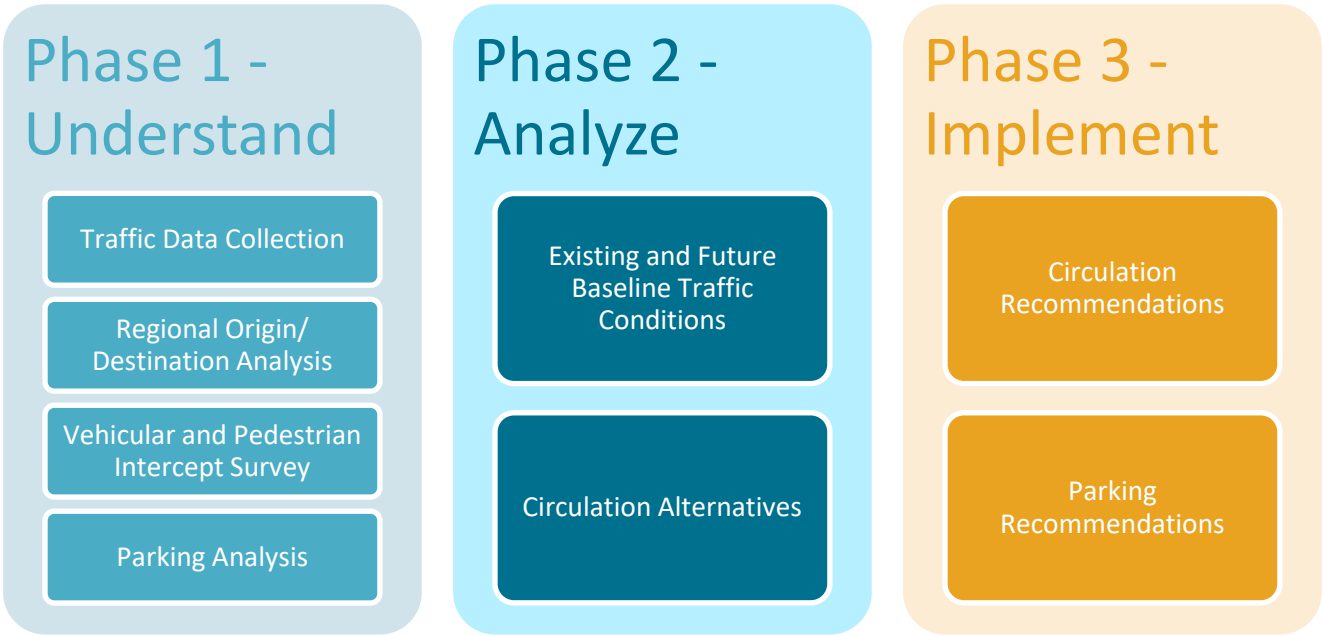
To respond to the large investment in expanding the San Luis I POE, the City has a desire to understand the localized transportation impacts to Downtown San Luis as well as a more holistic view on the impact the POE has on the greater Yuma region. Goals of the study include:

- Quantify the impacts on drivers and pedestrians of the POE expansion on the downtown transportation network and develop solutions to accommodate increased traffic levels.
- Understand where those entering the United States through the POE go after crossing.
- Learn travel characteristics and the economic impact of those crossing through the POE.
- Develop recommendations for addressing parking needs and deficiencies in Downtown San Luis.

STUDY PROCESS

The study process is broken into three primary phases: **Understand**, **Analyze**, and **Implement**. **Figure 1** shows the tasks included in each phase.

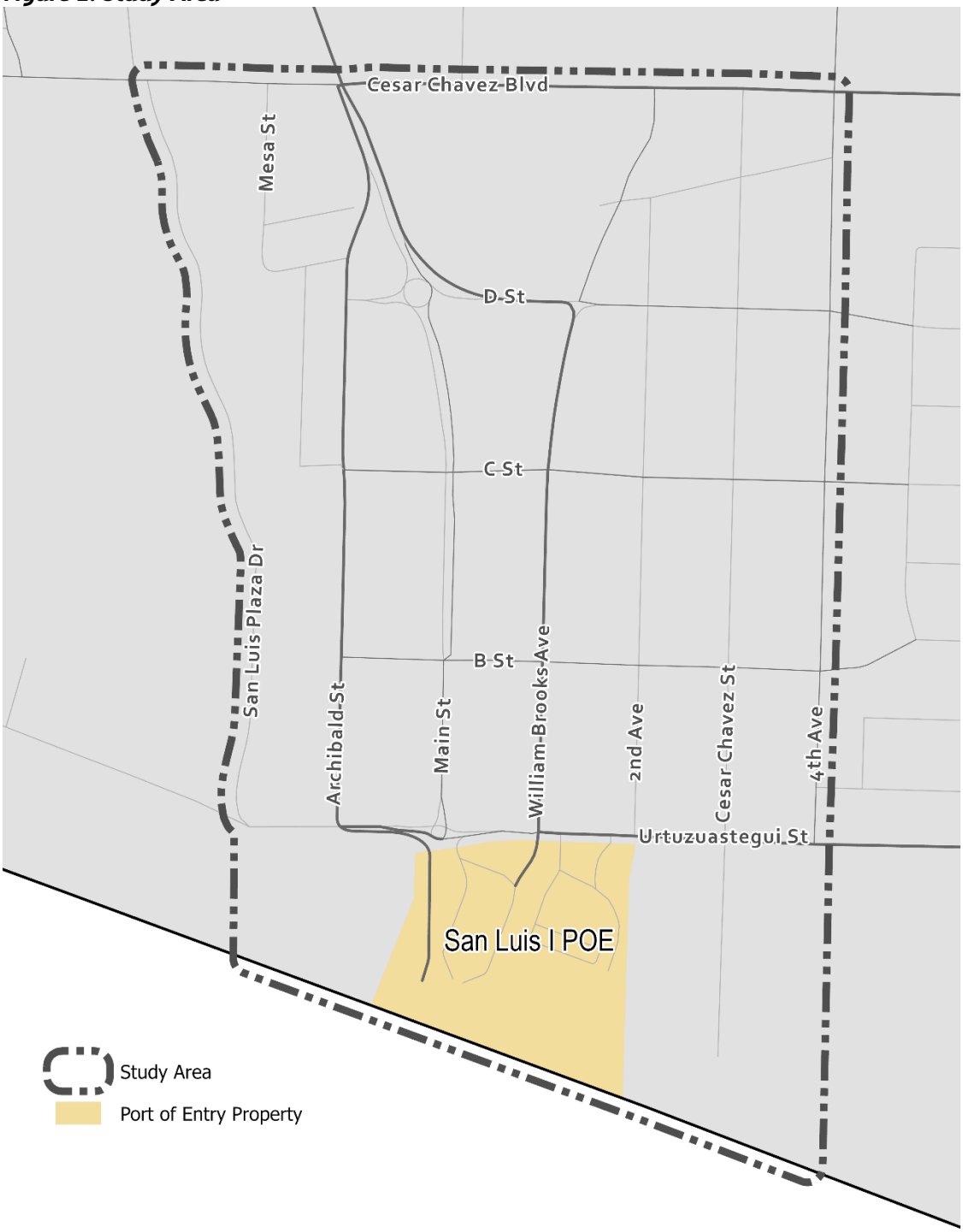
Figure 1. Study Process



STUDY AREA

The primary study area encompasses Downtown San Luis and is bounded by Cesar Chavez Boulevard on the north, 4th Avenue on the east, the United States/Mexico border on the south, and San Luis Plaza Drive on the west as shown in **Figure 2**.

Figure 2. Study Area



PHASE 1
UNDERSTAND

PHASE 1 - UNDERSTAND

The first phase of the POE Impact Study collected a comprehensive set of observed data from which alternatives for circulation and parking could be developed. This data collection effort was organized into four groups:

- Traffic data collection
- Regional origin-destination (OD) analysis
- Vehicular and pedestrian intercept survey
- Parking analysis

TRAFFIC DATA COLLECTION

Comprehensive quantification of vehicular and pedestrian volumes throughout the downtown study area is the primary basis from which alternatives, transportation modeling, and measures of effectiveness were drawn. Multi-day vehicle classification counts, intersection turning movement counts (TMCs), and travel time data were used to collect necessary data. **Figure 3** shows the locations of the classification counts and TMCs.

VEHICULAR CLASSIFICATION AND VOLUMES

Nine multi-day vehicle classification counts were collected within the downtown study area twice (once in late January 2022 and once in early February 2022) to understand:

- Which day of the week (Friday through Sunday) has the highest traffic volumes for the entire study area
- Peak hours throughout the day to inform the traffic simulation model times
- Differences in traffic volumes between the peak of harvest season in late January and when the TMCs were collected in early February to provide a factor to be applied to TMCs for the simulation model
- Vehicle classification splits (cars, trucks, buses, and bikes) on various study area roadways

A summary table of the average daily traffic (ADT) counts is provided in **Table 1**. The raw classification count sheets are provided in **Appendix A**. The analysis showed that traffic volumes are higher on Fridays and Mondays. Based on the traffic volumes and consultation with City staff, it was determined that Monday would be the day modeled in the traffic simulation model.

Figure 3. Classification Count and TMC Locations

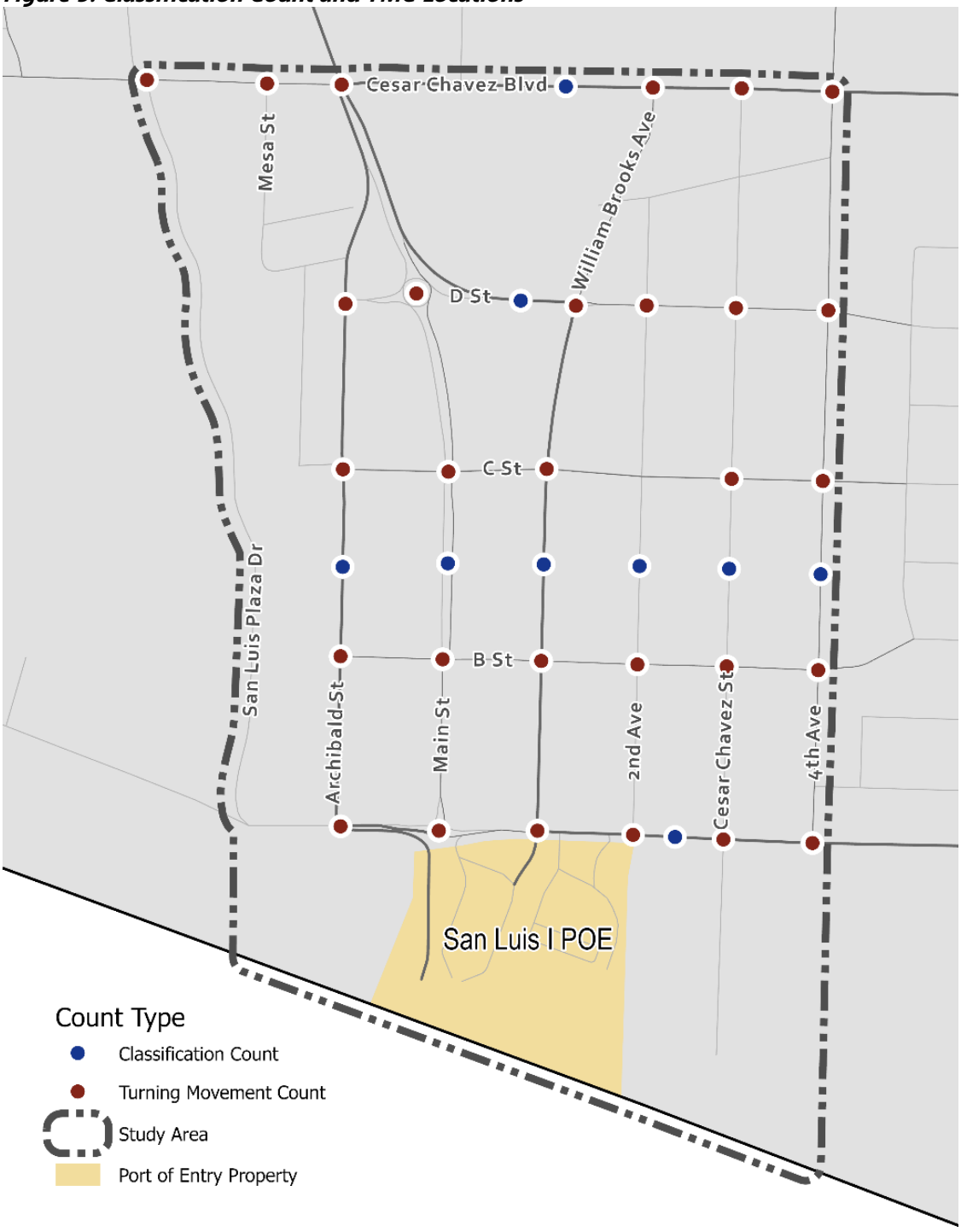


Table 1. January ADTs (Friday through Monday)

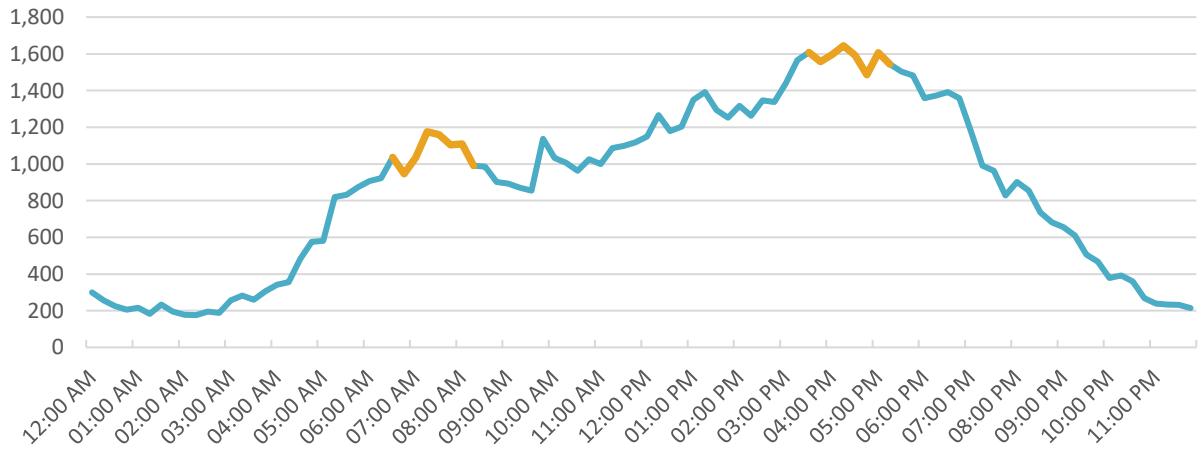
LOCATION	FRI ADT	SAT ADT	SUN ADT	MON ADT
1. Archibald St (B St to C St)	6,719	8,828	4,149	6,762
2. Main St (B St to C St)	10,526	9,690	7,228	9,140
3. William Brooks Ave (B St to C St)	8,509	8,013	7,308	8,714
4. 2nd Ave (B St to C St)	2,637	1,637	1,051	2,063
5. Cesar Chavez St (B St to C St)	894	620	400	806
6. 4th Ave (B St to C St)	2,990	1,736	1,329	2,447
7. Cesar Chavez Blvd (US 95 to William Brooks Ave)	12,508	9,874	7,890	12,653
8. Urtuzuastegui St (William Brooks Ave to 2nd Ave)	10,031	8,386	6,727	10,659
9. D St (Main St to William Brooks Ave)	9,925	8,550	6,888	8,881
Total	**64,739**	**57,334**	**42,970**	**62,125**
Change from late January to early February	-1.1%	-2.8%	+3.1%	-4.4%

After selecting Monday for the simulation model, the peak times needed to be identified to guide which hours to model. **Figure 4** shows 15-minute sums of all nine classification count location volumes. Based on the 15-minute traffic volumes, two two-hour periods were chosen to model in the traffic simulation model:

- Morning peak: 6:30 am – 8:30 am
- Evening peak: 3:30 pm – 5:30 am

TMCs from these peak times were used for the traffic simulation model. The raw TMC sheets are provided in **Appendix B**.

Figure 4. Monday 15-Minute Traffic Volume



PEDESTRIAN COUNTS

Pedestrian volume counts were collected via TMCs at the 29 study area intersections. TMCs were collected on a Monday and a Saturday, over the AM and PM peak periods identified during collection of vehicular classification and volumes. The pedestrian counts near the POE (at Main Street/Urtuzuastegui Street and William Brooks Avenue/Urtuzuastegui Street) are shown in **Figure 5** and **Figure 6** for Monday and Saturday, respectively.

Figure 5. Monday Pedestrian Counts

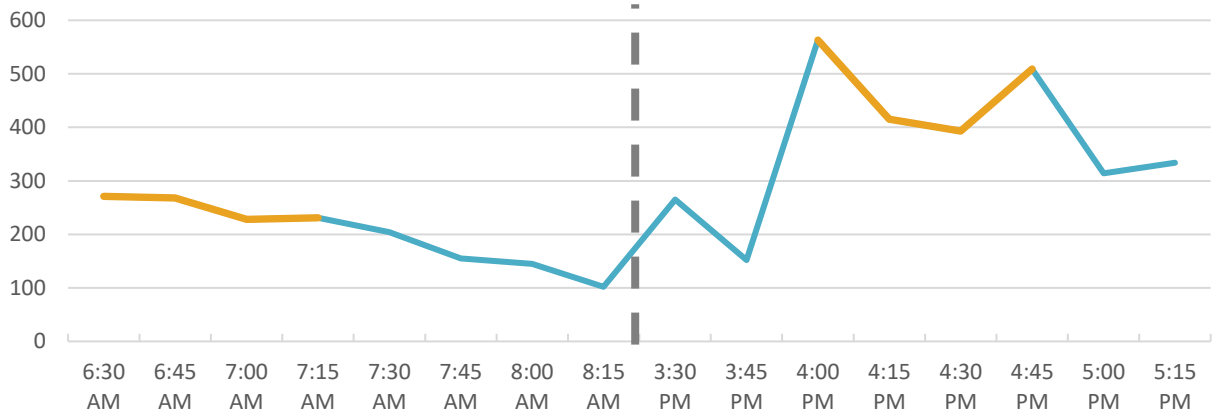
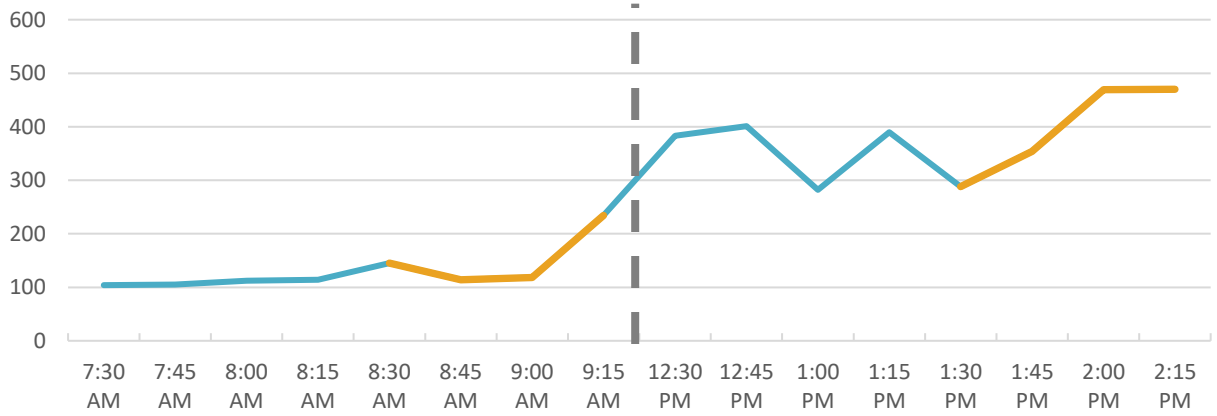


Figure 6. Saturday Pedestrian Counts



Pedestrian volumes were generally lower on Saturday, reaching a maximum of 470 pedestrians in a 15-minute interval, 93 pedestrians fewer than Monday's peak. The peak hours for pedestrian traffic near the POE are:

- **Monday**
  - AM Peak Hour: 6:30 AM to 7:30 PM – 998 pedestrians
  - PM Peak Hour: 4:00 PM to 4:45 PM – 1,880 pedestrians
- **Saturday**
  - AM Peak Hour: 8:30 AM to 9:30 AM – 611 pedestrians
  - PM Peak Hour: 1:30 PM to 2:30 PM – 1,581 pedestrians

VEHICLE TRAVEL TIMES

Kimley-Horn's proprietary Traction Travel™ software was used to obtain vehicular travel times for various routes in the study area which were used to calibrate the traffic simulation model. Traction Travel™ uses anonymized cell phone location data to obtain travel times for vehicles following pre-defined routes. Nine POE ingress and egress routes were defined to get travel times through the study area as shown in **Figure 7** and listed below:

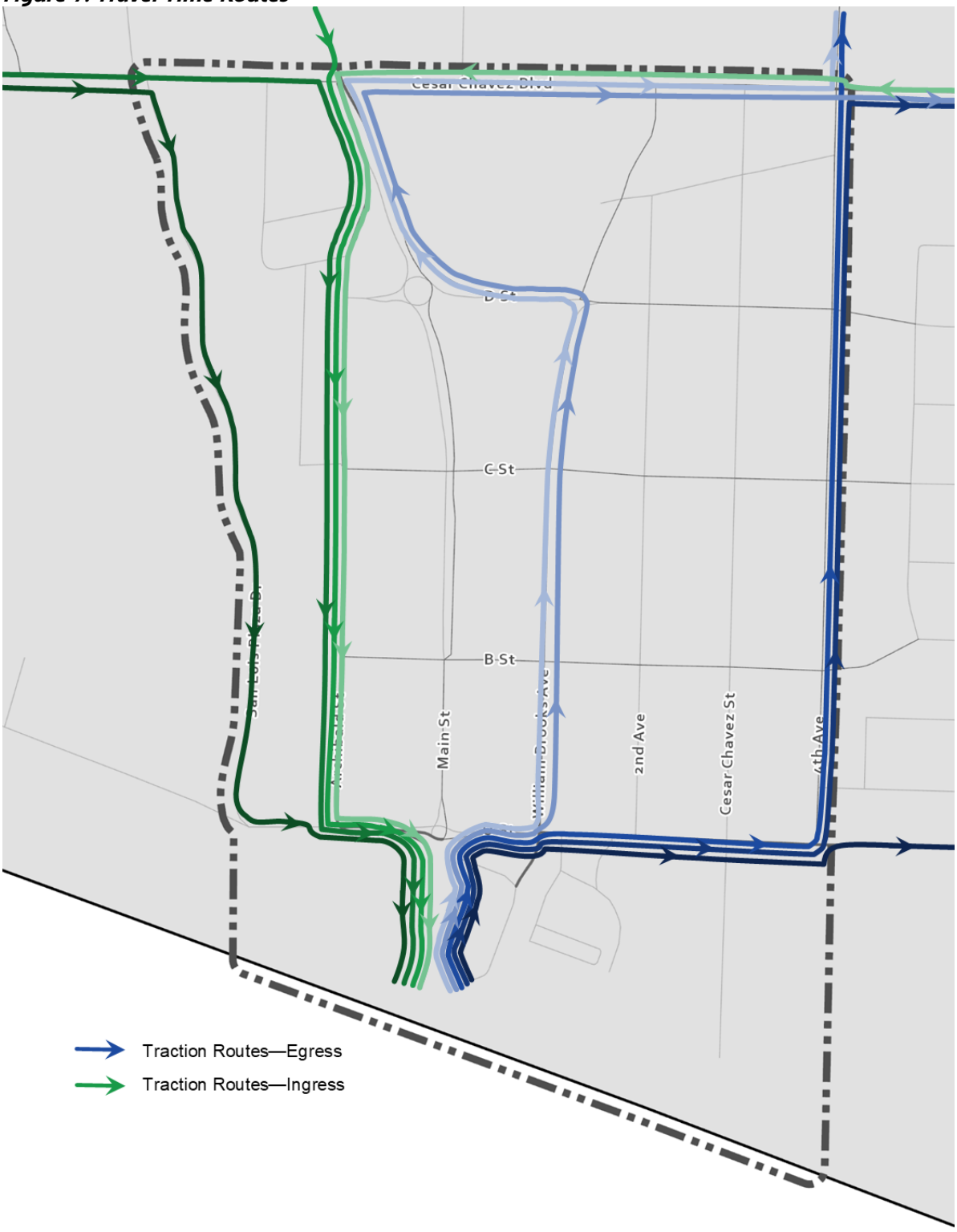
- **POE Ingress Routes**
  - US 95 (Main Street) north to the southbound POE
  - Cesar Chavez Boulevard east to the southbound POE
  - Cesar Chavez Boulevard west to the southbound POE
- **POE Egress Routes**
  - The northbound POE to US 95 (Main Street) north
  - The northbound POE to 4th Avenue north (via William Brooks Avenue)
  - The northbound POE to 4th Avenue north (via Urtuzuastegui Street)
  - The northbound POE to Cesar Chavez Boulevard east (via William Brooks Avenue)
  - The northbound POE to Cesar Chavez Boulevard east (via 4th Avenue)
  - The northbound POE to U Street east

Travel time data was obtained over the course of four weekends (Friday through Monday) in January and February 2022. Results are shown in **Table 2**. The results include the base (uncongested) travel time, maximum observed travel time, and AM and PM target travel times that were used in the traffic simulation model.

Table 2. Traction Travel™ Travel Time Results (in minutes)

LOCATION	BASE TIME	MAX TIME	AM MODEL TIME	PM MODEL TIME
US 95 (Main St) north to POE	2:36	20:12 (Fri 7:00pm)	2:59	6:14
Cesar Chavez Blvd east to POE	3:51	20:15 (Fri 7:00pm)	4:21	7:37
Cesar Chavez Blvd west to POE	3:15	19:31 (Fri 7:00pm)	3:35	6:50
POE to US 95 (Main St) north	2:24	4:14 (Fri 4:00pm)	3:00	3:29
POE to 4th Ave north (via William Brooks Ave)	3:31	5:39 (Fri 4:00pm)	4:17	4:46
POE to 4th Ave north (via Urtuzuastegui St)	3:00	3:53 (Fri 12:45pm)	3:23	3:42
POE to Cesar Chavez Blvd east (via William Brooks Ave)	3:28	5:37 (Fri 4:00pm)	4:15	4:44
POE to Cesar Chavez Blvd east (via 4th Ave)	2:46	3:40 (Fri 12:45pm)	3:09	3:29
POE to Urtuzuastegui St east	1:03	1:46 (Fri 12:45pm)	1:20	1:36

Figure 7. Travel Time Routes



REGIONAL ORIGIN-DESTINATION ANALYSIS

A regional OD analysis to and from the San Luis I POE was conducted to understand where people travel after crossing from Mexico into the United States. The OD analysis was conducted using Wi-Fi/Bluetooth receivers placed at strategic locations which pick up signals from cell phones in passing vehicles. Capturing these signals at multiple locations allows for tracing trips from the POE. Receivers were placed at several locations around the Yuma region to identify:

- The percentage of trips that stay in San Luis after crossing
- The percentage of trips that leave San Luis but stay in the greater Yuma area
- The percentage of trips that leave the Yuma region after crossing into the United States

OD data was collected for a Monday and a Saturday to understand differences between weekday and weekend travel. Wi-Fi/Bluetooth receivers were placed at seven locations around the region to understand regional travel patterns:

- Inbound travel lanes at the San Luis I POE
- Northbound on US 95, north of County 22nd St
- Northbound on Avenue B, north of State Route (SR) 195
- Eastbound on SR 195, east of Avenue B
- Westbound on Interstate 8 (I-8), west of 4th Avenue in Winterhaven, CA
- Northbound on US 95, north of the General Motors Proving Ground
- Eastbound on I-8, east of Foothills Boulevard

Figure 8 shows the captured Monday travel patterns and **Figure 9** shows the captured Saturday travel patterns. The Monday OD results showed that most trips were remaining in San Luis, at 53%. Of the observed trips, approximately 23% leave the Yuma urban area entirely. Of the observed travel patterns observed on Saturday, 52% of trips remained in San Luis, while only 19% left the greater Yuma urban area entirely. More vehicles stayed in the Yuma region on the Saturday than on Monday.

Figure 8. Monday Regional OD Study Results

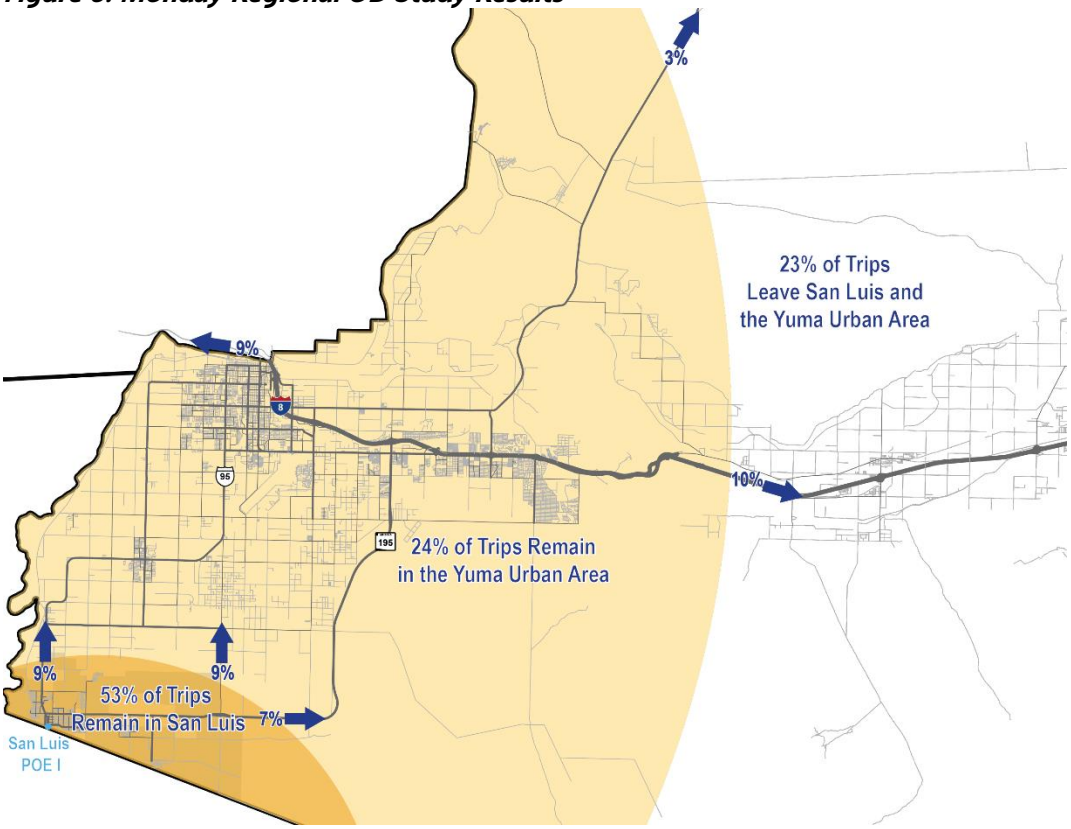
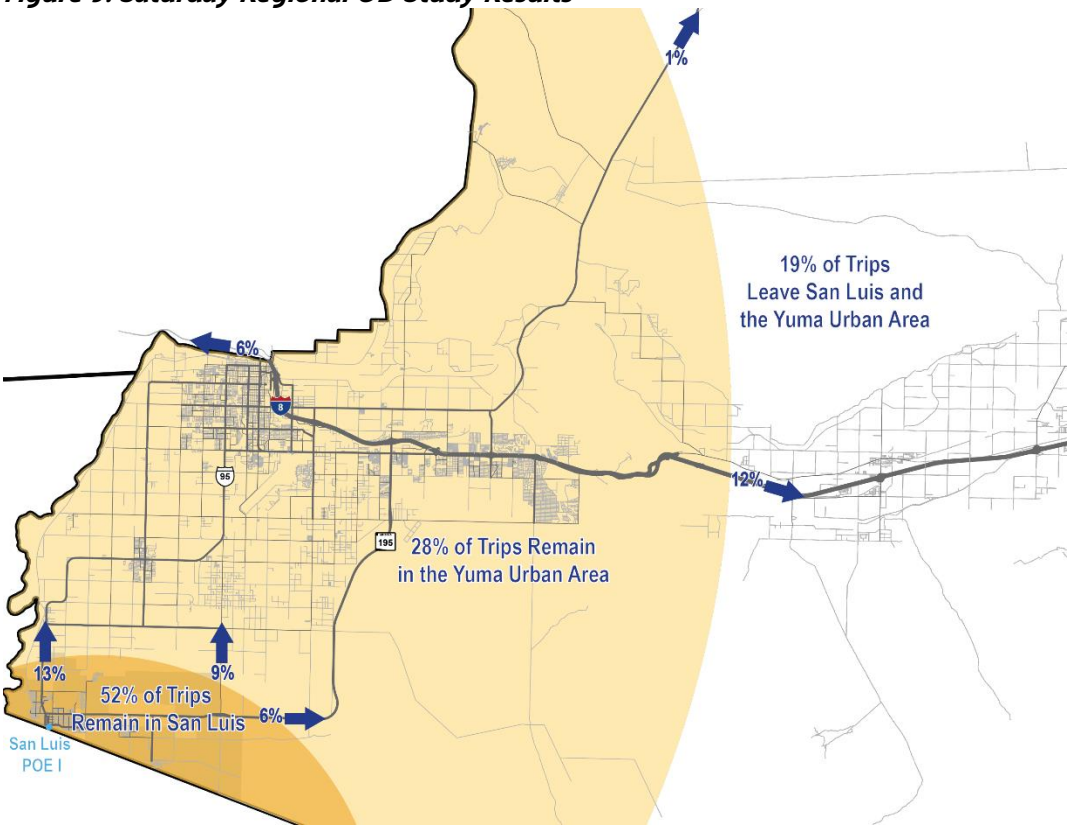


Figure 9. Saturday Regional OD Study Results



VEHICULAR AND PEDESTRIAN INTERCEPT SURVEY

A survey was conducted of people crossing from Mexico into the United States to get a deeper understanding of how and why the San Luis I POE is used. This survey helped identify trends related to trip purpose, duration of trips, frequency of travel, anticipated spending levels in the United States, and modes of travel used in San Luis. The survey was conducted in both English and Spanish on the Mexican side of the border while drivers and pedestrians were waiting to cross into the United States.

Project team members administered the survey from January 21st to January 25th, 2022, from 7:00 AM to 12:00 PM and 2:00 PM to 5:00 PM. Survey administrators conducted an interview survey and an accompanying observational survey based on visible characteristics. The interview survey questions and response options are provided in **Table 3** and the observational survey questions are provided in **Table 4**.

Table 3. Interview Survey Questions

QUESTION	POTENTIAL ANSWERS
Are you a Mexican National or a US Citizen?	a. Mexican National b. U.S. Citizen
Where are you going today?	a. San Luis Only b. Yuma c. Outside of Yuma
What is the primary purpose for your trip today?	a. Shopping b. School c. Family/Social Visit d. Tourism/Vacation e. Work/Business f. Medical/Health Reasons g. Air Travel h. Other
How long will you be staying in the US on this trip?	Number of hours or days of trip
Which answer best describes how frequently you cross the border?	a. 5+ times per week b. 2-4 times per week c. 1 time per week d. 1-2 times per month e. Less than 1 time per month f. First time crossing
How much money do you expect to spend in the US on this trip?	Any dollar amount
On the amount you mentioned, approximately how much will you spend on the following:	a. Restaurants b. Shopping c. Groceries
What transportation service are you planning to use for your trip today	a. Automobile b. Motorcycle c. Taxi d. Bus e. Walk f. Bicycle g. Greyhound

Table 4. Observational Survey Questions

PROMPT	POTENTIAL RESPONSES
Survey type	a. Vehicle b. Pedestrian
Language used for survey	a. Spanish b. English
Gender of participant	a. Male b. Female
Traveler type	a. Pedestrian – Regular b. Pedestrian – Ready Lane c. Pedestrian – Sentri d. Car – Regular e. Car – Ready Lane f. Car – Sentri
Vehicle type (if applicable)	a. Car – Hatchback/Coupe/Sedan b. SUV – Compact/Crossover c. SUV – Large d. Light Truck e. Heavy Duty Truck f. Mini Van g. Commercial Van h. Recreational Vehicle/Motor Home i. Other
License Plate	a. Sonora b. Baja California c. Other Mexican d. Arizona e. California f. Other U.S.
Number of adults	1 – 5+ adults
Number of children	1 – 5+ children
Day surveyed	a. Monday b. Friday c. Saturday d. Sunday
Time of survey	Time between 7:00 AM to 12:00 PM and 2:00 PM to 5:00 PM
Time to complete survey	a. 3 minutes b. 4 minutes c. 5 minutes d. 6 minutes e. 7+ minutes

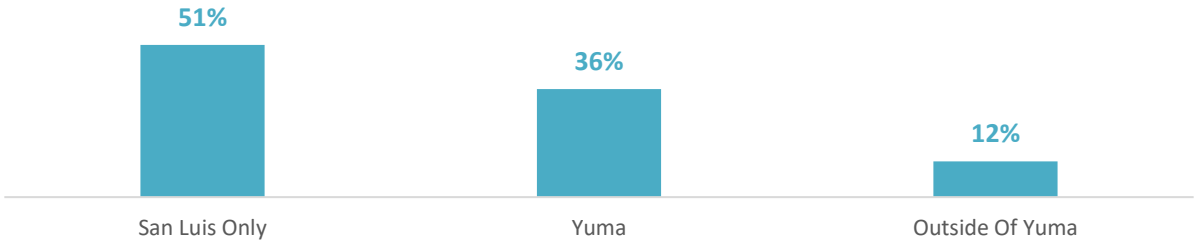
A total of **929 surveys** were collected, with the largest number of surveys conducted on Saturday. Of the collected surveys, 56% were pedestrian surveys and 44% were vehicle surveys. The results of the interview and observational surveys are summarized on the following pages.

The typical survey was...

- Answered by a Mexican national
- A license plate from Arizona (77%) of those driving a vehicle
- Preformed in Spanish
- A solo traveler (74%) or had a companion (22%)
- Mostly answered by pedestrians (57%)
- Adults only (87%)
- Either a Sedan (15%) or light truck (9%)
- Under 3 minutes (99%)

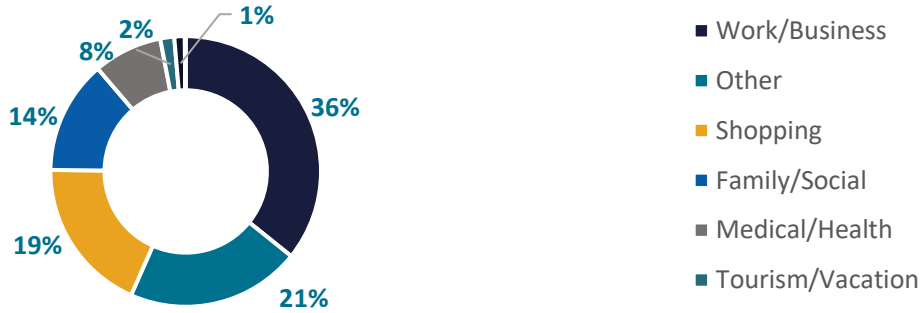
Trip Destination. Survey respondents were most commonly traveling to San Luis only, at 51%. Travel from the border to areas outside of the greater Yuma only accounted for 12% of respondents. **Figure 10** shows the percentage of respondents by destination.

Figure 10. Responses by Destination Location



Trip Purpose. Respondents were most commonly crossing the border for business or shopping. Of respondents that answered "Other", the majority were traveling to their home. No respondents reported that they were crossing the border for air travel. School and tourism also accounted for less than three percent of all trip purposes. **Figure 11** shows the breakdown by trip purpose. Most respondents reported that their trip was anticipated to be less than one day; only 2% of respondents reported that they would be staying for over 1 week.

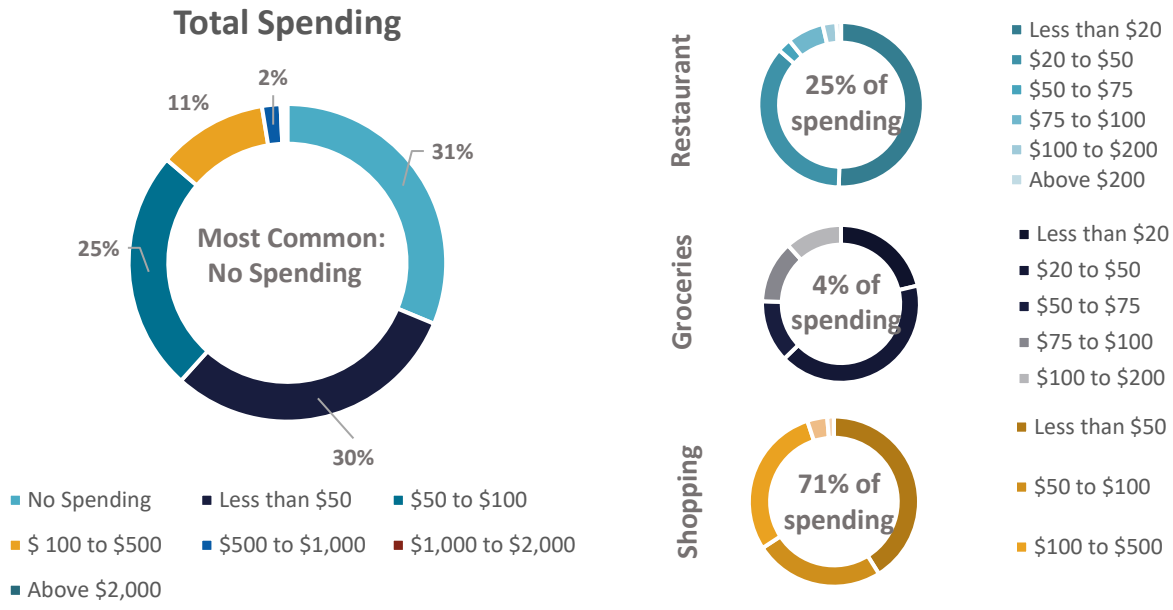
Figure 11. Responses by Trip Purpose



Trip Spending. Respondents reported the approximate amount they anticipated spending while on their trip overall, as well as in specific economic generating categories: restaurants, groceries, and shopping. **Figure 12** shows the total spending and spending by category reported by respondents. Many respondents anticipated spending no money at all, at 31%. Most respondents that did intend to spend less than $100.

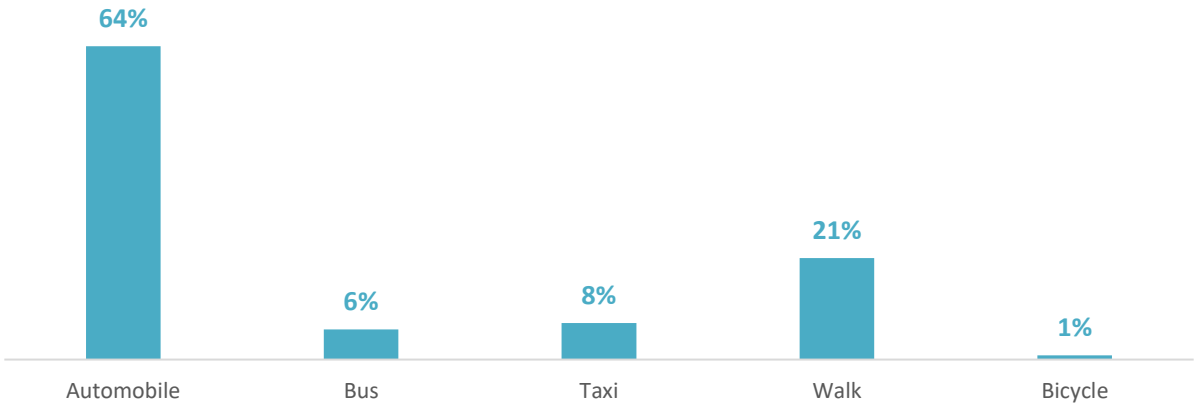
Most spending was planned for shopping, accounting for 71% of the reported spending, with groceries being the smallest, at 4%. For all three spending categories, most respondents anticipated spending less than $50 on each.

Figure 12. Responses by Anticipated Spending



Method of Transportation. Most respondents reported they would be using their personal vehicle, as shown in **Figure 13**. Bicycling was least common, with only 1% of respondents planning to bike to a destination on their trip.

Figure 13. Responses by Mode of Travel during Trip



PARKING DATA COLLECTION

Parking conditions within Downtown San Luis are significantly impacted by traffic generated by the San Luis I POE. Existing parking conditions were analyzed to identify potential actions the City can consider to better manage and limit the negative impacts parking in the downtown area. To best identify recommendations for parking management, the existing demand in the downtown area was identified by collecting occupancy data through drone footage and interviews with major agricultural employers.

PARKING INVENTORY AND OCCUPANCY

Parking inventory and occupancy was collected via drone footage. A drone with a high-quality camera was flown over the downtown area five times, from 8:00 AM to 5:00 PM on January 10th, 2022, to create tiled imagery of the downtown area. From this aerial imagery, the total number of parking spaces along with occupied spaces on- and off-street could be counted. There are a total of 4,822 parking spaces within the study area as shown in **Table 5**.

Table 5. Parking Inventory by Type

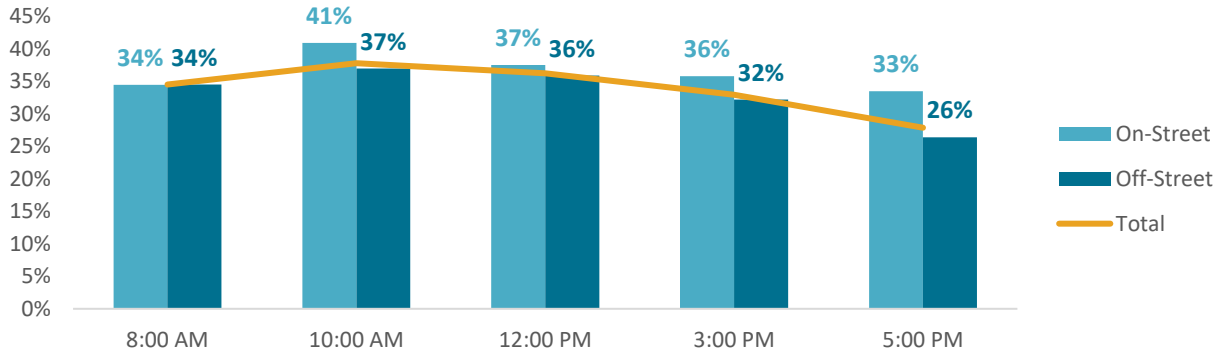
PARKING TYPE	INVENTORY
On-Street	993 spaces
Off-Street	3,829 spaces
Total	**4,822 spaces**

Parking demand was collected over a 9-hour period through drone footage. Occupied spaces were recorded to determine peak occupancy and occupancy trends throughout a typical Monday during peak agricultural season. Parking demand was collected at the following times:

- 8:00 AM
- 10:00 AM
- 12:00 PM
- 3:00 PM
- 5:00 PM

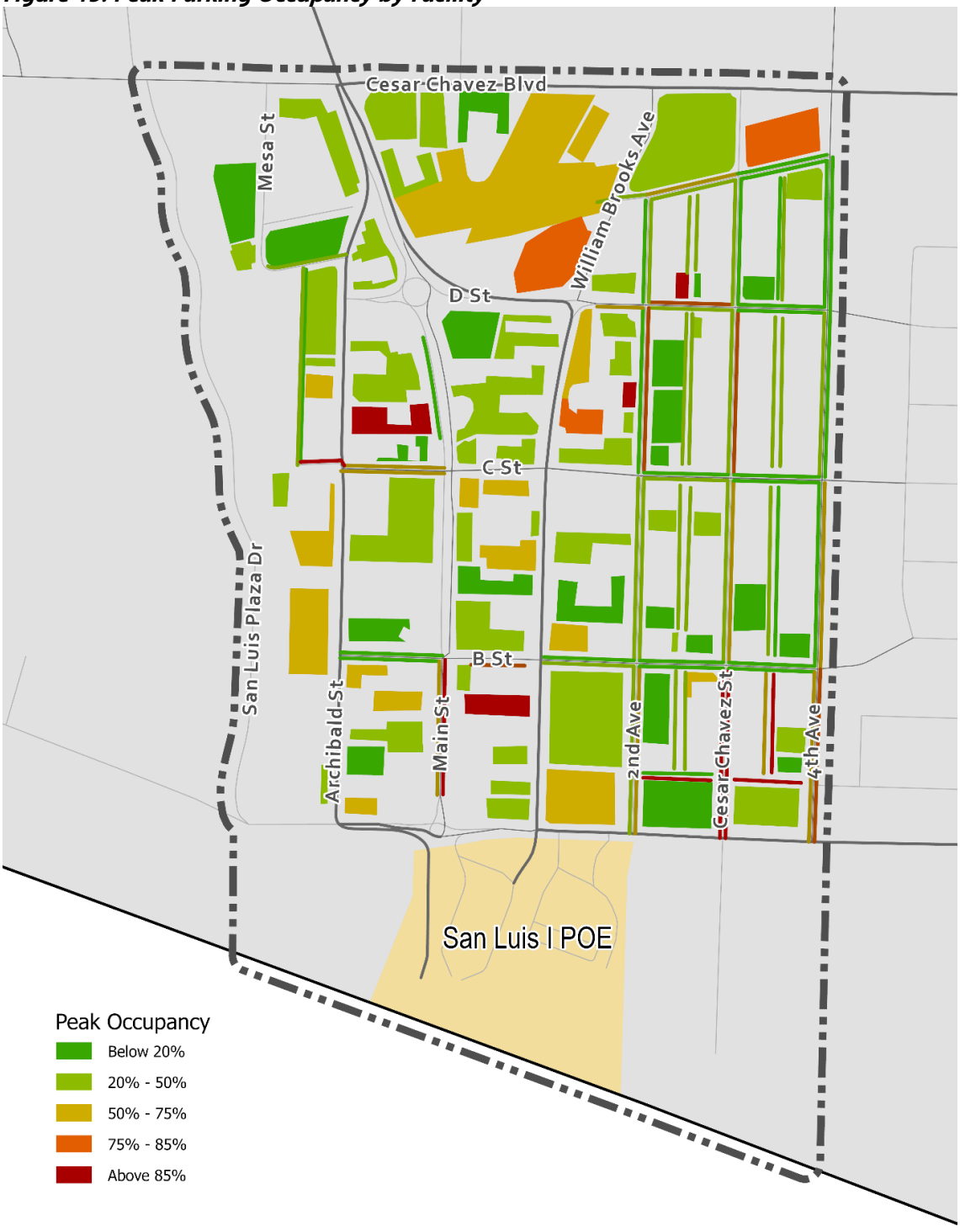
Of the observed times, peak occupancy for the study area was reached at 10:00 AM. On-street occupancy was observed to be higher in all collected times compared to off-street parking. Parking occupancy was lowest in the afternoon, reaching a minimum of 28% occupied at 5:00 PM. Parking utilization by time of day is shown in **Figure 14**.

Figure 14. Parking Occupancy by Time of Day



Parking occupancy was observed by facility for the peak observed time of 10:00 AM. Most off-street facilities are significantly underutilized, with many parking lots below 50% occupancy under peak conditions. Although on-street facilities are typically underutilized to the northern half of the study area, on-street parking becomes overutilized near the POE. Parking occupancy by facility is shown in **Figure 15**. Detailed parking occupancy data is provided in **Appendix D**.

Figure 15. Peak Parking Occupancy by Facility



AGRICULATURAL EMPLOYER INTERVIEWS

The San Luis I POE serves as the gateway for Mexican farm workers who serve as the primary employment base for agricultural operations throughout Yuma County. Workers often drive across the border, then park in Downtown San Luis and board shuttle buses to agricultural operations north of San Luis. To better understand the circulation and parking patterns of agricultural company shuttles and employees, five agricultural employers were contacted to discuss their employee pick-up and drop-off procedures. Three of the five agricultural employers responded to requests for interviews:

- Riverside AG Works LLC
- Bravo Harvesting
- Hilltown Packing

The agricultural companies were asked a series of questions from a questionnaire. The questions included are shown in **Table 6**.

Table 6. Agricultural Company Questionnaire

QUESTION	PROVIDED ANSWERS
How many buses do you run on a typical day during harvest season to shuttle workers from downtown San Luis to fields?	▪ 8 ▪ 12 ▪ 30-40
At what time(s) do your buses come to pick employees up in the morning?	▪ 4:00 AM – 5:00 AM ▪ 5:00 AM – 6:00 AM ▪ 11:00 AM
Approximately how many employees do you pick up on each bus?	▪ 20 ▪ 25-30 ▪ 48
Where do you currently pick-up and drop-off workers in downtown San Luis?	▪ Renting a parking lot at Urtuzuastegui Street and Cesar Chavez St ▪ Location varies, pick up can be at Circle K or at parking lots ▪ Have a yard at 4th Ave and Urtuzuastegui St, across from Century Link
Where do you park your buses when they are not in use?	▪ Vehicles stay at the field ▪ Vehicles have a yard for when not in use
At what time(s) do you drop-off workers in downtown San Luis in the afternoon?	▪ 1:00 PM – 4:00 PM ▪ 4:30 PM ▪ 5:00 PM – 6:00 PM
What improvements to circulation and parking would you like to see to improve operations and circulation from your perspective, such as consolidated pick-up/drop-off locations, remote parking locations, etc?	▪ Pick-up is very close to the centralized area. If it were not as close, there would be less issues with traffic ▪ Implementing designated parking for workers
Is there anything else you would like to share to help us understand the nature of your practices and how they are not efficient?	▪ Allows portable restrooms to be driven through San Luis. When picking up employees in San Luis, they have to go back to Yuma to pick up portable restrooms, making an extra trip

The results from the questionnaire are summarized below:

Time of Employee Pick-Up:
4:00 AM – 6:00 AM, 11:00 AM

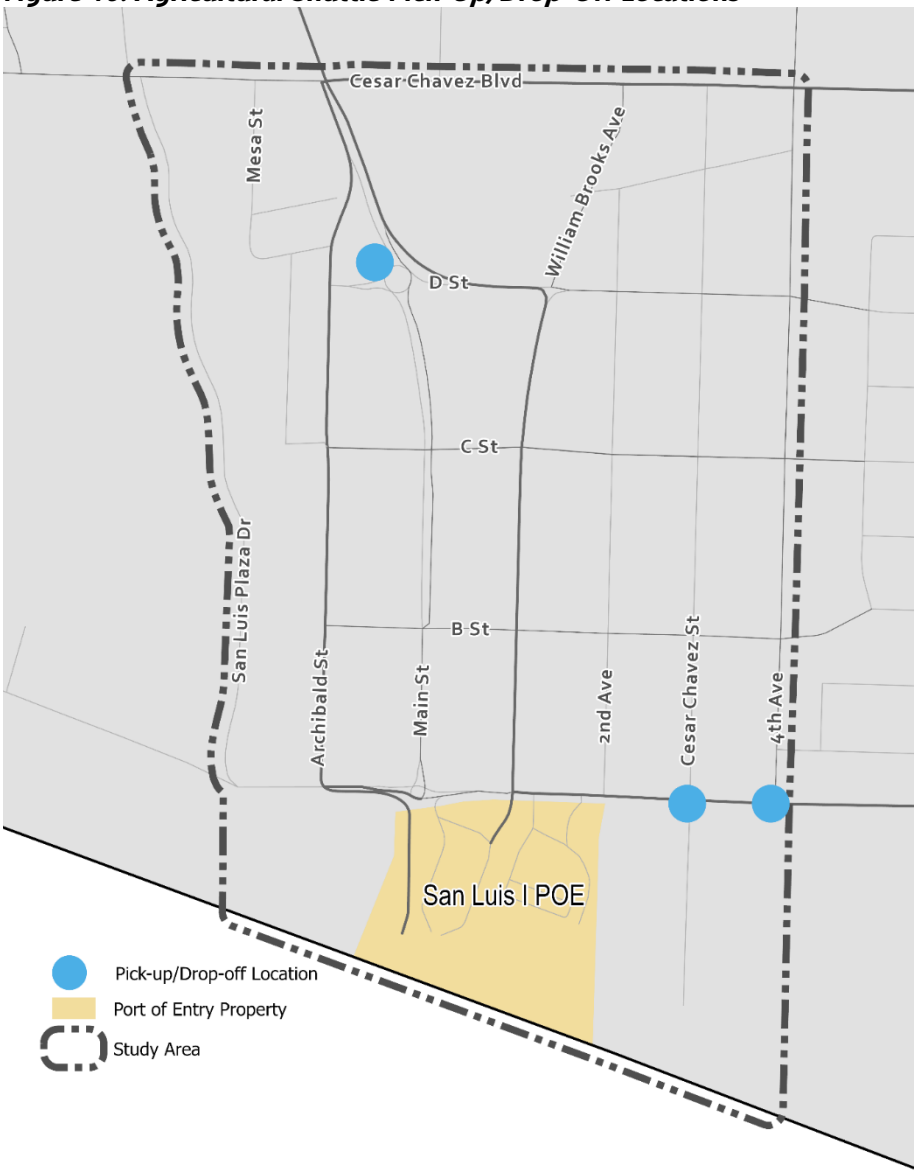
Time of Employee Drop-Off:
1:00 PM – 6:00 PM

Number of Buses per Day: 8 to 12, 40

Number of Employees per Bus: 20 to 50

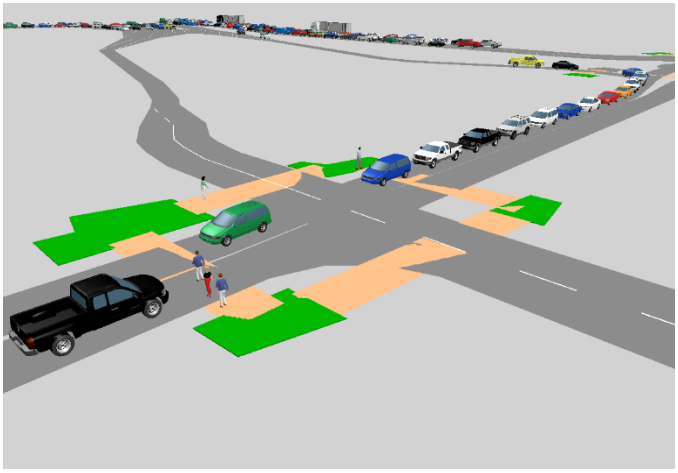
Bus Drop-Off and Pick-Up Locations are shown in **Figure 16**.

Figure 16. Agricultural Shuttle Pick-Up/Drop-Off Locations



PHASE 2
ANALYZE

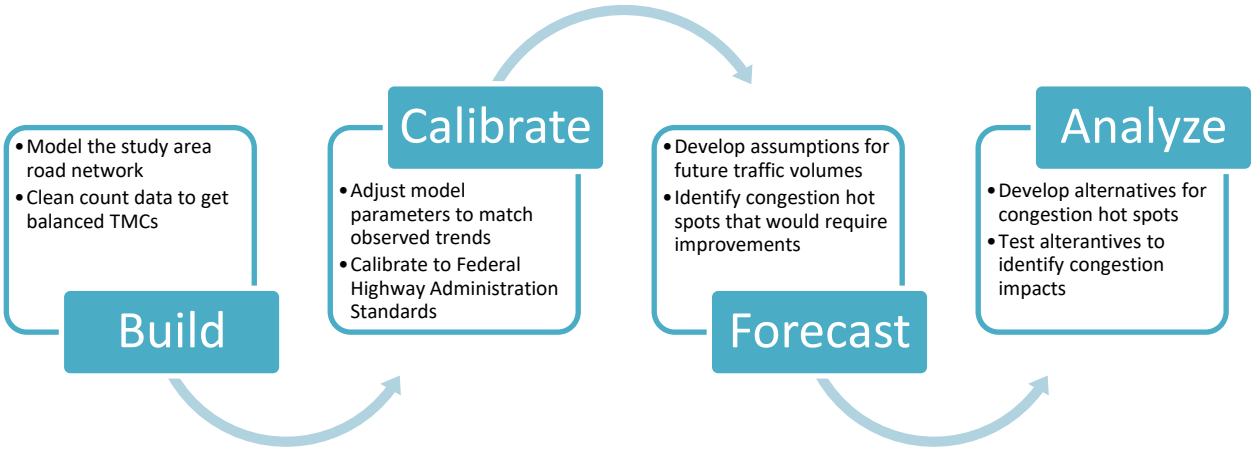
PHASE 2 – ANALYZE



A PTV Vissim traffic simulation model was built to analyze current and anticipated future traffic conditions in the study area as well as perform an alternatives analysis of potential improvements. This model simulates each vehicle and pedestrian counted as part of Phase 1 of the project to quantify congestion and test alternatives. An example screenshot of the model is shown in the image to the right. The simulation modeling is a multi-step process as shown in **Figure 17**. In addition to the current-year model, two horizon years were modeled to evaluate short- and long-term transportation system needs in the study area:

- **Opening Year** simulates the year that the expanded San Luis I POE opens
- **20-Year** simulates 20 years after the Opening Year

Figure 17. Traffic Simulation Modeling Process



To determine traffic performance for existing and future traffic conditions, a traffic operations analysis was conducted using the *Highway Capacity Manual (HCM)*. Level of Service (LOS) quantifies the operating conditions at intersections, ranging from A (very little delay) to F (long delays and congestion). The minimum acceptable LOS for an intersection approach is LOS E for rural areas. **Table 7** shows the threshold for each LOS for signalized and unsignalized intersections.

Table 7. LOS Definitions

LEVEL OF SERVICE	SIGNALIZED INTERSECTION AVERAGE TOTAL DELAY (SEC/VEH)	UNSIGNALIZED INTERSECTION AVERAGE TOTAL DELAY (SEC/VEH)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

CURRENT YEAR MODEL

The current year model showed that intersections operate at LOS D or better in both the morning (AM) and afternoon (PM) peak hours. The resulting AM and PM peak hour LOS for signalized are shown in **Figure 18** and **Figure 19**, respectively. Although all intersections operate with acceptable LOS in existing conditions, there are specific approaches that operate poorly:

- The southbound approach operates at an LOS F during the AM peak hour and LOS E in PM peak hour
- The eastbound approach operates at an LOS E during AM peak hour and LOS F in the PM peak hour
- William Brooks and Urtuzuastegui Street:
    - The eastbound approach operates at an LOS F in both the AM and PM peak hour
    - The westbound approach operates at an LOS E in the PM peak hour

Detailed Current Year Model LOS and queue results are provided in **Appendix E**.

Figure 18. Current Year Model AM LOS

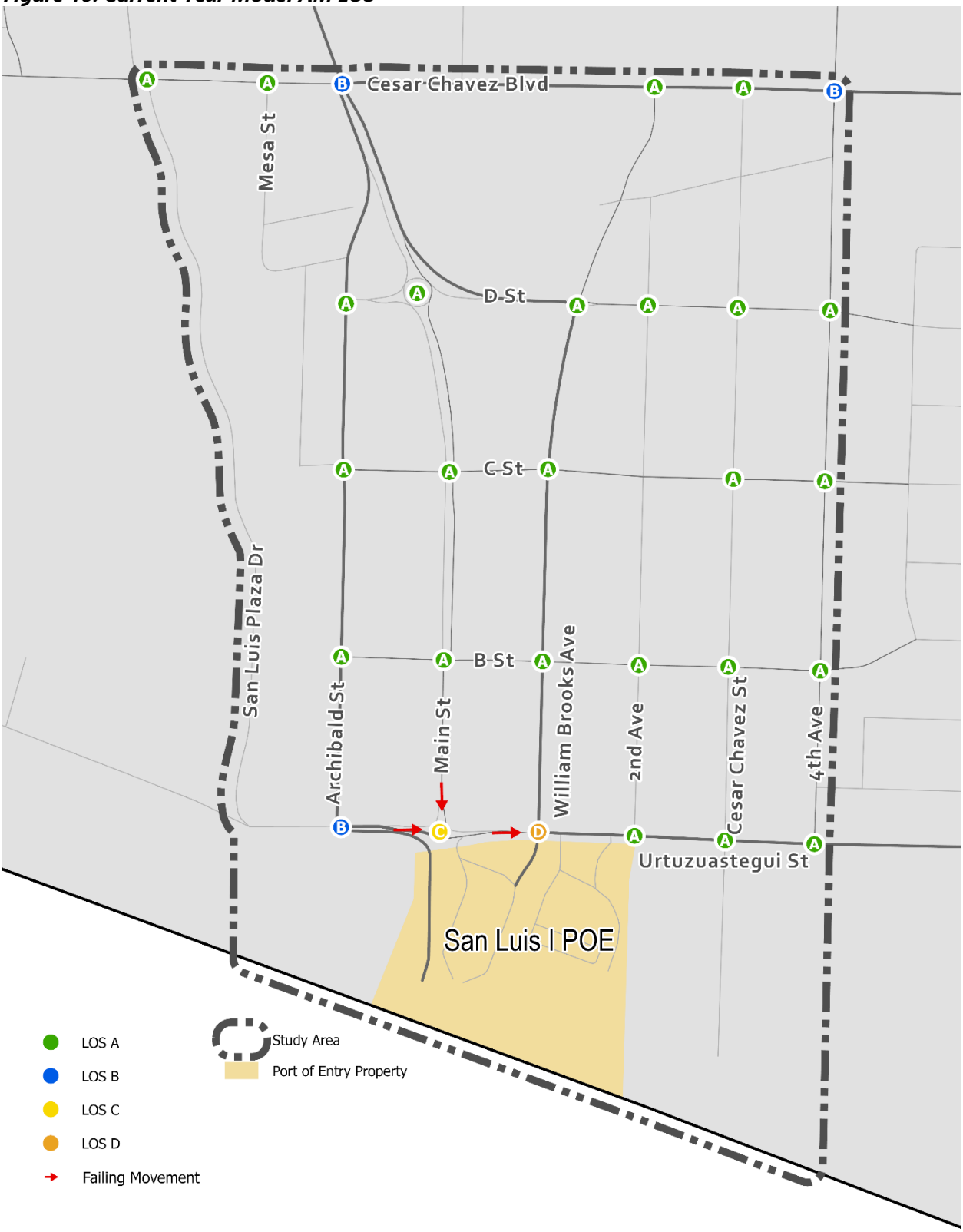
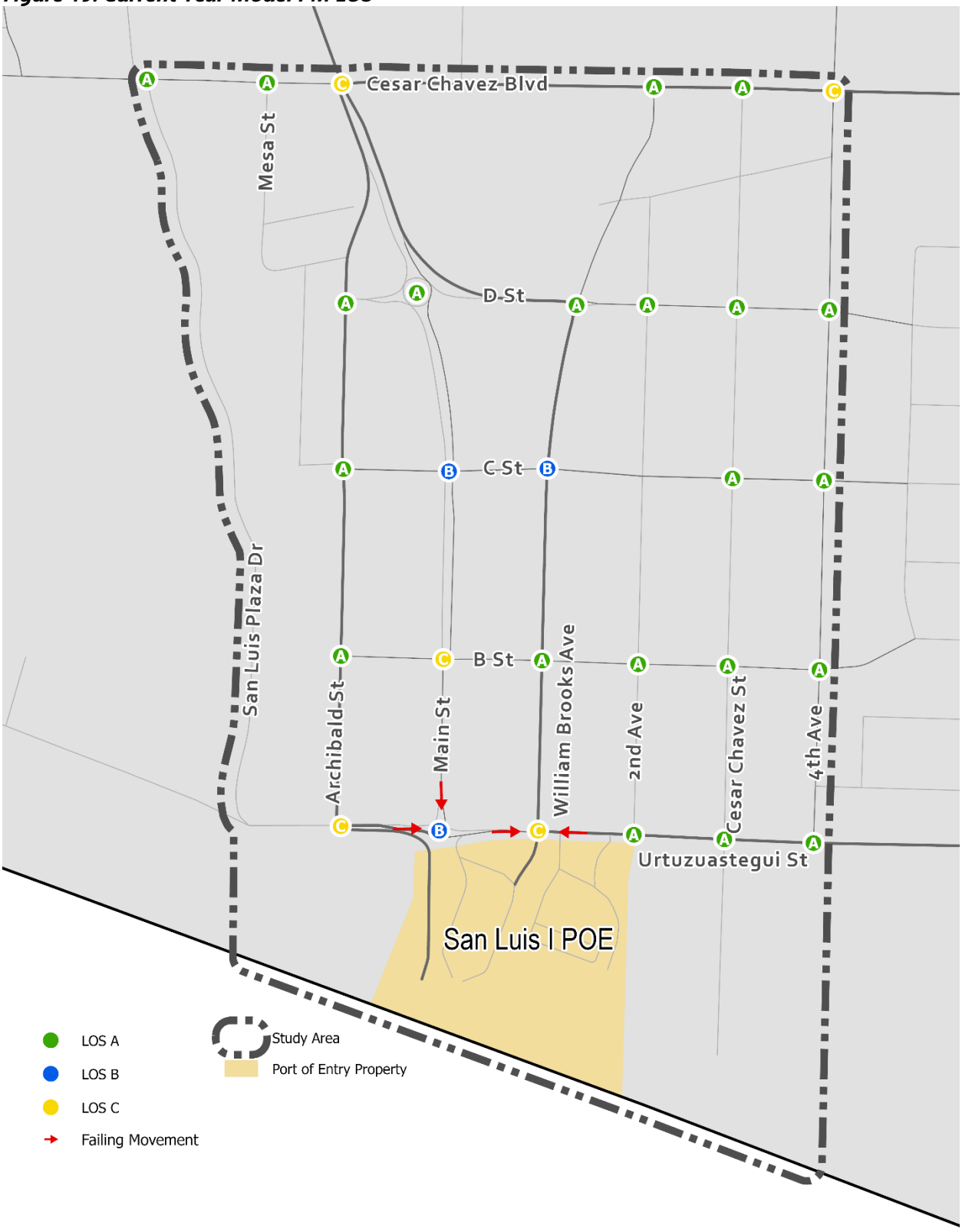


Figure 19. Current Year Model PM LOS



OPENING YEAR MODEL

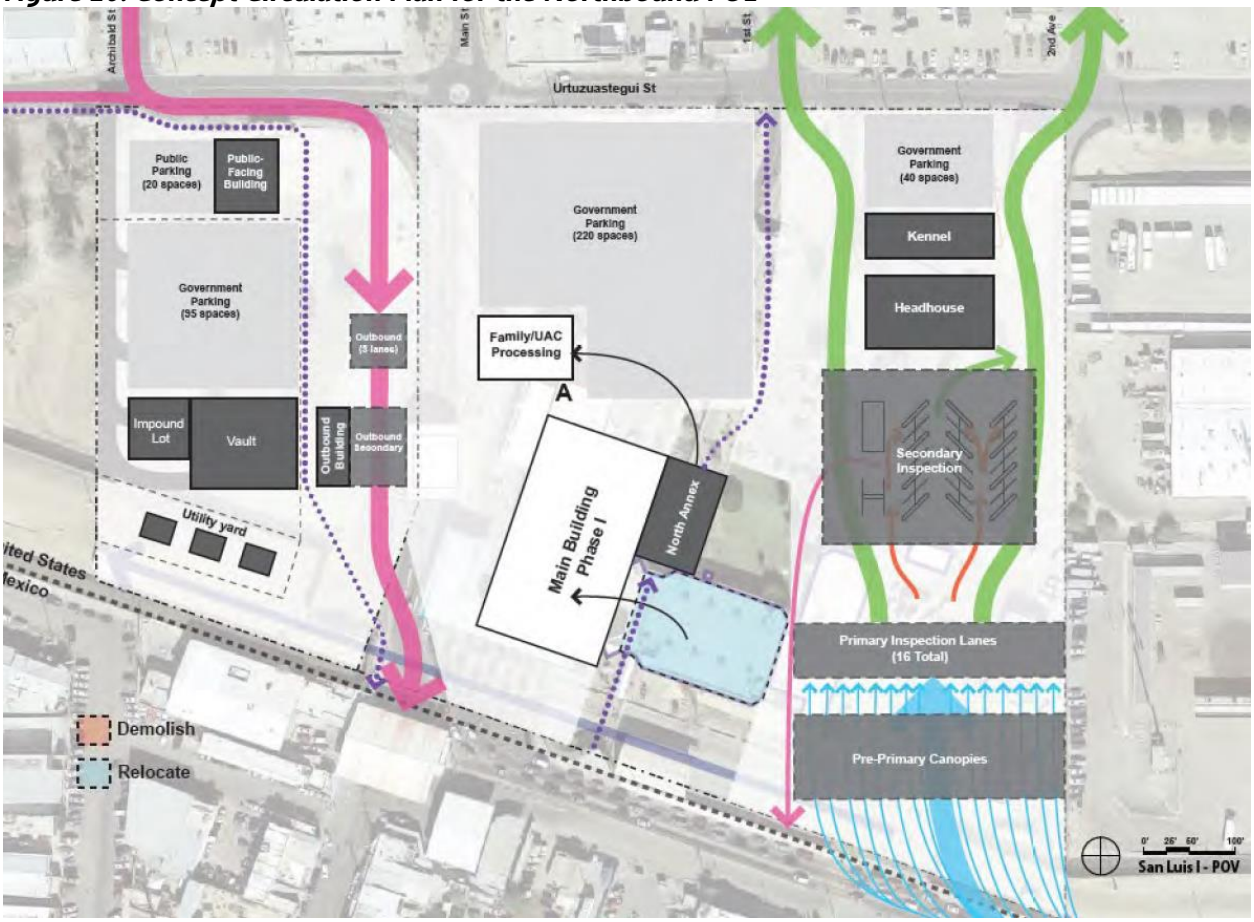
The Opening Year Model simulates Downtown San Luis right after the expanded northbound and southbound POEs are fully operational.

ASSUMED NETWORK CHANGES

Several changes to the downtown transportation network were added to the simulation model to reflect assumed conditions during the POE opening year. These network changes are:

- **Expanded Northbound POE.** Based on preliminary circulation concept provided to the City by GSA, shown in **Figure 20**, the number of inbound check lanes will be doubled from eight to 16 lanes and access into Downtown San Luis will be modified. The current primary exit from the POE located just east of Main Street will be closed, the current secondary exit at William Brooks Avenue will become the primary exit, and a new secondary exit will be constructed at 2nd Avenue. Additionally, pedestrians will now exit the Northbound POE west of William Brooks Avenue to reduce vehicle-pedestrian conflicts.

Figure 20. Concept Circulation Plan for the Northbound POE



Source: Final Environmental Impact Statement for Expansion and Modernization of the San Luis I Land Port of Entry

- **Expanded Southbound POE.** In conjunction with the expansion of the Northbound POE by GSA, the Mexican government is also pursuing reconfiguration and expansion of the Southbound POE. At the conceptual level, the plan is to double the number of southbound check lanes and realign southbound traffic to the Archibald Street alignment and move southbound pedestrian traffic to the east of the southbound travel lanes to reduce vehicle-pedestrian conflicts. A preliminary concept of the Southbound POE is shown in **Figure 21**.

Figure 21. Concept Circulation Plan for the Southbound POE

Source: City of San Luis Rio Colorado

- **Cesar Chavez Boulevard Multimodal Improvements Project.** The City of San Luis received $33 million from the State of Arizona to widen and improve five miles of Cesar Chavez Boulevard between San Luis Plaza Drive and Avenue E. While the final design process may change some elements of the project, the improvements included in a 2014 conceptual design for the project were included in the traffic simulation model, including:
  - One additional travel lane in each direction
  - A roundabout at San Luis Plaza Drive/Escondido Street
  - A center median that prohibits left turns from side street Mesa Street, William Brooks Avenue, and Cesar Chavez Street
  - A traffic signal at 4th Avenue

ASSUMED TRAFFIC VOLUME GROWTH

As both the Northbound and Southbound POEs are expanded, it is anticipated that more people will travel through the San Luis I POE during peak periods as a result of the reduction in wait times from the additional capacity. To account for this increased peak period demand, traffic volumes

to and from the POE were increased by 20% in the Opening Year. All other traffic volumes in the traffic simulation model were left at the same levels as the Current Year Model.

OPENING YEAR TRAFFIC PERFORMANCE

Figure 22 and **Figure 23** provide the LOS for the study area intersections during the AM and PM Monday peak hour conditions, respectively. All movements in the AM peak conditions operate at an acceptable LOS in the Opening Year Model. The following movements are notable results that are approaching or at failing conditions in the PM peak hour for the Opening Year Model:

- **William Brooks Avenue and Urtuzuastegui Street**
  - The overall intersection operates at a **LOS E**
  - All northbound movements are operating at a **LOS F**
  - The westbound through and right turn movements operate at a **LOS F**
- **2nd Avenue and Urtuzuastegui Street**
  - The overall intersection operates at a **LOS E**
  - The northbound through movement operates at a **LOS F**
  - The southbound through movement operates at **LOS D**
  - All westbound movements operate at a **LOS F**
- **Cesar Chavez Street and Urtuzuastegui Street**
  - The westbound through and right-turn movements operates at a **LOS F**
  - The westbound left movement operates at a **LOS E**
- **4th Avenue and Urtuzuastegui Street**
  - The overall intersection operates at a **LOS E**
  - The southbound left-turn movement operates at a **LOS E** and the southbound right-turn movement operates at a **LOS F**
  - The westbound approach operates at a **LOS F** for all movements
- **Main Street and B Street**
  - The westbound left-turn and right-turn movements operate at a **LOS E**
- **US 95 and Cesar Chavez Boulevard**
  - The southbound left-turn movement operates at a **LOS D**
  - The westbound left-turn movement operates at a **LOS F**

Detailed Opening Year Model LOS and queue results are provided in **Appendix E**.

Figure 22. Opening Year Model AM LOS

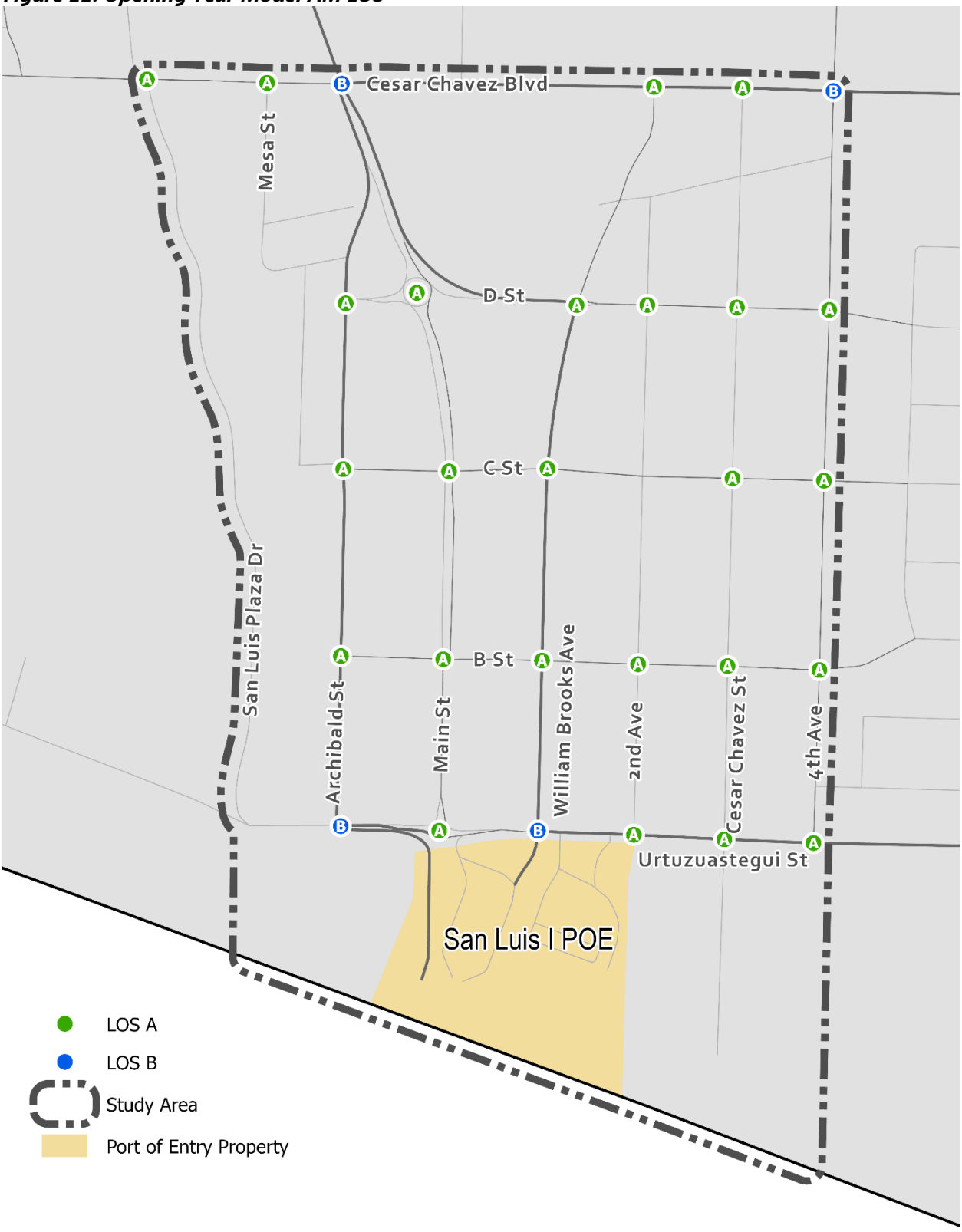
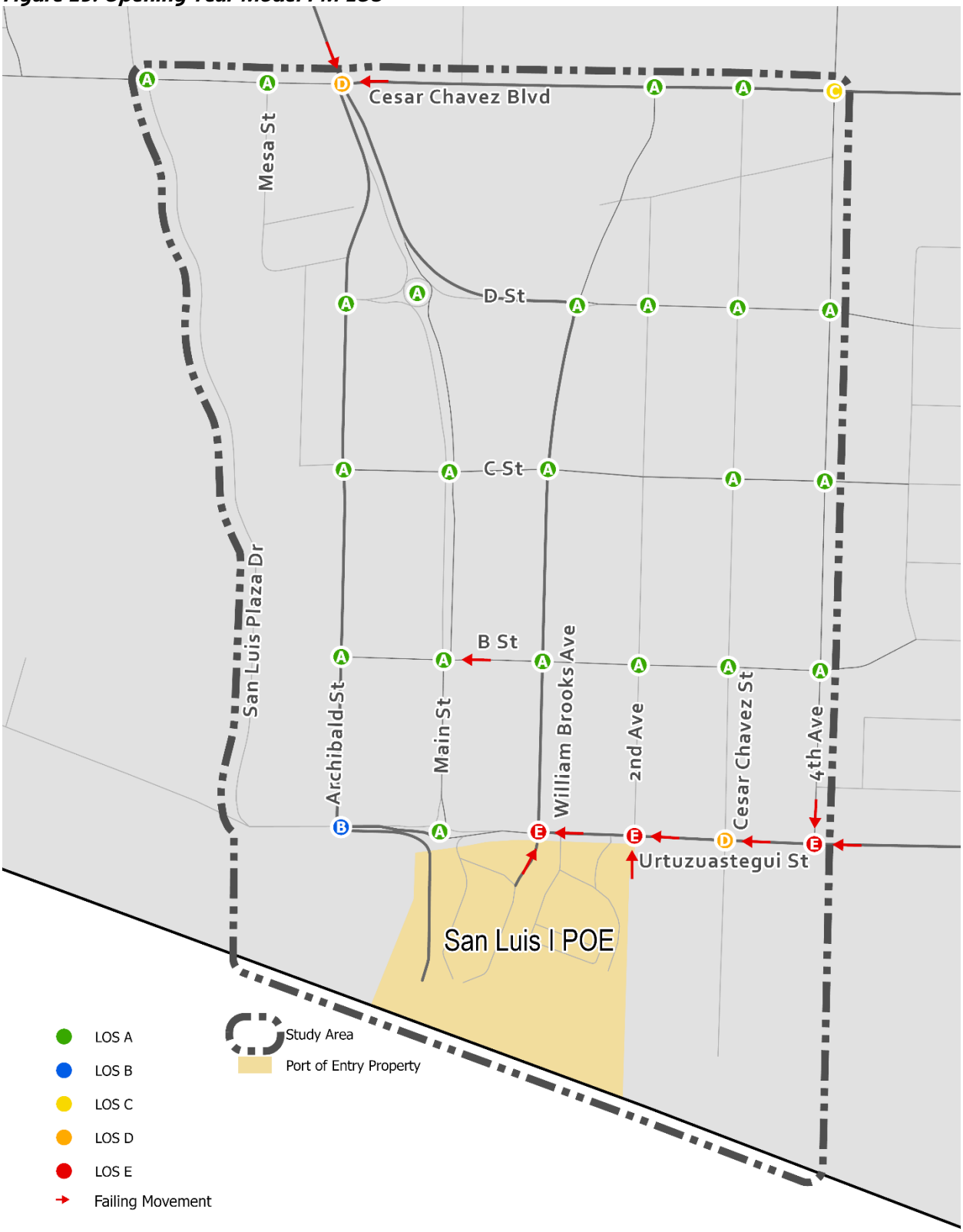


Figure 23. Opening Year Model PM LOS



20-YEAR MODEL

The 20-Year Model simulates Downtown San Luis 20 years after the Opening Year (the year the expanded northbound and southbound POEs are fully operational). All network changes in the Opening Year Model were carried forward to the 20-Year Model.

ASSUMED TRAFFIC VOLUME GROWTH

Based on historical growth in traffic volumes observed in San Luis in recent years, a 2% annual growth rate was assumed to grow traffic volumes from the Opening Year Model to the 20-Year Model. All TMCs in the model were grown by the same 2% annual growth rate.

20-YEAR TRAFFIC PERFORMANCE

Figure 24 and **Figure 25** provide the LOS for the study area intersections during the AM and PM Monday peak hour conditions, respectively. The following movements are notable results that are approaching or at failing conditions in the AM peak hour for the 20-Year Model:

- **William Brooks Avenue and Urtuzuastegui Street**
  - The northbound left movement operates at a **LOS E**
  - The westbound approach operates at a **LOS E** in all movements
- **US 95 and Cesar Chavez Boulevard**
  - The eastbound left movement operates at a **LOS E**
  - The westbound left movement operates at a **LOS D**
- **4th Avenue and Cesar Chavez Boulevard**
  - The northbound approach operates at a **LOS D** for all movements

The following movements are notable results that are approaching or at failing conditions in the PM peak hour for the 20-Year Model:

- **William Brooks and Urtuzuastegui Street**
  - The overall intersection operates at a **LOS E**
  - The northbound approach operates at a **LOS E** for all movements
  - The eastbound through movement operates at **LOS E**
  - The westbound approach operates at **LOS F** for all movements
- **2nd Avenue and Urtuzuastegui Street**
  - The overall intersection operates at a **LOS E**
  - The northbound through movement operates at a **LOS E** and the northbound right-turn movement operates at **LOS D**
  - The southbound right movement operates at a **LOS E**
  - The westbound approach operates at a **LOS F** for all movements

- **Cesar Chavez Street and Urtuzuastegui Street**
  - The overall intersection operates at a **LOS E**
  - The northbound approach operates at a **LOS E** for all movements
  - The westbound approach operates at a **LOS F** for all movements
- **4th Avenue and Urtuzuastegui Street**
  - The overall intersection operates at a **LOS F**
  - The southbound approach operates at a **LOS F** for all movements
  - The westbound approach operates at a **LOS F** for all movements
- **Main Street and B Street**
  - The westbound left and through movements operate at a **LOS E**
- **Main Street and C Street**
  - The eastbound left and through movements operate at a **LOS E**
- **San Luis Plaza Drive/Escondido Street and Cesar Chavez Boulevard**
  - The northbound approach operates at a **LOS F** for all movements
  - The southbound approach operates at a **LOS E** for all movements
- **Cesar Chavez Boulevard and Main Street**
  - The southbound left and through movements operate at a **LOS E**
  - The eastbound left-turn movement operates at a **LOS F**
  - The westbound left-turn movement operates at a **LOS F**
- **4th Avenue and Cesar Chavez Boulevard**
  - The northbound left-turn movement operates at a **LOS E**
  - The southbound approach operates at a **LOS E** for all movements
- **Cesar Chavez Boulevard and Mesa Street**
  - The northbound right-turn movement operates at a **LOS F**
  - The eastbound through movement operates at a **LOS E**

Detailed 20-Year Model LOS and queue results are provided in **Appendix E**.

Figure 24. 20-Year Model AM LOS

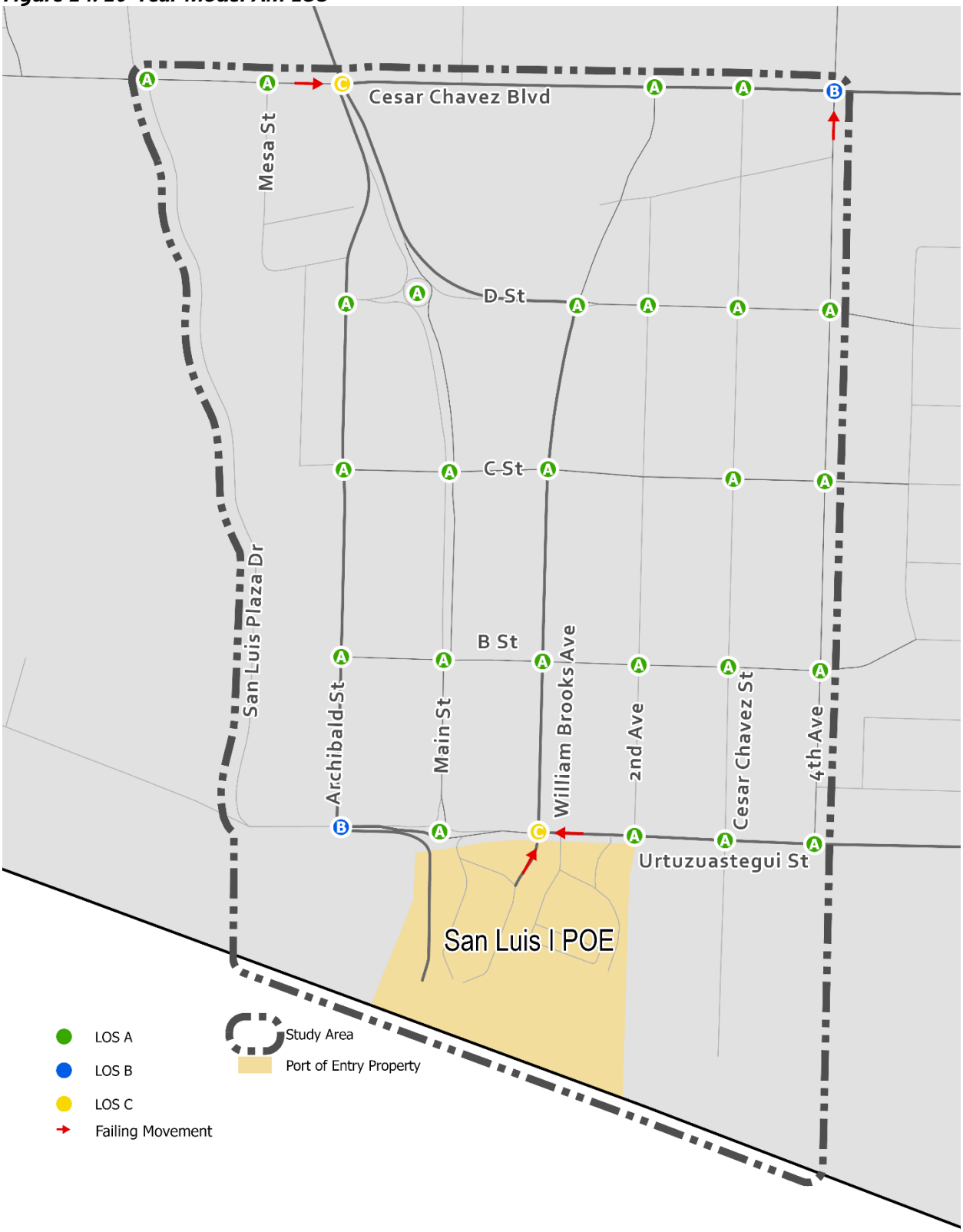
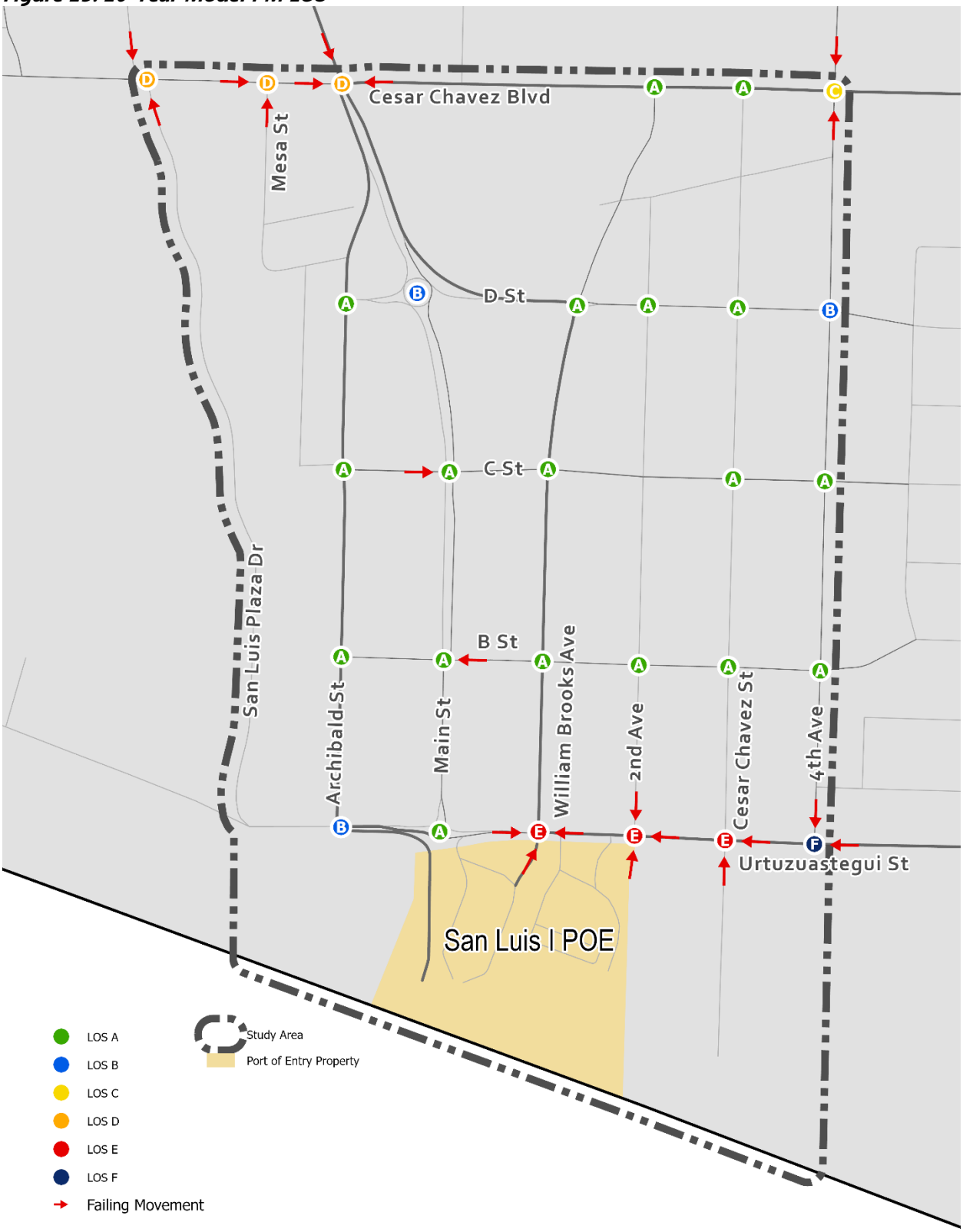


Figure 25. 20-Year Model PM LOS



CIRCULATION ALTERNATIVES

Based on the results from the Opening Year and 20-Year Models, five areas of constraint were identified. While congestion was identified at more than these five locations in the models, solving the congestion issues at these five locations will address the cascading congestion impacts at nearby intersections. The primary areas of constraint are:

- William Brooks Avenue and Urtuzuastegui Street
- Main Street and B Street
- Cesar Chavez Boulevard and Main Street
- Cesar Chavez Boulevard and 4th Avenue
- Cesar Chavez Boulevard and Mesa Street

A series of circulation alternative concepts were developed for each constrained intersection. Each concept was assessed in the Opening Year and 20-Year Models to determine which concepts best solve the anticipated congestion issues while also maintaining multimodal safety and supporting downtown's character and businesses. Detailed circulation alternative LOS and queue results for the Opening Year and 20-Year Models are provided in **Appendix E**.

WILLIAM BROOKS AVENUE AND URTUZUASTEGUI STREET

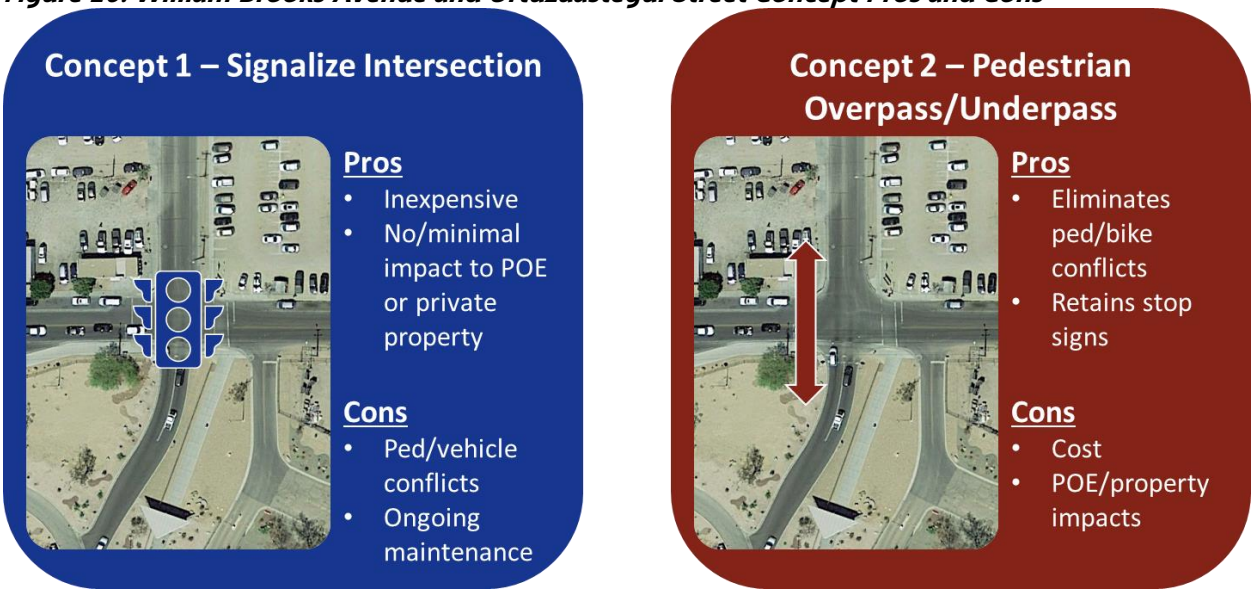
Two concepts were developed for the intersection of William Brooks Avenue and Urtuzuastegui Street to address congestion and pedestrian-vehicle conflict issues:

- **Concept 1 – Signalize Intersection.** The installation of a traffic signal at the main exit for the POE was analyzed as a mitigation measure to improve intersection operations. The intersection would operate with permitted left-turn phasing on all approaches and the existing lane configuration. **PLANNING LEVEL COST: $600,000**
- **Concept 2 – Pedestrian Overpass/Underpass.** Operations at William Brooks Avenue and Urtuzuastegui Street are significantly impacted by the interaction between pedestrian and vehicular traffic. A pedestrian overpass on the west leg of the intersection provides a grade-separated pathway that eliminates this pedestrian and vehicle interaction. This concept improves the safety and accessibility for pedestrians while also improving LOS and delay for vehicles. The intersection would continue to operate with stop-control on all approaches. **PLANNING LEVEL COST: $1,500,000**

Pros and cons for these two concepts are shown in **Figure 26**. Pros for Concept 1 include that it is relatively inexpensive compared to Concept 2 and there is little or no impact to the POE or other private properties adjacent to the intersection. Cons for Concept 1 include that it does not physically protect pedestrians from vehicular traffic and that traffic signals require ongoing monitoring and maintenance.

Pros for Concept 2 include that it eliminates pedestrian and vehicular conflicts and retains the existing stop control at the intersection. Cons for Concept 2 include that it is significantly more expensive than a traffic signal and there could be substantial impacts to adjacent properties through the taking of right-of-way.

Figure 26. William Brooks Avenue and Urtuzuastegui Street Concept Pros and Cons



Using the Opening Year and 20-Year Models, these concepts were modeled to quantify the congestion impacts. The LOS and vehicle delay results for the overall intersection are shown in **Table 8**. Impacts to failing movements in the Opening Year and 20-Year Models were reviewed for each concept and the results are shown in **Table 9**.

Table 8. William Brooks Avenue and Urtuzuastegui Street Overall Intersection Results

MODEL	BASELINE		CONCEPT 1		CONCEPT 2	
	AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK
Opening Year	B (14.7 sec)	E (70.8 sec)	B (17.8 sec)	B (19.2 sec)	A (7.8 sec)	B (11.3 sec)
20-Year	C (25.0 sec)	E (61.2 sec)	B (15.5 sec)	C (26.5 sec)	A (9.0 sec)	B (11.3 sec)

Table 9. William Brooks Avenue and Urtuzuastegui Street Failing Movements Results

MOVEMENT	BASELINE		CONCEPT 1		CONCEPT 2	
	OPENING YEAR	20-YEAR	OPENING YEAR	20-YEAR	OPENING YEAR	20-YEAR
NBL	F (70.2 sec)	E (49.9 sec)	A (9.9 sec)	B (14.2 sec)	B (11.5 sec)	B (11.5 sec)
NBT	F (60.6 sec)	E (42.3 sec)	B (13.9 sec)	B (16.8 sec)	B (10.1 sec)	B (10.1 sec)
NBR	F (75.1 sec)	F (51.4 sec)	B (15.8 sec)	B (17.5 sec)	B (10.7 sec)	B (10.7 sec)
WBT	F (104.3 sec)	F (118.6 sec)	C (23.2 sec)	D (38.4 sec)	B (13.0 sec)	B (13.0 sec)
WBR	F (104.8 sec)	F (112.7 sec)	C (24.6 sec)	D (37.0 sec)	B (13.4 sec)	B (13.4 sec)

MAIN STREET AND B STREET

Three concepts were developed for the intersection of Main Street and B Street to address congestion and pedestrian-vehicle conflict issues:

- **Concept 1 – Signalize Intersection.** The installation of a traffic signal at Main Street and B street was analyzed as a mitigation measure to improve traffic operations. The intersection would operate with permitted left-turn phasing on all approaches and with the existing lane configurations. **PLANNING LEVEL COST: $600,000**
- **Concept 2 – HAWK Signal.** The installation of a High Intensity Activated Crosswalk (HAWK) signal was considered due to the high amount of pedestrian activity. A HAWK signal would be installed along the south leg of Main Street and provide an allocated amount of 'WALK' time when the push button is activated for pedestrians and indicates a red signal for vehicles. Then, a flashing 'DON'T WALK' notifies pedestrians not to begin crossing while flashing red lights are displayed for drivers warning them to stop for pedestrians. A HAWK signal would allow platoons of pedestrians and vehicles dedicated green time, with little delay to both modes of travel and increased safety to pedestrians. **PLANNING LEVEL COST: $300,000**
- **Concept 3 – Roundabout.** The intersection reconstructed as a roundabout was analyzed to improve the flow of traffic and the LOS/delay for B Street. Intersections with stop control only on the minor approach often experience greater delays since the high volume of traffic on the major approach does not stop thus creating fewer gaps for vehicles to turn. A roundabout reduces the number of conflict points and the speed of vehicles providing an increase in acceptable gaps for all movements at each approach. The high volume of pedestrians may impede operations and traffic flow at this roundabout location. **PLANNING LEVEL COST: $1,500,000**

Pros and cons for these three concepts are shown in **Figure 27**. Pros for Concept 1 include that a traffic signal will improve safety on all four crosswalks and reduce the delay on B Street. Cons include the expense of installing a traffic signal as well as the ongoing monitoring and maintenance.

Pros for Concept 2 include that it has minimal impact on Main Street traffic which is heavier than on B Street as well as added protection for pedestrians crossing Main Street. Cons for Concept 2 include that a HAWK adjacent to an intersection is unconventional and potentially confusing; additionally, installing the HAWK will necessitate removing the crosswalk on the north leg of the intersection, reducing pedestrian connectivity.

Pros for Concept 3 include a reduction of vehicular delay on B Street and that the roundabout provides an opportunity for public art, similar to the other two roundabouts on Main Street. Cons include that it is the most expensive alternative, may require purchasing additional right-of-way from adjacent property owners, and that roundabouts are often not comfortable for pedestrians because there are no signals to stop vehicles.

Figure 27. Main Street and B Street Concept Pros and Cons

Using the Opening Year and 20-Year Models, these concepts were modeled to quantify the congestion impacts. The LOS and vehicle delay results for the overall intersection are shown in **Table 10**. Impacts to failing movements in the Opening Year and 20-Year Models were reviewed for each concept and the results are shown in **Table 11**.

Table 10. Main Street and B Street Overall Intersection Results

MODEL	BASELINE		CONCEPT 1		CONCEPT 2		CONCEPT 3	
	AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK
Opening Year	A (3.0 sec)	A (8.2 sec)	B (14.6 sec)	C (24 sec)	A (4.8 sec)	B (10.7 sec)	A (4.9 sec)	B (13.2 sec)
20-Year	A (3.3 sec)	A (10.0 sec)	B (13.7 sec)	D (45.4 sec)	A (5.8 sec)	B (14.2 sec)	A (2.2 sec)	B (14.2 sec)

Table 11. Main Street and B Street Failing Movements Results

MOVE-MENT	BASELINE		CONCEPT 1		CONCEPT 2		CONCEPT 3	
	OPEN YEAR	20-YEAR	OPEN YEAR	20-YEAR	OPEN YEAR	20-YEAR	OPEN YEAR	20-YEAR
WBL	E (37.3 sec)	E (35.7 sec)	C (32.2 sec)	C (33.9 sec)	D (30.6 sec)	E (37.5 sec)	A (9.4 sec)	A (9.4 sec)
WBT	E (42.9 sec)	E (49.0 sec)	C (30.7 sec)	C (29.0 sec)	E (35.1 sec)	E (48.1 sec)	A (9.1 sec)	C (24.0 sec)

CESAR CHAVEZ BOULEVARD AND MAIN STREET

Three concepts were developed for the intersection of Cesar Chavez Boulevard and Main Street to address congestion and pedestrian-vehicle conflict issues:

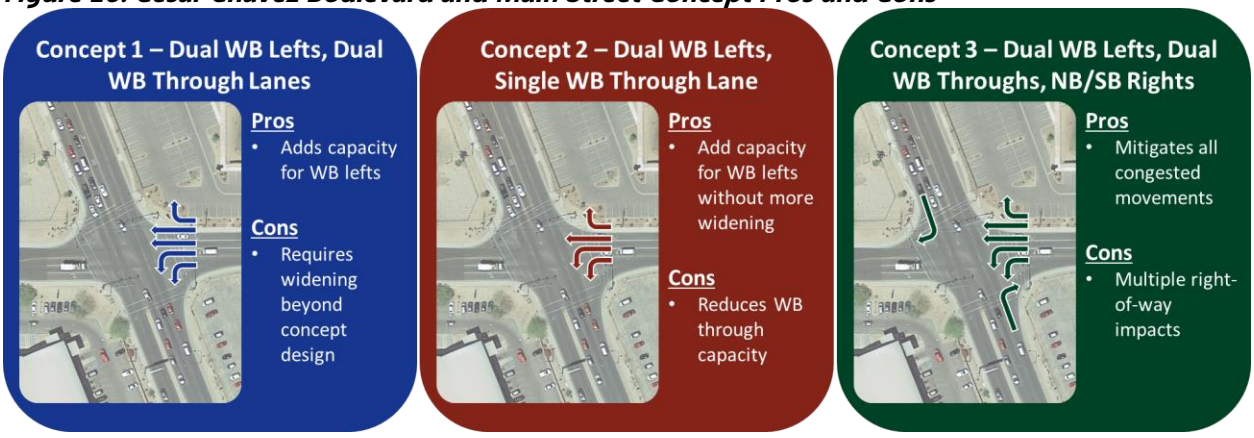
- **Concept 1 – Dual Westbound Lefts and Two Westbound Through Lanes.** To accommodate the increase of vehicles making a westbound left-turn from Cesar Chavez Boulevard onto Main Street, the installation of dual-left turn lanes was considered. Signal operations would need to be adjusted to provide protected only left turn phasing for the eastbound and westbound left turns. The two westbound through lanes in the concept design for the Cesar Chavez Boulevard Multimodal Improvements Project would remain. **PLANNING LEVEL COST: $500,000**
- **Concept 2 – Dual Westbound Lefts and a Single Westbound Through Lane.** Similar to Concept 1, dual westbound left-turn lanes that operate with protected left-turn phasing were considered to improve intersection operations. The intersection was evaluated with a single westbound through lane to analyze operation in case the feasibility of further widening beyond the Cesar Chavez Boulevard Multimodal Improvements Project assumptions is constrained by right-of-way acquisition. **PLANNING LEVEL COST: $50,000**
- **Concept 3 – Dual Westbound Lefts, Two Westbound Through Lanes, and Northbound/Southbound Right-Turn Lanes.** In addition to providing dual-left turn lanes, providing dedicated right-turn lanes for the northbound and southbound approaches to accommodate future traffic conditions and reduce delay for the northbound and southbound approaches. **PLANNING LEVEL COST: $1,500,000**

Pros and cons for these three concepts are shown in **Figure 28**. Pros for Concept 1 include that it adds capacity for westbound left turns, which becomes a failing movement by the 20-Year Model. Cons are that it will require additional widening beyond that found in the concept design for the Cesar Chavez Boulevard Multimodal Improvements Project.

Pros for Concept 2 include that it adds additional westbound left turn capacity without requiring additional widening. Cons include that it will reduce the capacity for the westbound through movement, which could increase delay.

Pros for Concept 3 include that it adds capacity to all the failing movements at the intersection. Cons include that there are likely right-of-way impacts on three of the four corners of the intersection (northwest, northeast, and southeast corners) to add additional lanes.

Figure 28. Cesar Chavez Boulevard and Main Street Concept Pros and Cons



Using the Opening Year and 20-Year Models, these concepts were modeled to quantify the congestion impacts. The LOS and vehicle delay results for the overall intersection are shown in **Table 12**. Impacts to failing movements in the Opening Year and 20-Year Models were reviewed for each concept and the results are shown in **Table 13**.

Table 12. Cesar Chavez Boulevard and Main Street Overall Intersection Results

MODEL	BASELINE		CONCEPT 1		CONCEPT 2		CONCEPT 3	
	AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK
Opening Year	B (19.0 sec)	D (42.5 sec)	C (23.1 sec)	D (47.2 sec)	C (21.7 sec)	D (43.4 sec)	C (24.2 sec)	C (33.8 sec)
20-Year	C (27.2 sec)	D (49.0 sec)	C (26.1 sec)	E (58.6 sec)	D (37.8 sec)	D (52.9 sec)	C (26.1 sec)	C (33.8 sec)

Table 13. Cesar Chavez Boulevard and Main Street Failing Movements Results

MOVE-MENT	BASELINE		CONCEPT 1		CONCEPT 2		CONCEPT 3	
	OPEN YEAR	20-YEAR	OPEN YEAR	20-YEAR	OPEN YEAR	20-YEAR	OPEN YEAR	20-YEAR
SBL	D (54.2 sec)	E (58.8 sec)	E (66.4 sec)	D (54.3 sec)	E (65.6 sec)	E (69.4 sec)	D (40 sec)	D (40 sec)
SBT	D (48.9 sec)	E (55.7 sec)	E (57.1 sec)	E (68.5 sec)	E (55.8 sec)	E (63.0 sec)	D (36.2 sec)	D (36.2 sec)
EBL	D (45.1 sec)	F (149 sec)	E (64.9 sec)	D (40.5 sec)	E (72.6 sec)	E (68.9 sec)	B (15.9 sec)	F (115 sec)
WBL	F (98.2 sec)	F (92.3 sec)	E (63.6 sec)	F (180 sec)	D (50.5 sec)	E (76.0 sec)	D (45.0 sec)	D (45.0 sec)

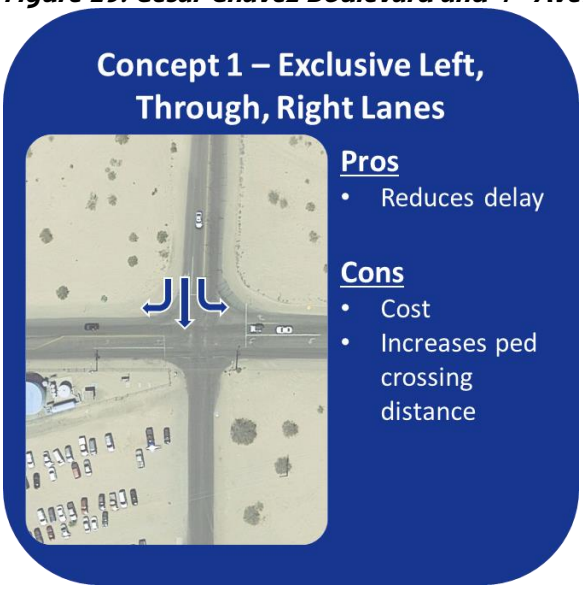
CESAR CHAVEZ BOULEVARD AND 4TH AVENUE

One concept was developed for the intersection of Cesar Chavez Boulevard and 4th Avenue to address congestion on the southbound approach:

- **Concept 1 – Southbound Right-Turn Lane.** To accommodate the 20-Year Model traffic volumes, the addition of a right-turn southbound right-turn lane was evaluated at this intersection. **PLANNING LEVEL COST: $250,000**

Pros and cons for this concept are shown in **Figure 29**. Pros include that adding the southbound right turn lane reduces overall delay. Cons include the cost of construction the lane as well as increasing the pedestrian crossing distance across the north leg of the intersection.

Figure 29. Cesar Chavez Boulevard and 4th Avenue Concept Pros and Cons



Using the Opening Year and 20-Year Models, this concept was modeled to quantify the congestion impacts. The LOS and vehicle delay results for the overall intersection are shown in **Table 14**. Impacts to failing movements in the Opening Year and 20-Year Models were observed for the concept and the results are shown in **Table 15**.

Table 14. Cesar Chavez Boulevard and 4th Avenue Overall Intersection Results

MODEL	BASELINE		CONCEPT 1	
	AM PEAK	PM PEAK	AM PEAK	PM PEAK
Opening Year	B (15.7 sec)	C (22.2 sec)	B (15.5 sec)	C (32.9 sec)
20-Year	B (19.6 sec)	C (33.2 sec)	B (15.0 sec)	D (37.7 sec)

Table 15. Cesar Chavez Boulevard and 4th Avenue Failing Movements Results

MOVE-MENT	BASELINE		CONCEPT 1	
	OPENING YEAR	20-YEAR	OPENING YEAR	20-YEAR
SBL	C (26.2 sec)	E (61.2 sec)	D (49.4 sec)	D (54.7 sec)

CESAR CHAVEZ BOULEVARD AND MESA STREET

Three concepts were developed for the intersection of Cesar Chavez Boulevard and Mesa Street to address the northbound left-turn movement which will no longer be able to be made after the Cesar Chavez Boulevard Multimodal Improvements Project is constructed:

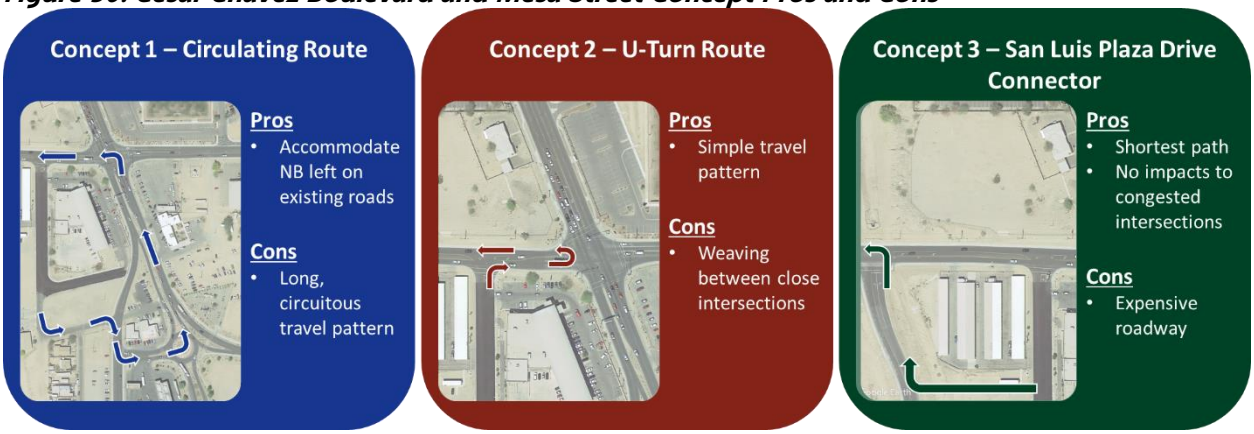
- **Concept 1 – Circulating Route.** The vehicles that currently make northbound left turns in this concept will need to exit the Post Office Archibald Street and D Street, travel to the Main Street and D Street roundabout to turn left (north) and make another left turn at the Main Street Cesar Chavez Boulevard intersection to travel westbound on Cesar Chavez Boulevard. **PLANNING LEVEL COST: $0**
- **Concept 2 – U-Turn Route.** The vehicles that currently make northbound left turns in this concept will need to make a northbound right-turn at Cesar Chavez Boulevard and Mesa Street and make an eastbound U-turn at Main Street and Cesar Chavez Boulevard to travel westbound on Cesar Chavez Boulevard. **PLANNING LEVEL COST: $0**
- **Concept 3 – San Luis Plaza Drive Connector.** This concept includes one-way connector roadway between Mesa Street and the planned roundabout at San Luis Plaza Drive and Cesar Chavez Boulevard. Vehicles that are currently making a northbound left onto Cesar Chavez Boulevard would instead utilize this connector to access the roundabout at San Luis Plaza Drive and Cesar Chavez Boulevard and then turn left (west) onto Cesar Chavez Boulevard. This concept was included in the conceptual design for the Cesar Chavez Boulevard Multimodal Improvements Project. **PLANNING LEVEL COST: $1,000,000**

Pros and cons for these concepts are shown in **Figure 30**. Pros for Concept 1 include that the northbound left movement is accommodated on existing streets, so no additional infrastructure is needed. Cons include that it is a long, circuitous route with several left turns.

Pros for Concept 2 include that it is a simple and intuitive travel pattern. Cons include the short distance between Mesa Street and Main Street, making weaving to the left-turn lane challenging during peak times.

Pros for Concept 3 include that it is the shortest path to replace the northbound left turn and there are not impacts to congested intersections. Cons include the expense of building the new roadway down a large hill between Mesa Street and San Luis Plaza Drive.

Figure 30. Cesar Chavez Boulevard and Mesa Street Concept Pros and Cons



Using the Opening Year and 20-Year Models, these concepts were modeled to quantify the congestion impacts. The LOS and vehicle delay results for the overall intersection are shown in **Table 16**.

Table 16. Cesar Chavez Boulevard and Mesa Street Overall Intersection Results

MODEL	BASELINE		CONCEPT 1		CONCEPT 2		CONCEPT 3	
	AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK	AM PEAK	PM PEAK
Opening Year	A (1.0 sec)	A (3.5 sec)	A (1.0 sec)	A (5.0 sec)	A (1.1 sec)	C (28.5 sec)	A (1.6 sec)	C (26.3 sec)
20-Year	A (1.6 sec)	D (39.2 sec)	A (1.7 sec)	B (12.9 sec)	A (1.5 sec)	C (28.5 sec)	A (1.4 sec)	C (27.2 sec)

PHASE 3
IMPLEMENT

PHASE 3 – IMPLEMENT

CIRCULATION RECOMMENDATIONS

A single recommendation has been made for each of the five constrained intersections based on:

- The results of the Opening Year and 20-Year Models
- Impacts to pedestrian safety and walkability in the downtown area
- The planning-level cost and ongoing maintenance needs
- Input from City staff on preferred treatments

WILLIAM BROOKS AVENUE AND URTUZUASTEGUI STREET

Concept 1 – Signalize Intersection is recommended. This concept is the less expensive alternative and adequately accommodates anticipated traffic levels. It also adds signalized pedestrian crossings, which are more comfortable than the current stop-controlled crosswalks

MAIN STREET AND B STREET

Concept 1 – Signalize Intersection is recommended. A traffic signal will mitigate delay issues on the westbound left and through movements while adding signalized crossings for pedestrians on all legs of the intersection. This concept increases the overall delay at the intersection, but still maintains an acceptable LOS while improving east-west travel and safety.

CESAR CHAVEZ BOULEVARD AND MAIN STREET

Concept 3 – Dual Westbound Lefts, Two Westbound Through Lanes, and Northbound/Southbound Right-Turn Lanes is recommended. This intersection becomes the primary pinch point for traffic in the 20-Year Model. Adding additional turn lanes will ensure that congestion at this intersection does not negatively impact surrounding intersections and business access. Additionally, a third southbound through lane from north of Cesar Chavez Boulevard connecting to Archibald Street should be considered beyond the 20-Year Model timeframe to accommodate increasing southbound traffic.

CESAR CHAVEZ BOULEVARD AND 4TH AVENUE

Concept 1 – Southbound Right-Turn Lane is recommended. While this concept slightly increases the crossing distance for pedestrians, it will ensure southbound traffic congestion does not impact the neighborhood north of Cesar Chavez Boulevard and maintains access to adjacent properties.

CESAR CHAVEZ BOULEVARD AND MESA STREET

Concept 3 – San Luis Plaza Drive Connection is recommended. While this concept has the highest cost, it provides the best accessibility from the Post Office, a critical community destination. The other two concepts do not adequately address the circulation needs and negatively impact the intersection of Cesar Chavez Boulevard and Main Street, which is anticipated to become increasingly congested.

PARKING RECOMMENDATIONS

The following parking recommendations are broken into two timeframes: short-term and long-term strategies. The short-term recommendations are anticipated to mitigate existing parking constraints in the downtown area and the long-term strategies should be implemented as conditions change in downtown and the parking system becomes increasingly constrained.

SHORT TERM: IMPLEMENT PARKING TIME LIMITS

In the short-term, it is recommended that parking time limits and 'No Parking' restrictions are implemented in the downtown study area. Due to the high demand of parking near the POE, many commercial and residential streets and alleys are at or beyond their parking capacity. This overparking results in restricted access for emergency vehicles in alleys, limited parking for local businesses and residents, and increased congestion from vehicles circulating to find parking. Recommended short-term strategies are:

- Review and Revise San Luis City Code
- Stakeholder Engagement.
- Remove Existing Parking Meters
- Construct North Lot Improvements
- Implement 'No Parking' and Time Restrictions
- Establish Regular Parking Enforcement
- Perform Ongoing Monitoring

The intended benefits and potential challenges of the short-term recommendations include:

Intended Benefits	Potential Challenges
▪ Reduced parking demand in high-occupancy areas near the POE ▪ Improved safety in alleyways through removal of parked vehicles ▪ Increased parking turnover in high-demand areas through time limits ▪ Increased off-street parking inventory to absorb existing on-street demand	▪ Coordination with the San Luis Police Department to enforce parking limits ▪ Substantial funding is required to implement North Lot Improvements ▪ Some loss of revenue with the removal of parking meters ▪ Resources for an ongoing parking monitoring program

Short-Term Recommendation Implementation Steps

1

Review and Revise City Code

Ensure that the proposed actions (adding parking time limits, restricting parking in alleys, enforcement activities through both the Police Department and Public Works Department) are all statutorily enabled by the City Code. An initial review of the City Code indicates that all necessary elements are enabled, but should be further investigated before implementation

2

Stakeholder Engagement

Meet with downtown residents and business owners to discuss the planned changes to the parking system, including implementing time restrictions on all streets in the downtown area, restricting parking in alleyways, and removing the parking meters from downtown streets. Buy-in will be important to successfully implement these strategies.

3

Remove Existing Parking Meters

Parking meters are present on a handful of block faces, but they are outdated and require frequent maintenance. The City does not have an active contract with the meter vendor and the meters are anticipated to no longer be able to process credit or debit card transactions soon. It is recommended that these meters are removed in lieu of multi-space meters/kiosks and mobile pay technology.

4

Construct North Lot Improvements

To absorb the long-term parking, the City will need to improve the parking facilities at the north end of downtown using the concept in the San Luis Master Plan for Downtown Parks and Parking Lots. This concept includes paving and formalizing the parking facilities, adding bus pick-up/drop-off areas for agricultural shuttles, and adding amenities such as park space, public restrooms, and a police substation. The City will need to work with agricultural companies to establish the designated areas as the only pick-up/drop-off areas for workers.

5

Implement 'No Parking' and Time Restrictions

It is recommended that the City implement ordinances and signage to permit parking in alleyways on one side only to maintain emergency access. Other areas with known safety issues should also be posted with 'No Parking' signage. For blocks where long-term parking is a known problem, shown in **Figure 31**, a six-hour time limit should be implemented through signage between 8:00 AM and 5:00 PM. This restriction will prevent long-term parking by workers while still allowing customers to park on-street for local businesses.

6

Enforcement

Coordinate with the Police and Public Works Departments to enforce the six-hour time restrictions and new 'No Parking' areas. The six-hour time limit allows for simple enforcement with two runs through downtown per day using License Plate Reader (LPR) technology: one to record license plates in the morning and one to identify violations and issue citations in the afternoon. Regular enforcement will ensure the time limits and 'No Parking' restrictions are effective in eliminating long-term parking and safety hazards.

7

Ongoing Monitoring

Regular on-street parking occupancy counts should be conducted by the City to evaluate the effectiveness of the Short-Term Recommendations. If occupancy approaches 80% on unrestricted block faces, the City should consider adding multi-space meters/kiosks or implement a Residential Parking Permit program to further regulate parking occupancy.

Code Changes

Adjustments may be needed to the San Luis City Code, including language related to alleyway parking, implementation of time limits, and parking enforcement by both the Police and Public Works Departments.

Supporting Code:
The following ordinances support the City of San Luis in their authority to implement and enforce 'No Parking' restrictions and time-limit parking restrictions:

- *10.15.100 Parking Zones and Rates*
- *10.15.235 Parking in Alleys*
- *10.15.280 Time Limit and Operation of Parking Meters*
- *10.15.990 Penalty*

Technology Needs

- Initiation of LPR technology to aid enforcement of parking time limit and parking enforcement at the improved North Lot.
- Implementation of multispace meters or kiosks for the North Lot and downtown block faces with paid on-street parking.

A *multi-space meter or kiosk* is comprised of a secure, weather-proof metal cabinet. It typically features a digital display that provides instructions on completing a transaction. These kiosks offer a wide variety of payment options, including Mastercard, Visa, contactless credit/debit cards, Apple Pay, and Google Pay. The kiosks can also accept cash or coins, however it is not recommendated due to significant costs with cash collection and maintenance.

Potential Costs

- LPR Technology - $20,000 - $35,000 (capital) and $4,000 - $4,500 (annual)
- Multi-space Meters/Kiosks - $7,000 - $12,000 per multispace meter/kiosk
- Mobile Payment System - $5,000 - $10,000
- North Lot Improvements - $7.8 million
- 'No Parking' and Time Restriction Signs - $100 per sign
- Enforcement Time – dependent on salary and enforcement frequency

Supporting Strategies

- Remove existing parking meters or move to multispace meters/kiosks and mobile pay options for paid parking.
- Implement signage in Downtown San Luis, implementing a six-hour parking limit for on-street parking in high-demand areas.
- Implement 'No Parking' signs at loocations with safety issues, such as alleyways and near intersections.
- Make improvements to the North Lot to include on- and off-street parking facilities, as well as bus pullouts for agricultural company buses to have a central pick-up and drop-off location.

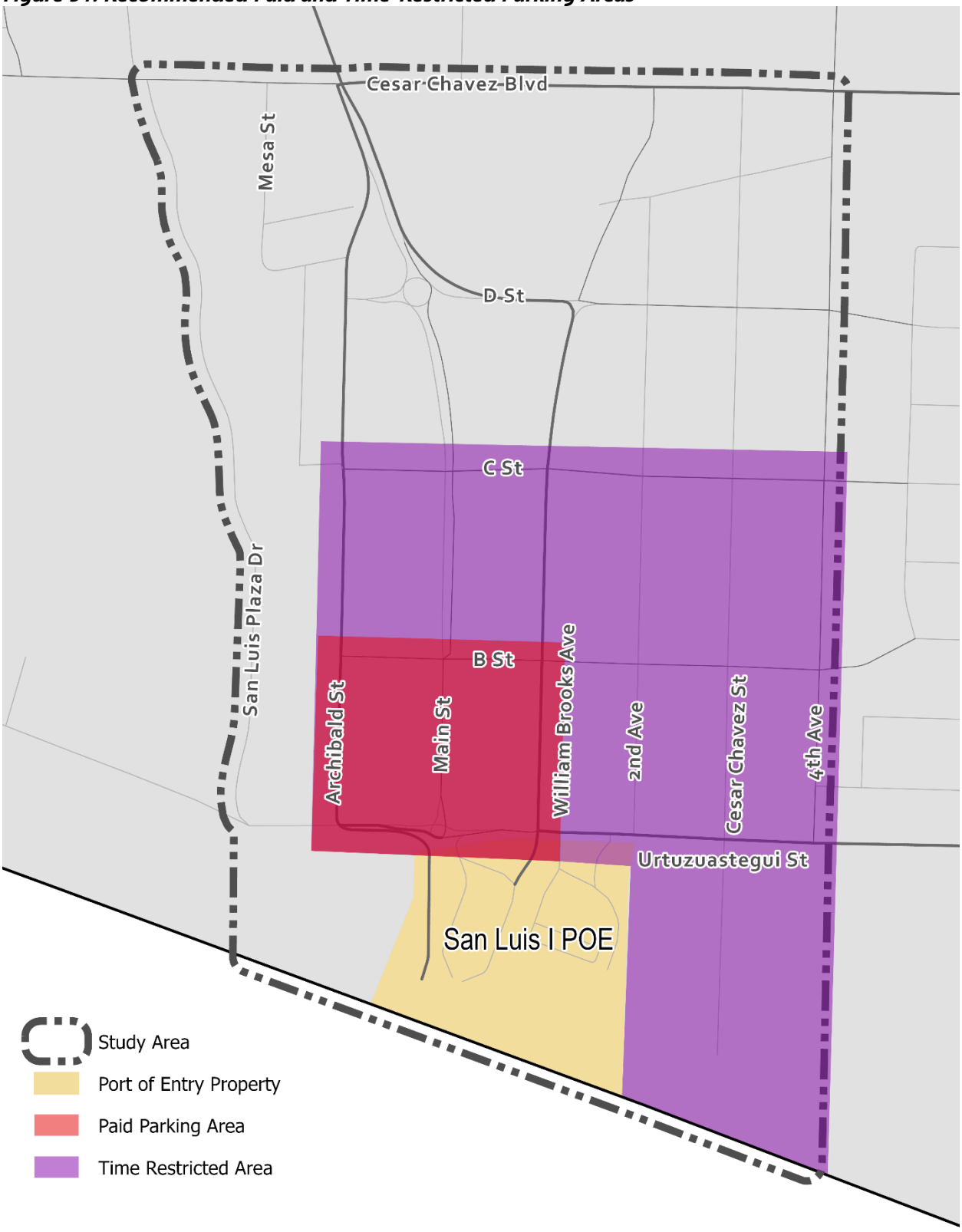
Key Partnerships

Engage with key stakeholders to obtain opinion on the removal of meters and implementation of time limits. Partnership with the Police and Public Works Departments is key for enforcing the parking time limits. Coordinate with agricultural companies to determine a centralized pick-up and drop-off location for employees in Downtown San Luis.

Performance Metrics

Establish ongoing monitoring of time-restricted and paid parking as well as parking occupancy throughout the study area. If on-street occupancy increases to approximately 80%, explore introducing paid parking or implement a Residential Parking Permit Program (discussed in the long-term recommendations).

Figure 31. Recommended Paid and Time-Restricted Parking Areas



LONG TERM: IMPLEMENT A RESIDENTIAL PARKING PERMITS

Following implementation of the short-term parking recommendations, including time restrictions and improvements to the North Lot, if parking conditions are not resolved, it is recommended that the City of San Luis implements a Residential Parking Permit (RPP) program and consider construction of a South Lot, located in the industrial park adjacent to the POE. Recommended long-term strategies are:

- Need identification
- Stakeholder engagement
- Implement the RPP program
- RPP signage and enforcement efforts
- Ongoing monitoring
- Construction of a South Lot located on the south side of Urtuzuastegui Street as close to the POE as possible

What is a Residential Parking Permit (RPP) Program?

An RPP program aims to ensure that residents have reasonable access to on-street parking near their homes by restricting transient (short-term) parking. To accomplish this, on-street parking is restricted to residents and residential visitors. Programs are typically created based on the request of the residents within the given area. Physical or virtual permits are issued to residents at a nominal annual cost and visitor passes can be obtained by contacting the City department responsible for RPP management. Short-term parkers may still be permitted if that is a desire of the City or residents but are subject to time restrictions.

The intended benefits and potential challenges that can arise with the long-term parking recommendations includes:

Intended Benefits	Potential Challenges
▪ Reduced all-day parking occupancy in residential neighborhoods ▪ Increased off-street parking inventory for agricultural workers near the POE	▪ May need to address concerns and manage neighborhood impacts, such as a RPP Program ▪ Coordination with the Police and Public Works Departments to enforce permit compliance ▪ Substantial funding is required to construct a South Lot

Long-Term Recommendation Implementation Steps

1

Review and Revise City Code

Ensure that the proposed actions (including implementation and enforcement of an RPP) are all statutorily enabled by the City Code.

2

Stakeholder Engagement

Meet with downtown residents and business owners to discuss specifics about the rules of an RPP and whether they want to implement the program. Stakeholders will need to be informed about all potential costs and bureaucratic processes behind purchasing and obtaining resident permits, visitor passes, the potential for continued short-term parking if desired, etc. Residents must decide if the benefits of an RPP program outweigh the drawbacks.

3

Implement the RPP Program

Define parking program procedures, such as number of permits issues per household, application/permit fees, physical vs. digital permits, and duration of permits with reissuance procedure. These procedures must all then be communicated back to local residents and business owners.

4

RPP Program Signage and Enforcement

Implement signage within the RPP program area, restricting parking to permit holders from 8:00 AM to 5:00 PM. Enforcement of the RPP rules, especially at the start of the program, is critical to its success. Coordination with the Police and Public Works Departments will be required to develop an enforcement plan.

5

Ongoing Monitoring

Regular on-street parking occupancy counts should be conducted by the City to evaluate the effectiveness of the RPP program. If occupancy of on-street parking approaches 80%, consider constructing a South Lot.

6

Construct South Lot

If parking demand cannot be met through the Short-Term recommendations and an RPP program, the City should investigate constructing a South Lot. This process will involve securing a property in the industrial park that is large enough to accommodate unmet parking demands, serve agricultural shuttle pick-up/drop-off operations, and house amenities similar to those proposed for the North Lot. The South Lot should be constructed on the south side of Urtuzuastegui Street as close to the POE as feasible to minimize walking and driving time for workers. A concept circulation is shown in **Figure 32**.

Long-Term Recommendation Considerations

Required Changes

Adjustments may be needed to the San Luis City Code to include allowance of an RPP program and associated enforcement activities.

Code Modifications to allow for permit parking areas:

The following ordinance language may be implemented to support the City of San Luis in their authority to implement and enforce an RPP program:

Establishment of Permit Parking Zones

"Whenever the City Administrator determines that on-street parking congestion in a particular district is cuch that the restriction or prohibition of parking during certain hours of the day and days of the week is necessary to reduce hazardous traffic conditions and to promote the health, safety, and welfare of the district by providing adequete parking spaces to gain access to residences, businesses, and instititutions, permit parking may be authorized in such districts. The issuance or renewal of a permit under this section shall not be granted until all outstanding parking infractions under the city code are paid in full. The establishment of permit parking shall not conflict with any restricts contained in this traffic code, "

Parking in Permit Parking Area

"No person shall park in a vehicle beyond the posted time limit in a permit parking area authorized by the City Administrator as a permit parking area except those vehicles displaying a valid permit or having a registered license plate associated with a virtual permit."

Technology Needs

- Virtual parking permit system, if needed.
- LPR technology to aid enforcement of the parking permit program.

Potential Costs

Specific costs cannot be determined at this time for the long-term recommendations as they may change substantially by the time the City implements them. Potential costs include the cost administering the RPP program, LPR technology, staff tiem for enforcement, RPP signage, and the South Lot.

Supporting Strategies

To issue the residential permits to residents within the study area, the City will need to define:

1. Number of permits issued per household
2. Associated application and permit fees
3. Utilization of physical or digital permits
4. Duration of permits and associated reissuance procedures

Implementation of RPP signage within the designated zone area.

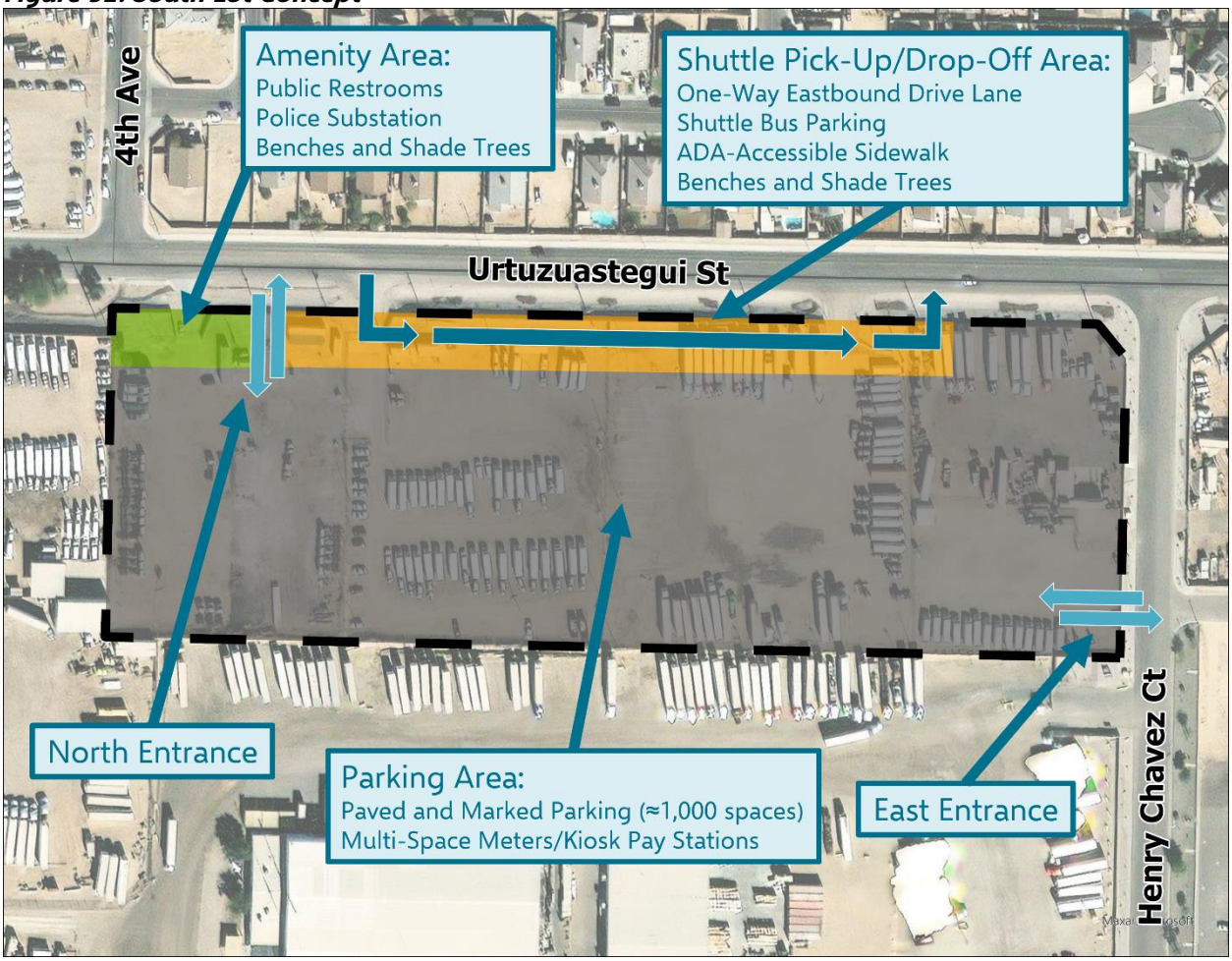
Key Partnerships

Engage with key stakeholders to obtain opinion on the implementation of the RPP program. Partnership with the Police and Public Works Departments is key for enforcing the RPP.

Performance Metrics

Establish ongoing monitoring of the RPP area as well as parking occupancy throughout the study area. If on-street parking occupancy increases to approximately 80%, explore constructing the South Lot.

Figure 32. South Lot Concept



APPENDICES

APPENDICES

APPENDIX A. CLASSIFICATION COUNT SHEETS

APPDENDIX B. TMC SHEETS

APPENDIX C. DETAILED SURVEY RESULTS

APPENDIX D. DETAILED PARKING OCCUPANCY DATA

APPENDIX E. DETAILED SIMULATION MODEL RESULTS


Main St
To Mexico


25