

West Elizabeth Enhanced Travel Corridor Plan



Stakeholder Committee

Meeting #2

September 23, 2015

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Welcome

Welcome to Stakeholder Meeting #2! Thank you for your continued commitment to the West Elizabeth Enhanced Travel Corridor Plan process. We are currently wrapping up the Visioning phase of the planning effort and beginning Alternatives Development.

This packet provides a summary of the work completed on the West Elizabeth Enhanced Travel Corridor Plan since the first Stakeholder Committee meeting (July 2015), including notes from the **Stakeholder Committee Meeting #1**, highlights of the **Visioning Events**, and summaries of the results from the **Visioning Surveys**.

The focus of this meeting will be on the draft vision, purpose and need statements and initial concepts related to corridor alternatives. We would like your feedback on the vision and direction for the plan prior to developing policies, action items, and other recommendations for the draft plan.

As a reminder, these packets will also be made available online so others can participate in the process and provide additional input. We highly encourage you to talk with your neighbors, friends, family, and colleagues about their ideas for the future of the West Elizabeth Corridor.

Process & Schedule

Planning Phase	Date	Stakeholder Committee Activities	Public Activities & Events
Phase 1: Project Startup & Corridor Understanding	Mar - July 2015	Stakeholder Committee Selection; Stakeholder Committee Meeting #1 (<i>July</i>)	Listening Sessions; Walking Tours; WikiMap; Online Survey
Phase 2: Visioning, Alternatives Development & Alternatives Evaluation	July - Dec 2015	Stakeholder Committee Meeting #2 (<i>September</i>) Stakeholder Committee Meeting #3 (<i>November</i>)	Visioning Events; Alternatives Workshop; Online Survey
Phase 3: Preferred Alternative & Implementation Planning	Dec - Feb 2016	Stakeholder Committee Meeting #4 (<i>February</i>)	Preferred Alternative Workshops; Online Survey Community Presentations/ Listening Sessions
Phase 4: Draft Master Plan & Adoption Process	Feb - July 2016	Stakeholder Committee Meeting #5 (<i>April</i>)	Draft Plan Open Houses; Online Survey; Community Presentations/ Listening Sessions

Community Outreach to Date

Project Start-up

- **Listening Sessions**

Two listening sessions were held in April and May, with a total of 51 attendees. A postcard mailing to all property owners and residents was used to announce the meeting, in addition to other notification methods.

- **Walking Tours**

Neighborhood walking, bike, and transit tours were held in May to directly observe concerns and opportunities in the neighborhoods and commercial areas in the corridor.

- **Surveys & WikiMap**

Paper, intercept, and online surveys as well as an online WikiMap were used to collect input on specific issues and ideas related to the existing conditions in the corridor. More than 480 people participated in these survey formats.

- **Open Streets**

The project team hosted a booth at June's Open Streets event on West Elizabeth Street, introduced the project to several citizens and asked if they would like to provide feedback on the main issues in the corridor and improvements desired for the future.

Community Outreach to Date

Visioning

- **Focus Groups**

The project team hosted meetings with special focus groups in July in order to gain their unique perspectives as they related to needs and desires for the future in the corridor. These included business owners, alternative transportation advocates, multi-family housing managers, and CSU facilities and administrative personnel.

- **Visioning Open House**

A Visioning Open House was held at St. Paul's Episcopal Church in early August. Over 20 people attended the event and participated in cross-section building activities and an interactive survey in which attendees shared how they used the corridor, how they would describe their current experience in the corridor, how they think the corridor should be prioritized for the future, and how they would describe their desired future experience in the corridor was.

- **Online Visioning Survey**

There were 187 respondents to the Online Visioning Survey open throughout August. The survey complemented the Visioning Open House and was targeted at those who were unable to attend the event.

- **Textizen Visioning Survey**

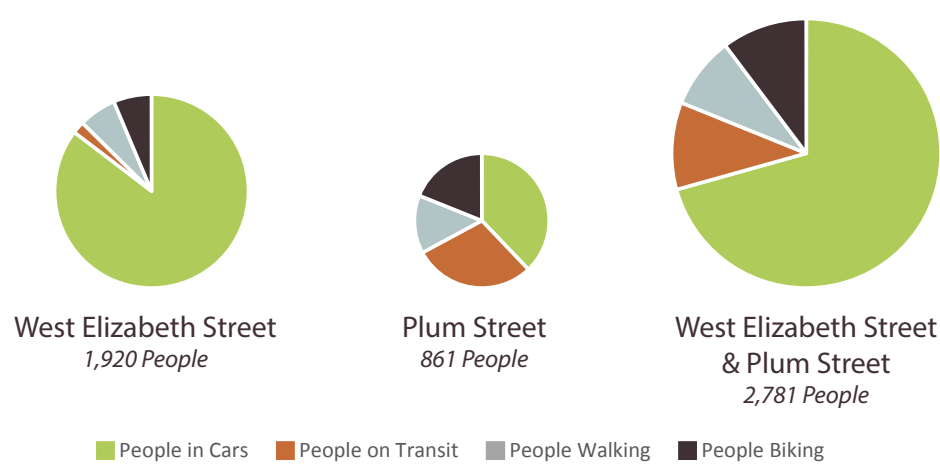
A text based visioning survey was targeted towards gaining insight from the CSU community. Over 400 people responded during August and early September. Similar to the other visioning surveys, the Textizen questions gauged how respondents used the corridor and what improvements they would like to see in the corridor in the future.

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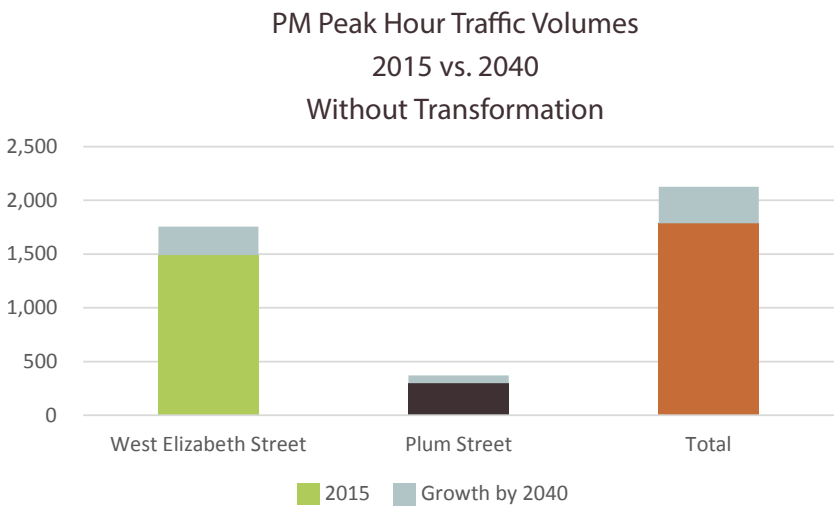
Corridor Understanding Overview

WEST ELIZABETH ENHANCED TRAVEL CORRIDOR CORRIDOR UNDERSTANDING - KEY TAKEAWAYS

NUMBER OF PEOPLE BY MODE - PM PEAK HOUR WEST ELIZABETH STREET & PLUM STREET



ANTICIPATED GROWTH WITHOUT TRANSFORMATION WEST ELIZABETH STREET & PLUM STREET



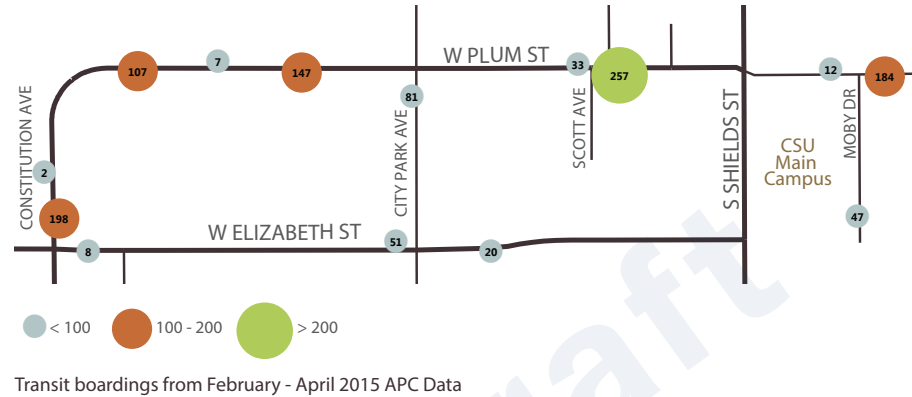
TRANSIT

Between 8,000 & 10,000 riders a day within the study area (9 routes) - highest ridership in the City

3,737 Number of passengers left behind on Route 31 from January to April 2015

Equivalent to the capacity of:
Over 37 MAX buses
Almost 75 standard Transfort buses

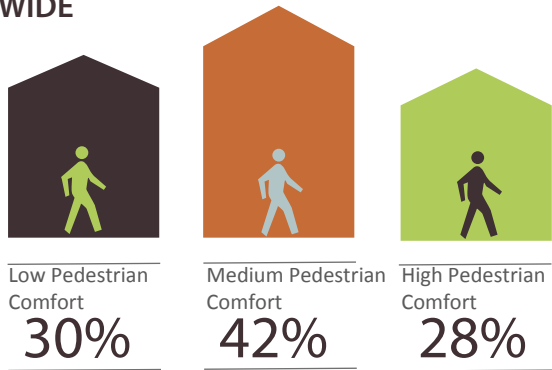
TRANSIT BOARDINGS



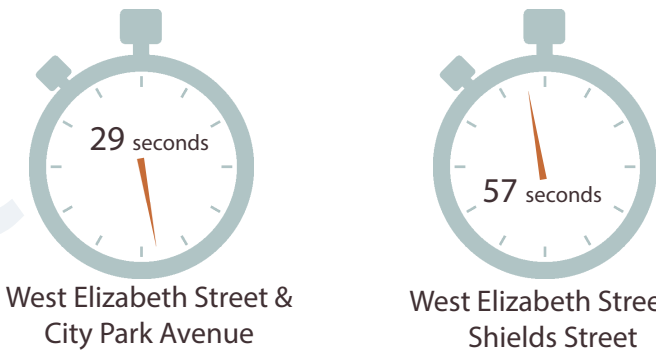
WALKING

17% of sidewalks are non-ADA compliant **7%** of sidewalks are missing

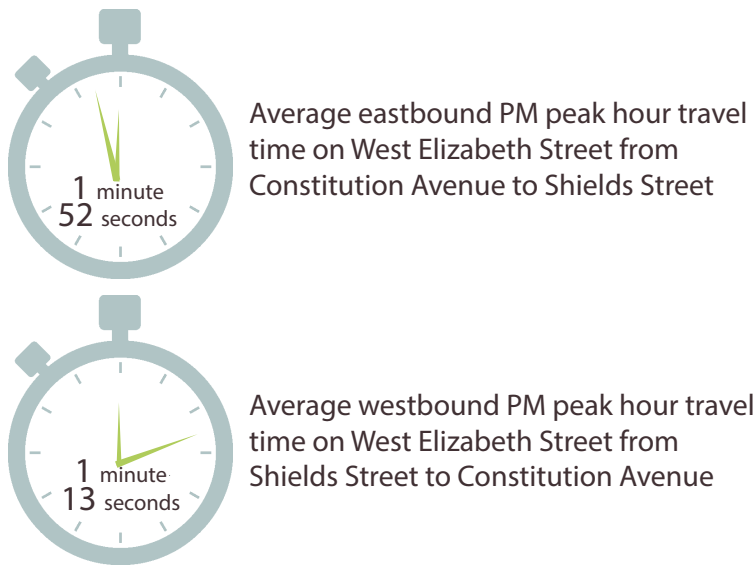
PEDESTRIAN LEVEL OF COMFORT CORRIDOR-WIDE



AVERAGE PM PEAK HOUR PEDESTRIAN DELAY

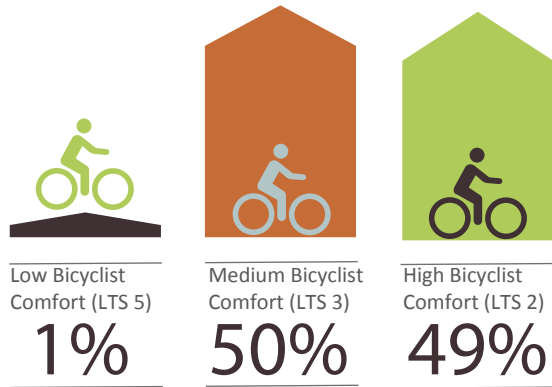


DRIVING



BIKING

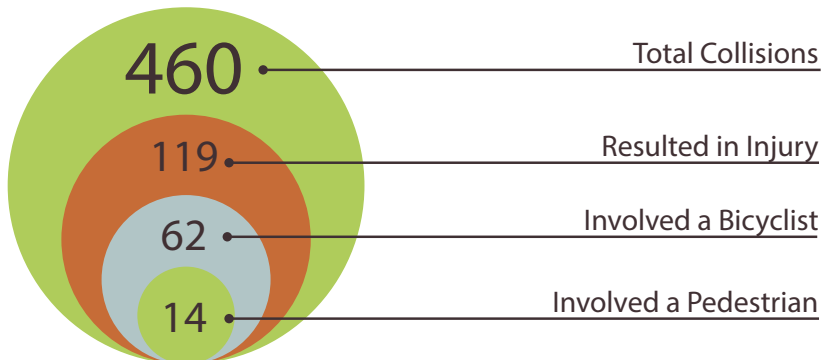
BICYCLIST LEVEL OF COMFORT CORRIDOR-WIDE



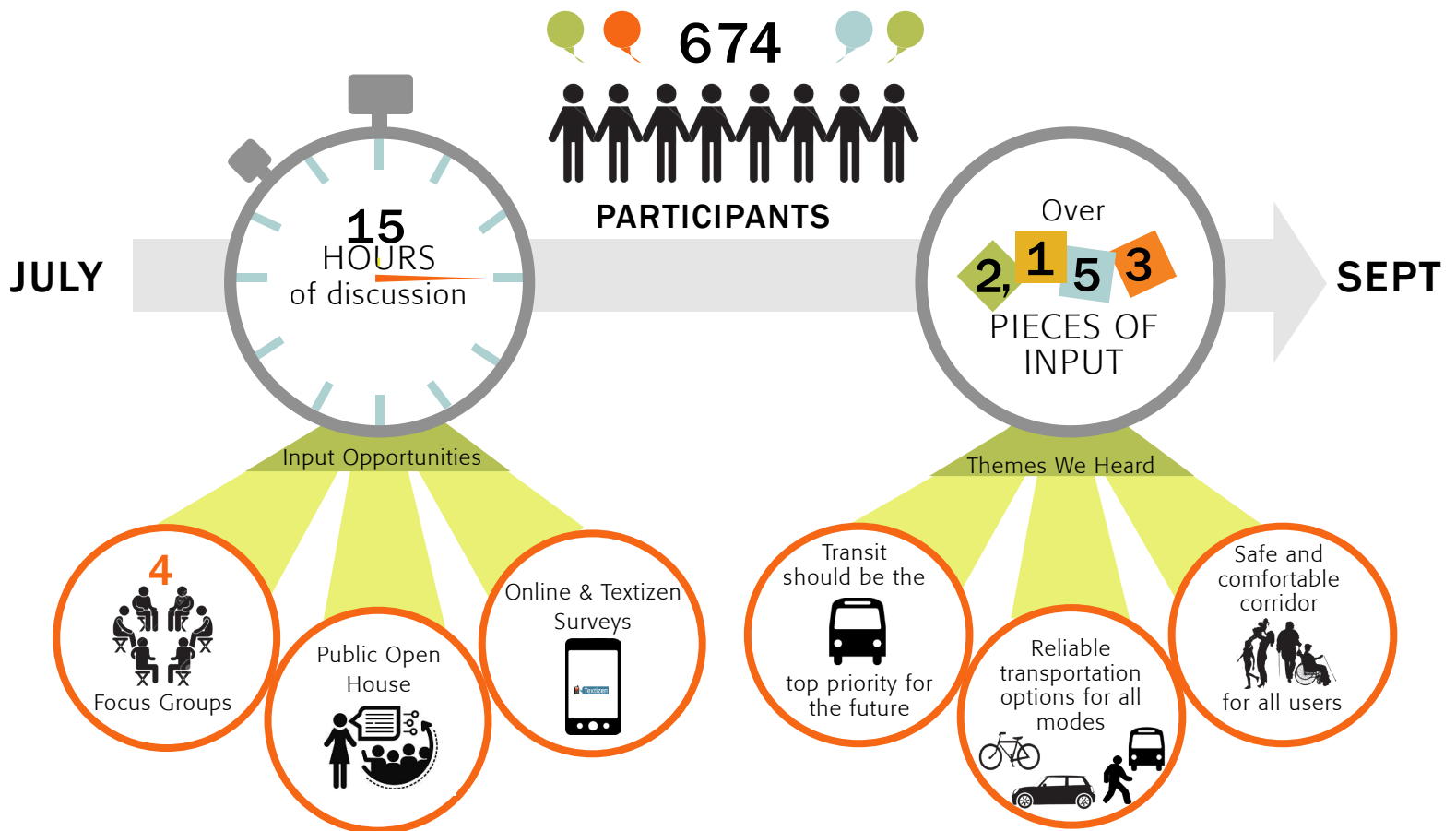
LTS: Level of Traffic Stress

SAFETY

COLLISIONS ON WEST ELIZABETH STREET BETWEEN 2010 & 2014



Visioning Overview

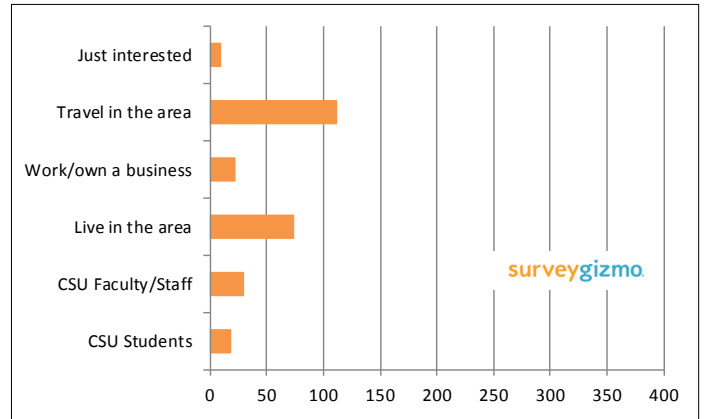
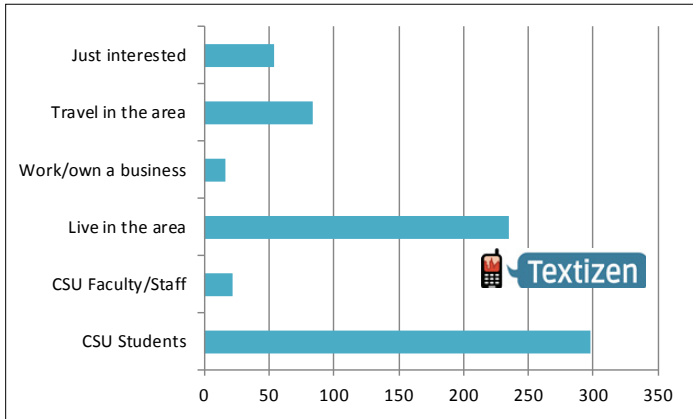


PUBLIC INPUT OPPORTUNITIES

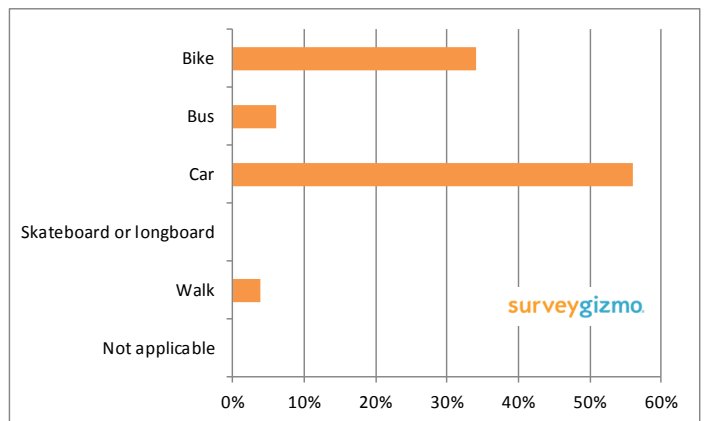
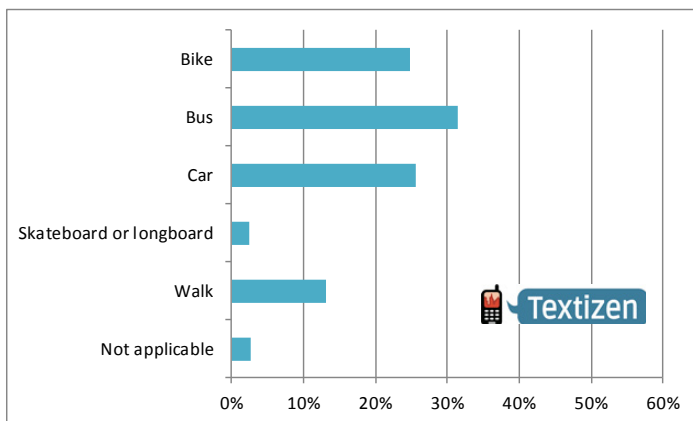


Visioning Survey Summaries

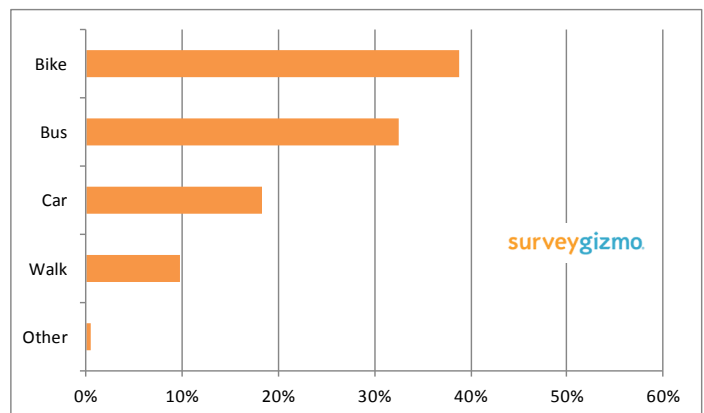
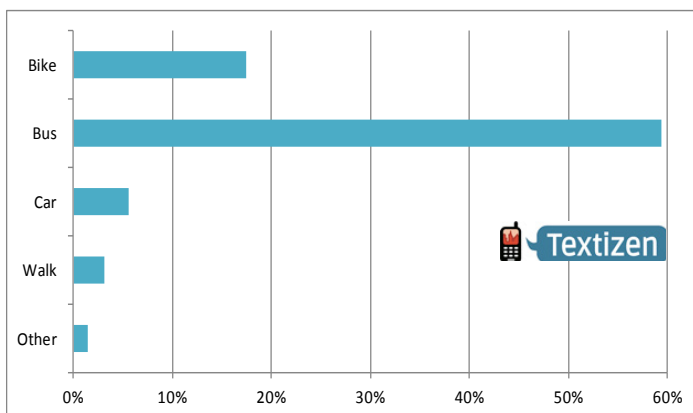
Which of the following apply to you?



Which travel mode do you use most often in this corridor?



When planning for the future, how should modes of transportation be prioritized?



Visioning Survey Summaries

What word(s) best describe your **existing** experience in the West Elizabeth Corridor?



What word(s) best describe your **desired future** experience in the West Elizabeth Corridor?



Activity: Review Draft Vision, Purpose & Need Highlights

VISION

The vision for the West Elizabeth Enhanced Travel Corridor is to serve as an easily accessible, reliable multimodal corridor between the CSU Main and Foothills campuses. The corridor will be well-integrated and well connected within the city, with an emphasis on improving transit, walking and biking. The corridor will foster existing business and future infill and redevelopment to accommodate the growing number and diversity of users in the corridor, which include: students, families and seniors. The network shall:

- **Be unique and adaptable** to the distinctive characteristics of each corridor segment.
- **Be safe and comfortable** for all users.
- **Prioritize public transportation** options.
- **Encourage active transportation** options.
- **Support the interconnectivity** of all modes.
- **Be a beautiful and vibrant** environment.

PURPOSE

The purpose of the West Elizabeth Enhanced Travel Corridor Plan is to develop a corridor plan that is able to serve existing and future transportation demands, with a focus on increasing capacity through multimodal transportation improvements.

Broadly, these improvements will:

- Address anticipated growth in development within and around the study area resulting in a growth in demand for transportation.
- Increase transit, and bicycling and walking infrastructure to meet demand.
- Foster economic vitality through high-quality and attractive facilities.
- Remain fiscally responsible and cost-effective.

More specifically, the purpose is to:

- Increase transit capacity, reliability, and improve transit stop amenities to accommodate current demand and future growth in population, student enrollment, and travel demand.
- Improve transit system connectivity to and from West Elizabeth Street, Colorado State University's Main and Foothills Campuses and other Transfort routes including MAX.
- Improve pedestrian facilities for comfort, safety, and accessibility throughout the corridor.
- Improve bicycling facilities for ease, comfort, and safety.
- Maintain vehicular mobility and enhance access to commercial properties in the corridor.
- Support the interconnectivity of various modes, and increase safety in the entire corridor for all users.

NEED

- **Support anticipated growth**
 - o Growth in population, employment, and student enrollment will increase demand for travel
- **Transit service is inadequate**
 - o Insufficient system connectivity, low and inconsistent route frequencies, poor reliability, lack of capacity to serve current and future demands, and lack of passenger stop amenities.
- **Pedestrian facilities are uncomfortable and incomplete**
 - o Inconsistent and missing sidewalks, as well as sidewalks that are not ADA-compliant; in addition, there are limited north/south crossing opportunities, and pedestrians experience significant delays crossing West Elizabeth Street.
- **Bicycle facilities are uncomfortable and inconsistent**
 - o Incomplete bike lanes and inadequate intersection treatments. There is a higher than expected rate of bicycle- and vehicle-related collisions.
- **Vehicular mobility, safety, and access concerns**
 - o Intersection and driveway turning conflicts, as well as queue spillback at some signalized intersections.
- **Lack of interconnectivity of modes**
 - o Inadequate pedestrian and bicyclist access to transit stops and parking challenges in the corridor.

Activity: Review Alternatives

Evaluation Criteria

West Elizabeth Street Alternatives Analysis Evaluation Criteria

Each criterion used to evaluate the potential cross section components on West Elizabeth Street is defined and described below. Each criterion is based on either the Fort Collins Transportation Master Plan (TMP) or the West Elizabeth Enhanced Travel Corridor Purpose & Need Statement. The specific principle or policy from the TMP being referred to is referenced following the criterion description.







- **Multi-modal transportation network**- a transportation network that allows for the safe, accessible, and convenient use of all modes.
 - **High frequency transit service**- Creates a transit service that runs frequently enough (15 minute or less headways) to allow users to make trips without consulting a schedule; service is frequent enough to allow for the convenient use of transit to major destinations (*TMP Policy T10.6, Purpose & Need Statement*)
 - **Reliable transit service**- Creates a transit service that runs consistently on schedule to allow users to arrive at their destination reliably (*TMP Policy T10.2, Purpose & Need Statement*)
 - **Sufficient transit capacity**- Creates a transit service that contains enough capacity to meet the growing demand for transit, with available space for all desiring riders (*Purpose & Need Statement*)
 - **Physically active transportation**- Promotes safe, comfortable and convenient bicycling and walking (*TMP Policy T8.1, Purpose & Need Statement*)
 - **Safe and convenient pedestrian/bicycle access**- Creates pedestrian and bicycle infrastructure that provides access to key destinations and transit stops (*TMP Policy T11.1 and T12.1, Purpose & Need Statement*)
 - **Complete pedestrian network**- Creates a sidewalk network that is complete and ADA accessible (*TMP Principle T12, Purpose & Need Statement*)

Activity: Alternatives Development

Evaluation Criteria Review

- o **Comfort for bicyclists**- Creates a network of bicycle facilities that is complete and comfortable for all users, by providing continuous designated bicycle facilities along segments and at crossings (*TMP Principle T11, Purpose & Need Statement*)
 - o **Vehicular safety**- Reduces the negative safety impacts associated with vehicle turn conflicts at driveways and queue spillbacks at intersections (*TMP Principle T18, Purpose & Need Statement*)
 - o **Vehicular efficiency**- Creates a transportation network that allows for efficient and easy use of vehicles by minimizing congestion and increasing mobility in alignment with level of service standards (*TMP Principle T13 and T25, Purpose & Need Statement*)
- **Economic opportunity**- Promotes economic vitality for businesses along and near the corridor by easing access for all modes and creating an attractive environment for customers (*TMP Policy T2.1, Purpose & Need Statement*)
- **Beautiful, vibrant and attractive public spaces**- Creates an aesthetically appealing corridor consisting of a well-designed streetscape (*TMP Policy T4.4, Purpose & Need Statement*)
- **Well-connected transportation network**- Creates a transportation network that provides safe and comfortable access between modes and to destinations including pedestrian and transit (*TMP Policy T9.2, Purpose & Need Statement*)
- **Fiscal responsibility**-Supports a model for development that allows the City of Fort Collins to be financially strong and economically resilient (*TMP Policy T6.2 and T14.2, Purpose & Need Statement*)
- **Community Support**- Reflects the vision and values of the community (*TMP Principle T24, Purpose & Need Statement*)

Activity: Concepts for Alternatives

	Discrete Option Example		Provide Additional Options
People Driving		3 travel lanes	
		On-street parallel parking	
People Taking Transit		Bus Rapid Transit dedicated lane	
		Bus Rapid Transit mixed traffic	
People Biking		Buffered bike lane	
		Protected bike lane (one way)	
People Walking		Detached sidewalk	
		Attached sidewalk	
Shields Street		Crossing improvements	
		Raised bike lane	
Corridor Identification and Beautification		Street trees	

	Provide Additional Options	Location
Other Ideas		

Next Steps

Tasks

- Finalize Vision, Purpose & Need
- Finalize Evaluation Criteria & Matrix
- Draft Alternatives

Next Stakeholder Meeting

November 2015 (tentative)

Appendix

Stakeholder Committee Meeting #1

West Elizabeth Enhanced Travel Corridor Plan

July 8, 2015 – 6:00-8:00 pm

Present:

Alison Anson
Aaron Buckley
Rick Callan
Laurel Grimm
Kay Henke
Edward Kendall
Gail McKee
Bonnie Michael
Kathy Nicol
Troy Ocheltree
Peter Rhoades
Gene Schoonveld
Dave Thompson
Michael Werner

Absent:

Madi Book
Jean Robbins
Jordan Sowell

Staff & Consultants:

Charles Alexander, Fehr & Peers Associate
Emma Belmont, Transfort Transit Planner
Amy Lewin, FC Moves Senior Transportation Planner
Rachel Prelog, FC Moves Intern
Carly Sieff, Fehr & Peers Transportation Planner

Agenda

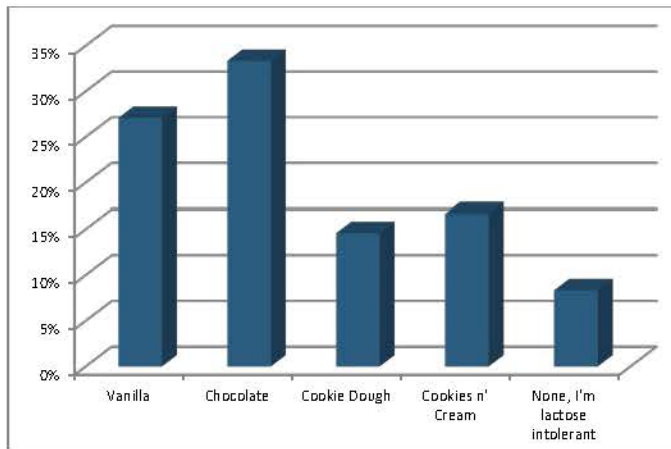
6:00-6:10 – Dinner, settle-in
6:10-6:20 – Introductions
6:20-6:40 – Project background
6:40-7:05 – Tradeoff and case study keypad polling
7:05-7:35 – Cross-section building exercise*
7:35-7:50 – Present cross-section building concepts*
7:50-8:00 – Wrap-up, next steps

*Due to other activities running over on time committee members were able to participate in these activities after the meeting

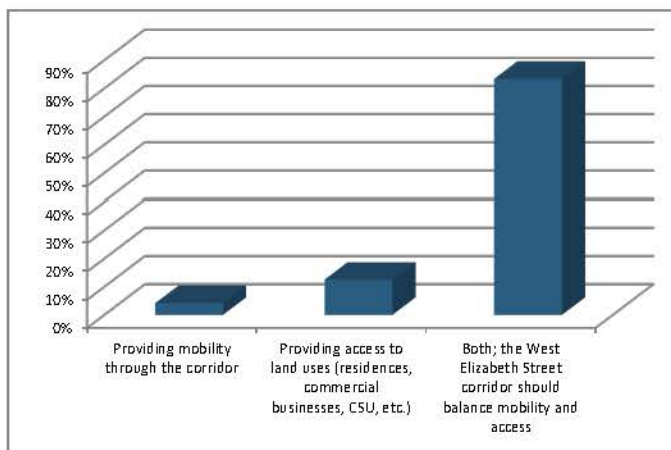
Stakeholder committee members were provided workbooks which served as a tool to help guide participants through the information presented in the agenda above. This included general information relevant to the plan as well as specific activities and information pertinent to the current planning activities.

Keypad Polling Results

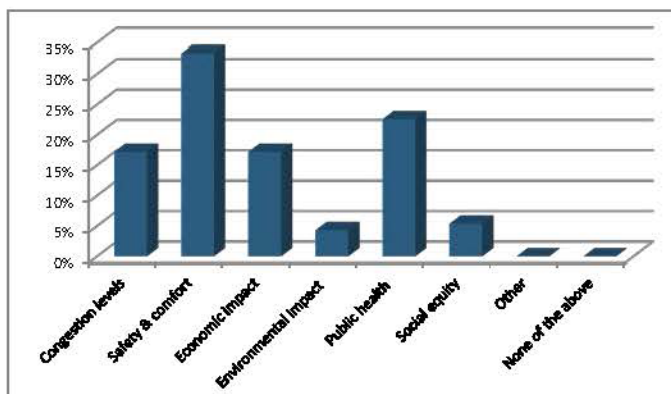
1. What is your favorite flavor of ice cream? (Test question)



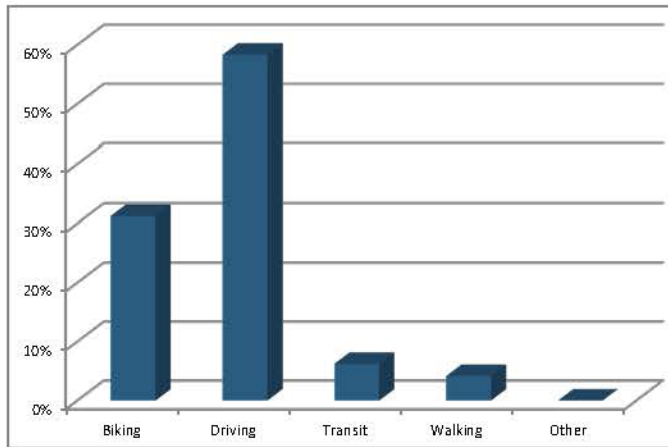
2. The West Elizabeth Street corridor's primary function should be?



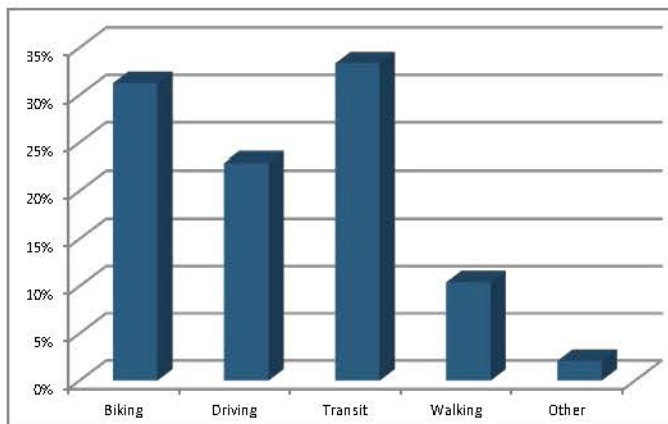
3. Success on the West Elizabeth Street corridor should be defined by? (Select 2)



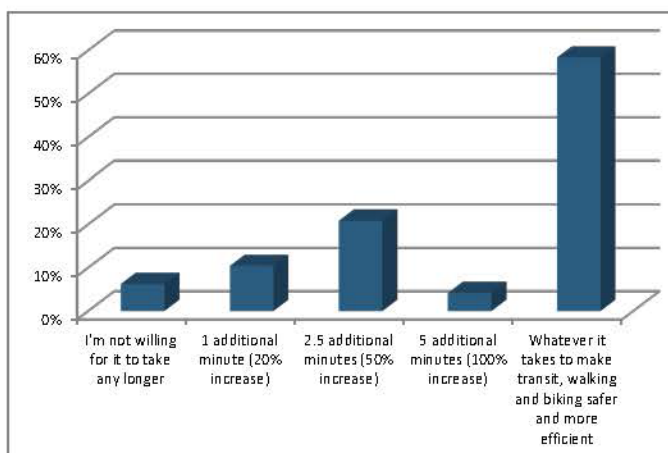
4. What mode of travel do you most often use in this corridor?



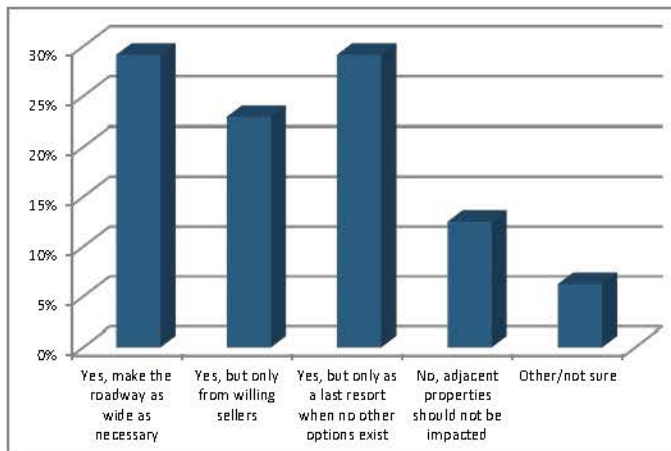
5. What is the most important mode of transportation on the West Elizabeth Street corridor?



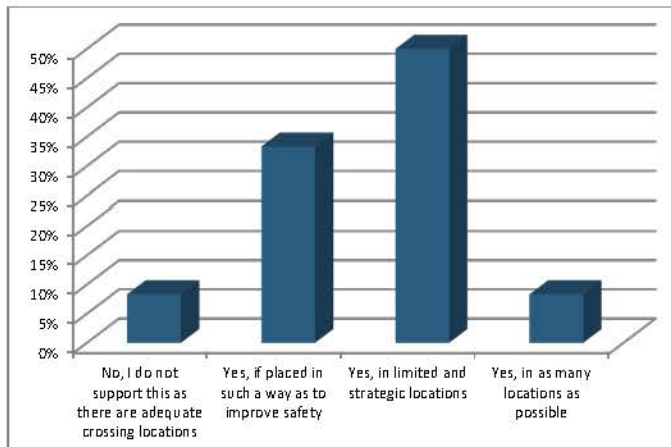
6. Are you willing to spend additional time driving on West Elizabeth Street to make transit, walking, and biking safer and more efficient? The trip from Shields Street to Overland Trail is currently about 5 minutes.



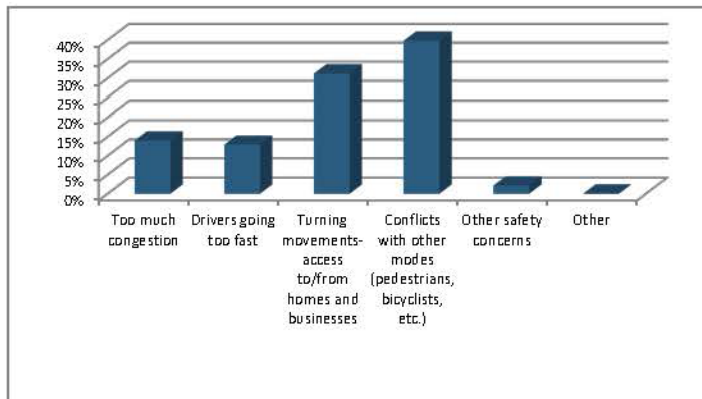
7. Should the City consider purchasing slivers of adjacent properties to make the corridor safer and more efficient for all modes?



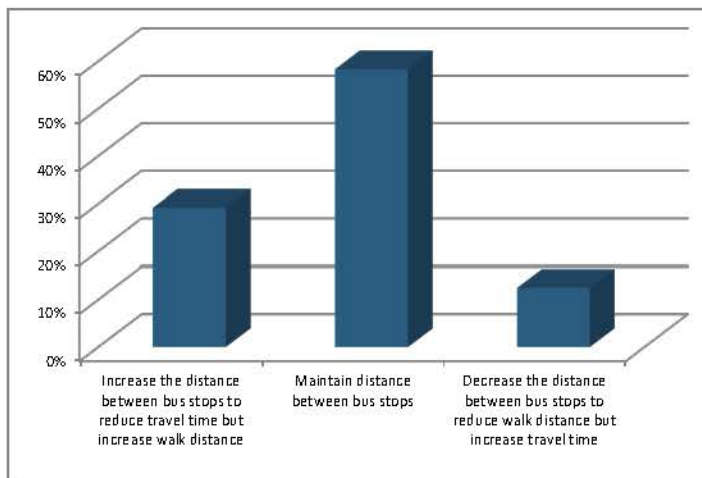
8. West Elizabeth Street currently has 2 midblock crossings. Adding more crossing can improve pedestrian convenience, but can also increase vehicle congestion and transit travel times. Do you support adding additional pedestrian crossing at high-use and priority locations?



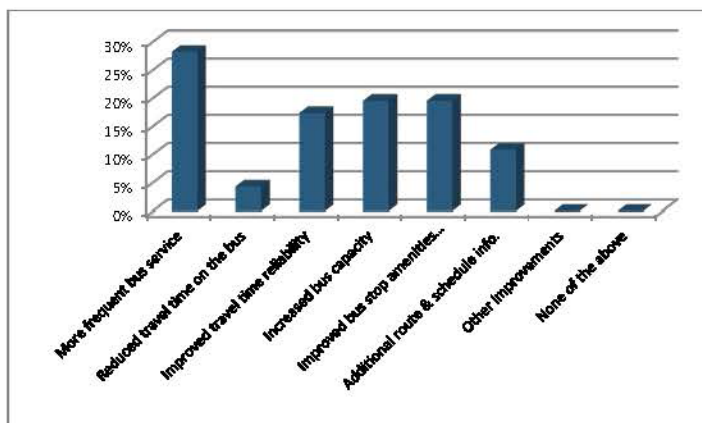
9. What is your biggest concern when driving on West Elizabeth Street? (Select 2)



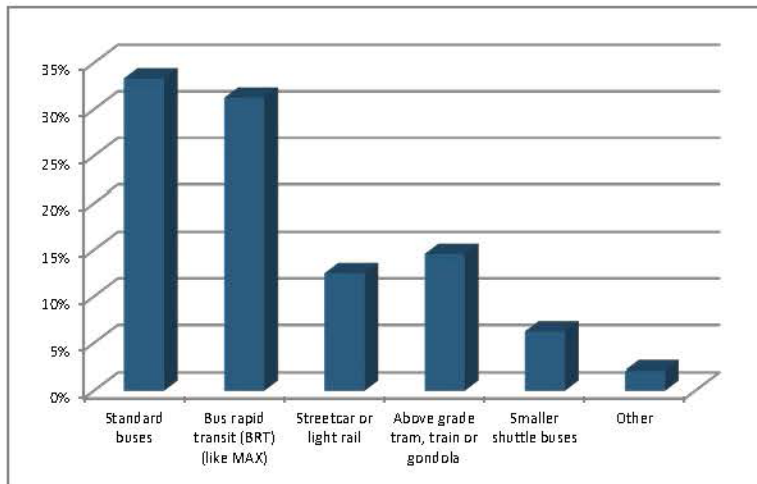
10. I would rather:



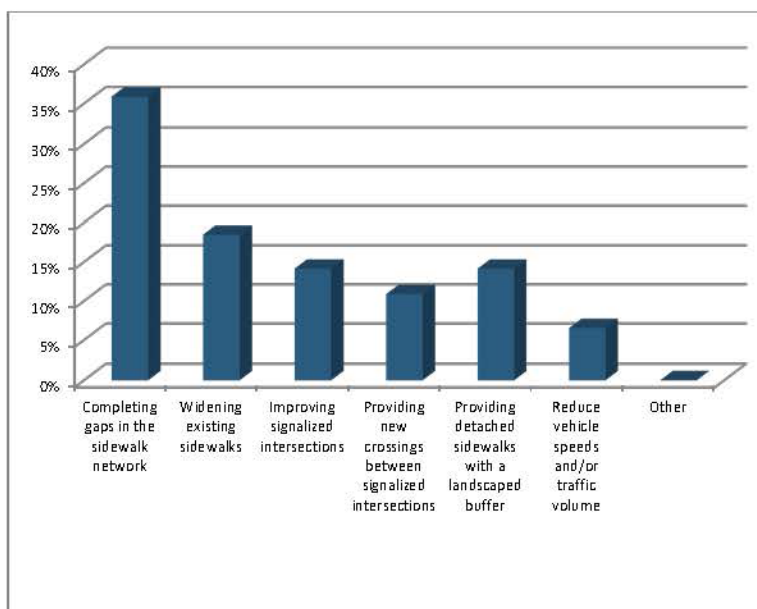
11. What improvements are most needed for transit within this study area (West Elizabeth Street & Plum Street)? (Select 2)



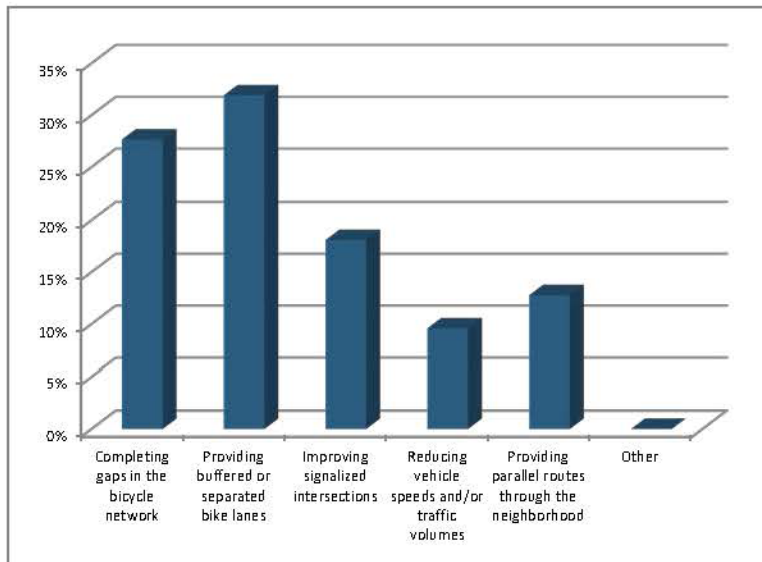
12. The right type of transit service for the study area is:



13. Pedestrians' comfort on West Elizabeth can be best increased by? (Select 2)



14. Bicyclists' comfort can be best increased by? (Select 2)

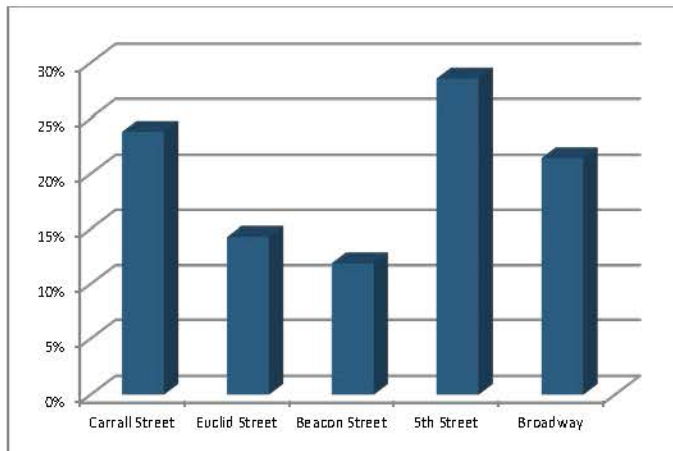


Keypad Polling Discussion

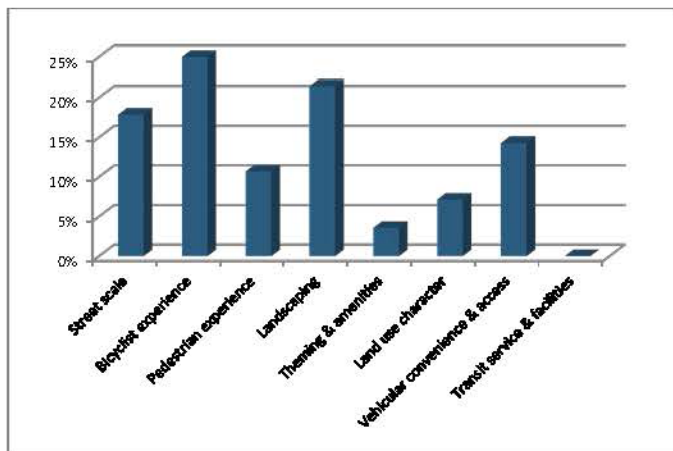
- Public Health
 - Encompassed by the fact that if you head west on Elizabeth you get to nature
 - Providing opportunities for walking and biking promotes a greater sense of community
 - There seems to be a large focus on walking and biking in the corridor
 - High use of alternative modes
- Safety
 - Correlated with the number of collisions
 - Seen and have been involved in pedestrian/bicycle/car conflicts
 - One solution is increased education
 - Safety and congestion are highly correlated, especially on (CSU) event days
- Economic Impact
 - People avoid businesses in the area because of transportation-related issues
 - People go Downtown rather than Campus West because it is safer to bike Downtown
 - Need to maintain access to businesses
- Mode Prioritization
 - Transit- not a desirable mode if it's at capacity
 - It is an important issue if so many people are being left behind
 - Vital resource for student; provides main access to CSU
 - Could free up space for other modes if it was able to take cars off the road
 - Weather conditions make transit necessary, provides mobility in winter months
 - One Stakeholder Committee Member - takes bus to CSU a lot, but only takes the bus to other places about once a month
 - Driving- has become the default solution. If you improve biking, walking, and transit it will reduce the need for driving
 - Driving is necessary for longer commutes
 - People avoid driving on Elizabeth because of bike congestion
- Access vs Mobility- Elizabeth should balance the two

Case Study Polling Results

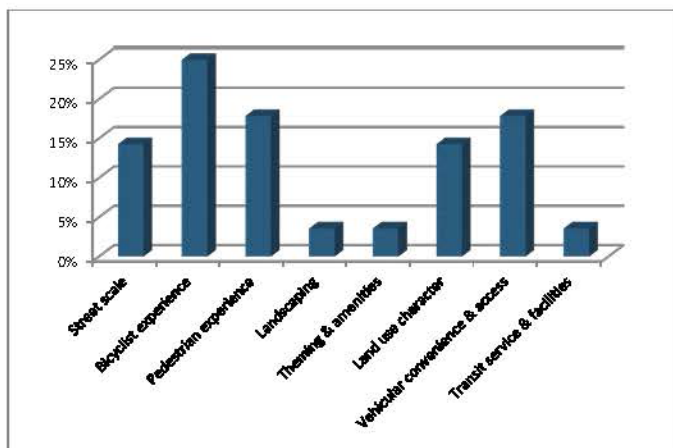
1. Which corridors did you find the most memorable? (Select 3)



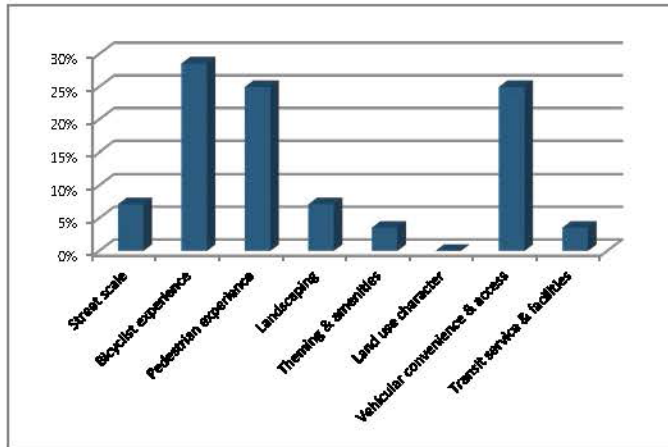
2. Choice 1: Which elements made you choose this corridor? (Select 2)



3. Choice 2: Which elements made you choose this corridor? (Select 2)



4. Choice 3: Which elements made you choose this corridor? (Select 2)



Case Study Discussion

Carrall Street



- People naturally slowdown in this type of environment
- Human scale increases the pedestrian experience; things were built to accommodate the pedestrian
- Liked the separated bike lane (like on Shields south of Drake)

Euclid Street



- People were deterred from the transit option because the center running would increase conflicts with access to transit stops
 - With that transit layout, a lot of pedestrians would be crossing the street and slowing down traffic
 - It is also difficult to turn across transit to access businesses
- Others liked the center running transit because it would take up less space than two-lane bus options
 - May also increase safety because vehicles would expect people to cross the roadway more often

Beacon Street



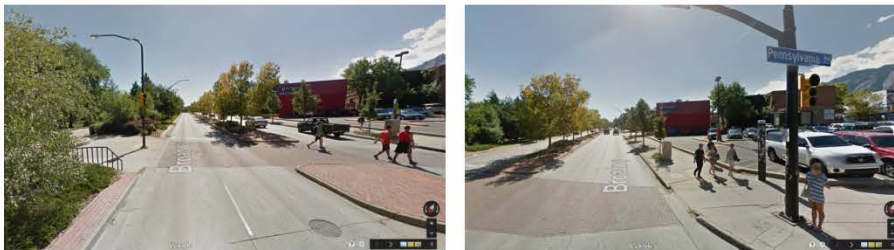
- Desirable because of the dominant sense of place
- People liked that this transit option seemed to take up less space

5th Street



- People slowdown in places with lots going on, such as areas with greater amounts of landscaping
- They want to spend more time and not just pass through
- This option seems to match Fort Collins character the best

Broadway Street



- People liked that all the modes had their own space
 - Separated bicycle facilities makes driving less stressful when you know where the bicyclists are going to be
- There was a good balance between modes
- People felt like it was corridor you just wanted to pass through
 - Not Memorable
 - Bad for business

Common Case Study Discussion Themes

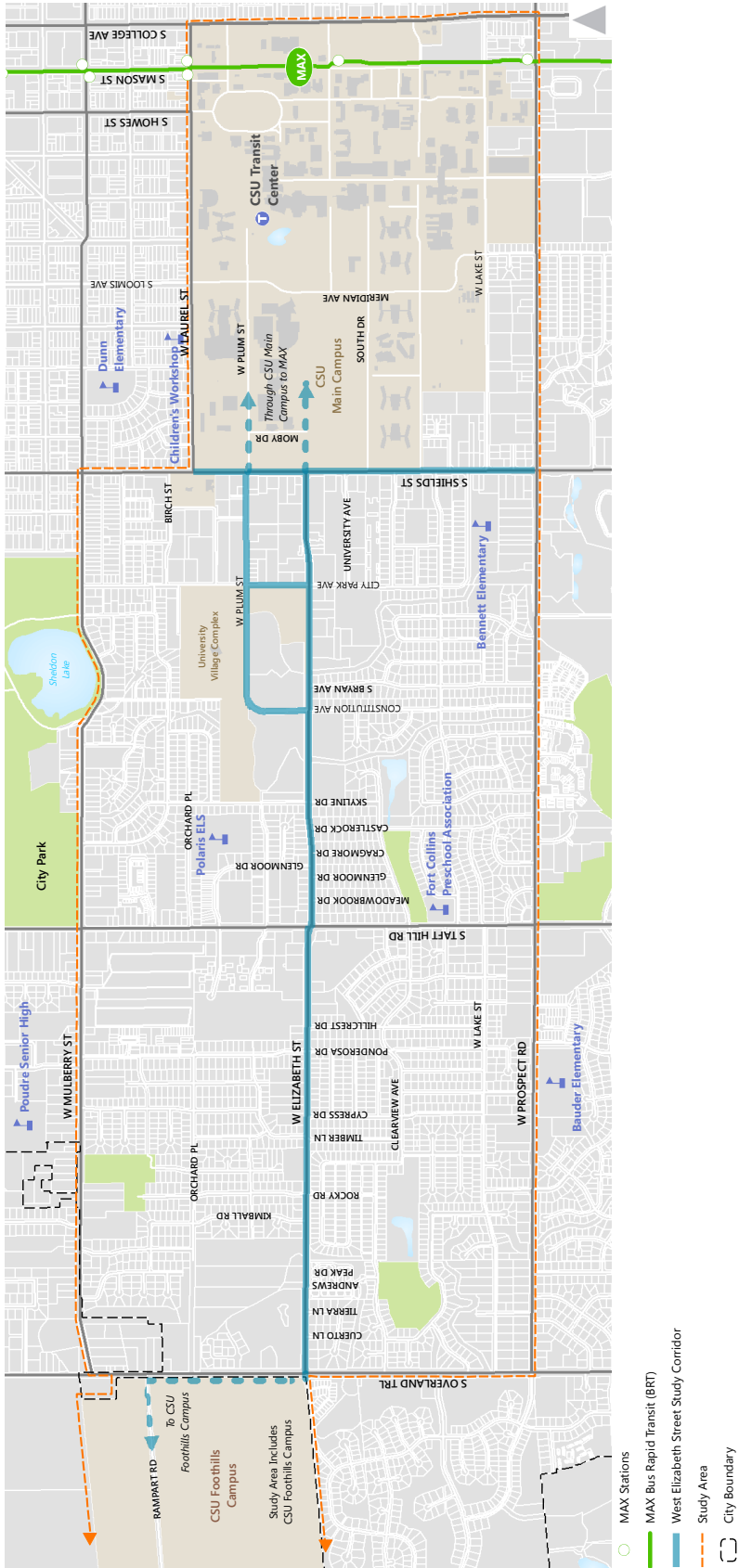
- Placemaking
- Landscape
- Separation
- Defining modes

Draft Vision, Purpose & Need

1. INTRODUCTION

The West Elizabeth Street corridor has been identified in the Transportation Master Plan (TMP) as part of a citywide network of Enhanced Travel Corridors (ETCs) – uniquely designed corridors with an emphasis on high-frequency transit, bicycling and walking. ETCs are intended to support high quality economic development opportunities for mixed-use, transit-oriented development and support Fort Collins’ active lifestyles and environmental stewardship goals. The West Elizabeth ETC Plan will develop a short- and long-term vision for the corridor based on an understanding of the transportation, land use, environmental, economic and social needs of the area.

The corridor plan focuses on West Elizabeth Street from Overland Trail to Shields Street, with an emphasis towards connectivity to CSU's Foothills Campus on the west, and CSU's Main Campus (including MAX stations) on the east, as shown in **Figure 1**. In addition to West Elizabeth Street itself, adjacent corridors are also considered as key to the overall study area’s transportation network: Constitution Avenue (north of West Elizabeth Street), Plum Street (between Constitution Avenue and Shields Street), City Park Avenue (between West Elizabeth Street and Plum Street) and Shields Street (between Prospect Road and Laurel Street). An initial analysis of Shields Street was conducted as part of the West Central Area Plan (WCAP), and this corridor is undergoing additional analysis as a part of the West Elizabeth ETC Plan given its nexus to issues identified through this plan. To a lesser extent, other adjacent streets will be considered—for example, related to cut-through traffic and/or their role in the Low-Stress Bike Network proposed in the Bicycle Master Plan. The Study Area Map (**Figure 1**) represents the project’s focuses.



West Elizabeth Street Study Area
Figure 1

2. VISION

The vision for the West Elizabeth Enhanced Travel Corridor is to serve as an easily accessible and reliable multimodal corridor between the CSU Main and Foothills campuses. The corridor will be well-integrated and well-connected within the city, with an emphasis on improving transit, walking and biking. The corridor will foster existing business and economic vitality and future infill and redevelopment to accommodate the growing number and diversity of users in the corridor, which include: students, families and seniors. The network shall:

- **Be unique and adaptable** to the distinctive characteristics of each corridor segment.
- **Be safe and comfortable** for all users.
- **Prioritize public transportation** options.
- **Encourage active transportation** options.
- **Support the interconnectivity** of all modes.
- **Be a beautiful and vibrant** environment.

3. PURPOSE AND NEED

INTRODUCTION

The purpose and need statement identifies the goals and needs for the West Elizabeth Enhanced Travel Corridor (ETC) study area. The project is needed because of the current deficiencies in the multimodal transportation system on the corridor. These deficiencies include: inadequate transit service; incomplete, non-ADA compliant pedestrian facilities; incomplete, low-comfort bikeways, vehicular congestion, and conflicts at access points, all resulting in potential safety issues for users in the corridor. Not only are these deficiencies present today, they also present challenges in serving the anticipated growth in population, employment, student enrollment and travel demand in the study area.

PROJECT PURPOSE

The purpose of the West Elizabeth Street Enhanced Travel Corridor Plan is to develop a corridor plan that is able to serve existing and future transportation demands, with a focus on increasing capacity through multimodal transportation improvements.

Broadly, these improvements will:

- Address anticipated growth in development within and around the study area resulting in a growth in demand for transportation
- Increase transit, and bicycling and walking infrastructure to meet demand
- Foster economic vitality through high-quality and attractive facilities
- Remain fiscally responsible and cost-effective

More specifically, the purpose is to:

- Increase transit capacity, reliability, and improve transit stop amenities to accommodate current demand and future growth in population, student enrollment, and travel demand
- Improve transit system connectivity to and from West Elizabeth Street, Colorado State University's Main and Foothills Campuses and other Transfort routes including MAX
- Improve pedestrian facilities for comfort, safety, and accessibility throughout the corridor
- Improve bicycling facilities for ease, comfort, and safety and to attract new riders

STATEMENT OF PROJECT NEED

- **Support anticipated growth**
 - Growth in population, employment, and student enrollment will increase demand for travel.
- **Transit service is inadequate**
 - Insufficient system connectivity, low and inconsistent route frequencies, poor reliability, lack of capacity to serve current and future demands, lack of passenger stop amenities and safe access to stops using walking and bicycling facilities.
- **Pedestrian facilities are uncomfortable and incomplete**
 - Inconsistent and missing sidewalks, as well as sidewalks that are not ADA-compliant; in addition, there are limited north/south crossing opportunities, and pedestrians experience significant delays crossing West Elizabeth Street.
- **Bicycle facilities are uncomfortable and inconsistent**
 - Incomplete bike lanes and inadequate intersection treatments. There is a higher than expected rate of bicycle- and vehicle-related collisions.
- **Vehicular mobility, safety, and access concerns**
 - Intersection and driveway turning conflicts, as well as queue spillback at some signalized intersections.
- **Lack of interconnectivity between of modes**
 - Inadequate pedestrian and bicyclist access to transit stops and parking challenges in the corridor

ANTICIPATED GROWTH

Study area growth in population, employment, and student enrollment will increase demand for travel. Without a transformation of the corridor, future travel demand in the study area will most likely mirror the study area's existing mode share. This will further stress the study area's existing transit service, walkways, and bikeways. Additionally, a lack of transformation will also result in high growth rates for vehicle travel. Without improvements to transit service, walkways and bikeways the North Front Range Regional Travel Model projects the following growth rates in vehicle travel from 2012 to 2040:

- West Elizabeth Street – 23 percent (0.8 percent per year) during the AM peak hour and 12 percent (0.5 percent per year) during the PM peak hour.
- Shields Street – 16 percent (0.6 percent per year) during the AM peak hour and 19 percent (0.8 percent per year) during the PM peak hour

These 2040 forecasts generally assume a 0.53 percent annual growth in population and 0.33 percent annual growth in employment with no major changes to existing transit service or walk/bike mode share.

INADEQUATE TRANSIT SERVICE

System Connectivity

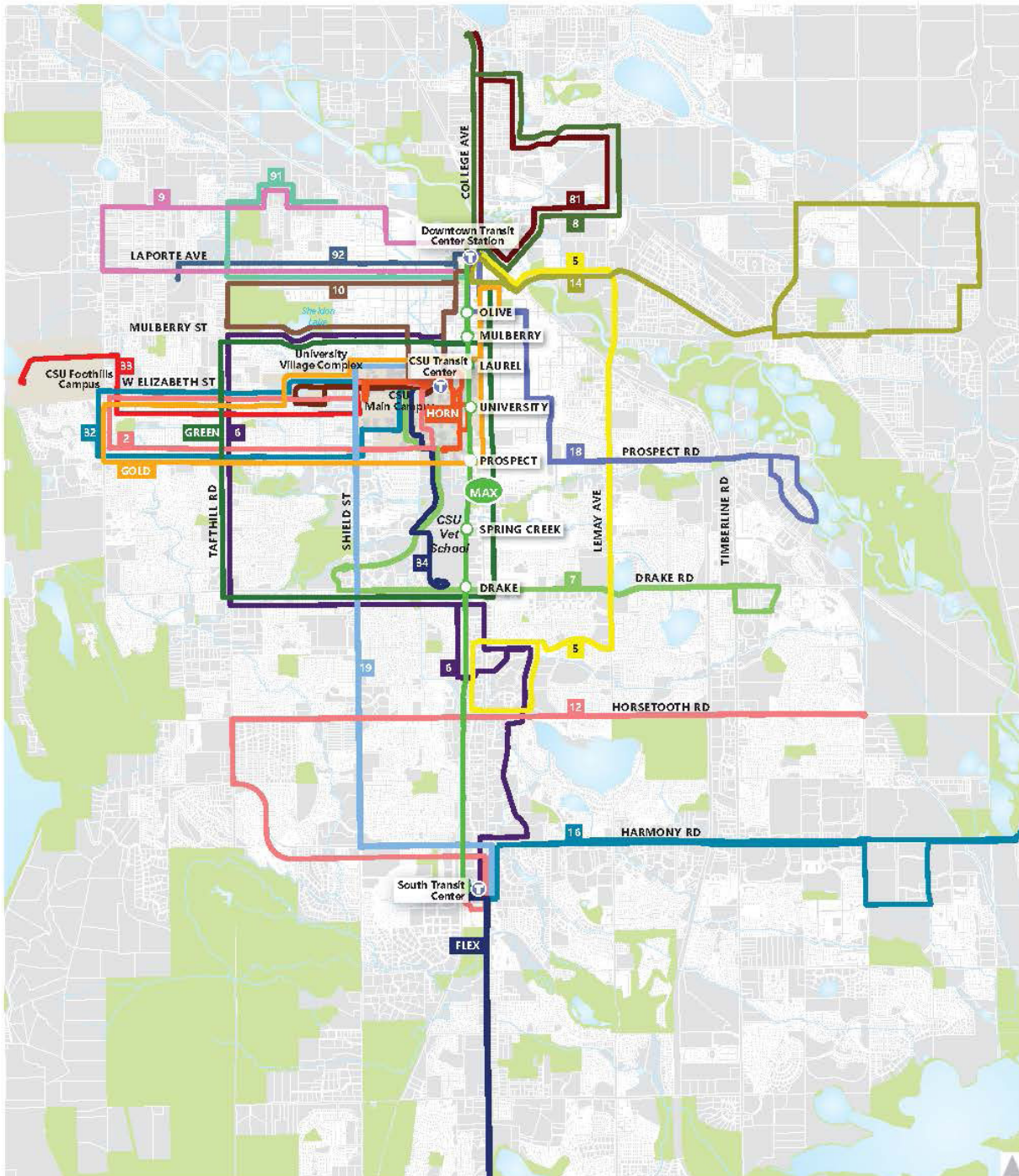
Transfort has designed a hybrid grid/hub-and-spoke network, as shown in **Figure 2**. This service structure is typically utilized in areas with lower service frequencies. It allows passengers to transfer between routes at hub locations, often via timed transfers while still maintaining a grid configuration where strong mixed use corridors are present. Because of this network configuration, there is a lack of connectivity between routes in the study area and the rest of the system. It takes at least one transfer to reach most major destinations from the study area, with the exception of Colorado State University. More transfers and increased travel time deter both existing and new riders.

Low and Inconsistent Frequencies

Service frequency is the most important factor in recruiting new transit riders. The table below shows the distribution of frequency (10, 30 and 60 minutes) of the nine routes in the study area (Routes 2, 6, 10, 19, 31, 32, 33, HORN and MAX). During the Peak and Midday time periods, only three of the nine routes run every ten minutes (MAX, HORN, and 31). During the summer (when CSU is not in session), only one route operates at ten-minute frequencies (MAX). The remainder of the routes run every 30 or 60 minutes or are not in service. Frequency and service is reduced even further on evenings, weekends and during the summer. This means that the majority of routes do not run frequently enough to allow for "spontaneous use" during peak, midday periods or when CSU is not in session. The current frequencies require users to check the schedule before arriving at the bus stop, making transit less convenient.

Table 1: Frequency of Transfort Routes

Frequency (minutes)	Number of Routes		
	Peak (AM/PM)	Midday	CSU not in Session
10	3	3	1
30	4	3	2
60	2	3	3
Does not run	--	--	3



- MAX Stations
- 16 Bus Route
- MAX Bus Rapid Transit (BRT)

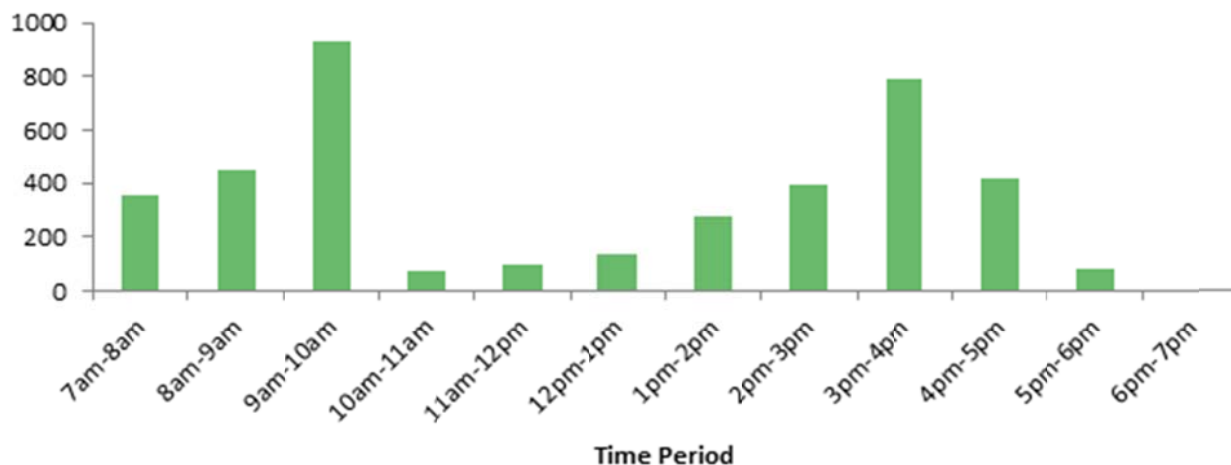
Poor Reliability

The nine Transfort routes that travel within the study area range in their level of on-time performance. Transfort service standards define on-time trips as those trips that serve a time-point stop within 0 to 5 minutes of the published public schedule. Using this standard, 85 percent of trips in the West Elizabeth Corridor study area are on-time, 14 percent are late, and 1 percent of trips are early. Within the study area, on-time performance ranges from a high of 98 percent for the HORN and Route 31 to a low of 72 percent for Route 2. This range and high upper limit is an indicator of inadequate reliability in routes running within the study area. Reliability is important to maintain existing riders and recruit new riders.

Lack of Capacity to Serve Existing and Future Demand

Transfort currently deals with significant passenger leave behind issues. 98 percent of all leave behinds are on Route 31¹. The problem is concentrated along Plum Street just west of the CSU Main Campus in the mornings and at the CSU Transit Center (CTC) during the afternoon. In an attempt to address this issue, during the periods of highest demand Transfort has supplemented Route 31 with additional trailer buses that are not part of the schedule. Without additional transit vehicle capacity and/or frequencies the potential for overcrowding and passenger leave behinds will increase, especially as the area continues to develop/redevelop and more student-oriented housing is built. **Figure 3** shows the number of passengers left behind by all routes in the study area between January and April 2015 by time period

Figure 3: Passenger Leave Behinds by Time Period



¹ Passenger leave behind data covers January to April 2015.

Lack of Patron Stop Amenities and Access to Stops

The bus stops in the study area have very few patron amenities and are often not accessible using the pedestrian and bicycle networks. Providing pedestrian and bicycle access to transit stops is an important component of making riding transit safer, more accessible and comfortable. The study area does not provide complete and ADA accessible sidewalks, or bus stop loading and unloading areas and stops are not always located near signalized or enhanced crossings. Bike lanes are also inconsistent with a lack of end of trip bike facilities such as bike parking.

UNCOMFORTABLE AND INCOMPLETE PEDESTRIAN FACILITIES

The sidewalks in the study area are inconsistent in width, incomplete in many sections and generally non-compliant with ADA requirements. Other pedestrian deficiencies include lack of crossing opportunities and/or significant delay for pedestrians crossing in many locations in the study area. **Figure 4** shows the level of safety and comfort for pedestrians within the study area, based on sidewalk width, buffer width and difficulty in midblock crossing.

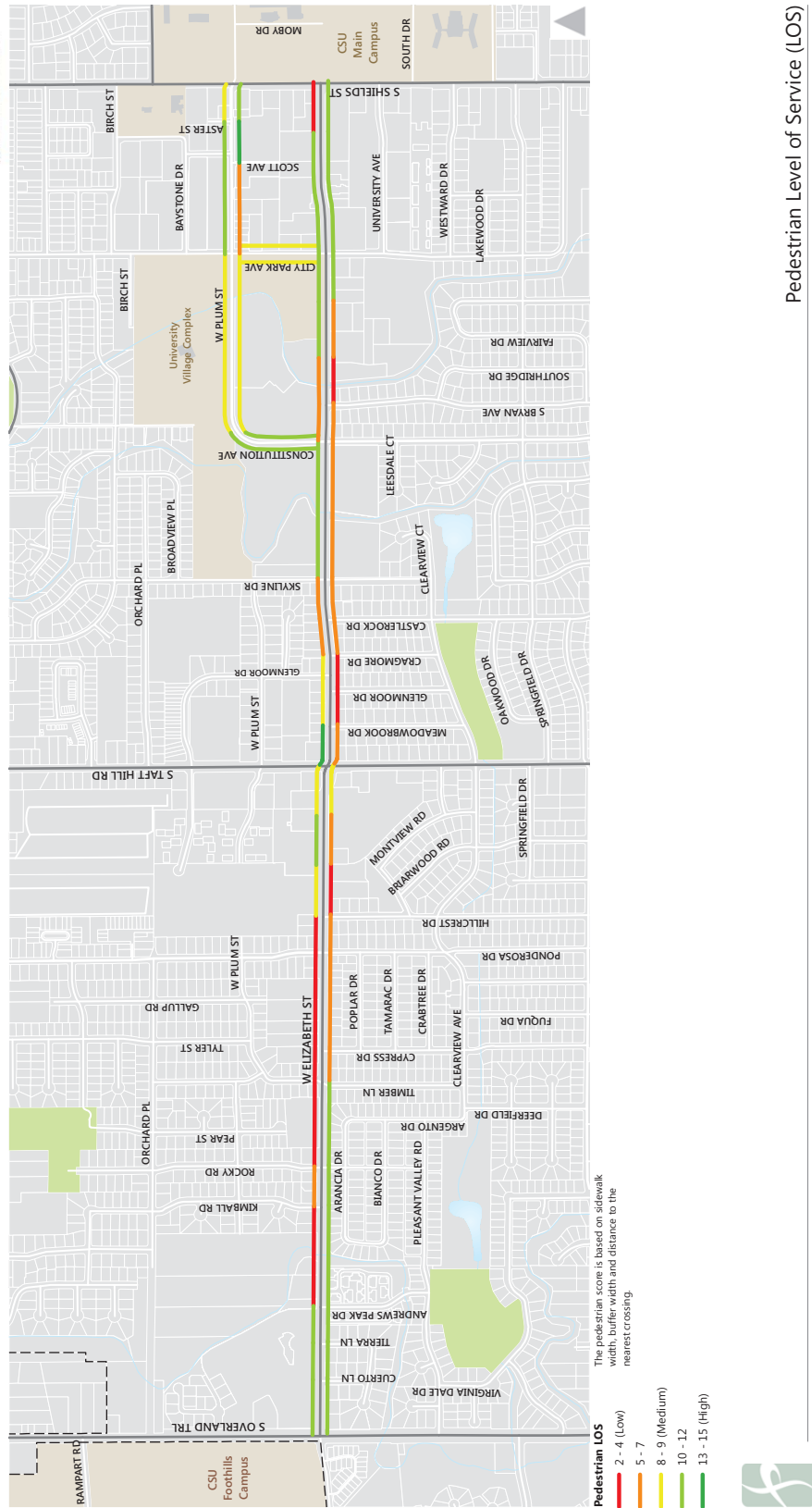
Inconsistent, Incomplete and ADA Non-Compliant

On West Elizabeth Street, several blocks west of Taft Hill Road and one block just west of Shields Street are missing sidewalks completely. In the segment west of Constitution Avenue, when sidewalks are present, they generally are below the four foot minimum width required to be ADA compliant. In addition, the majority of sidewalks in the study area do not have a tree lawn buffers to provide a space between pedestrians and vehicular traffic. Many driveways are present throughout the whole corridor, specifically in the Campus West area as well as the western segment of the study area; these driveways sometimes make the sidewalk slant at an uncomfortable angle for walking and for people in mobility devices, and the driveways also introduce conflicts for pedestrians with turning vehicles. The overall result is a less comfortable pedestrian experience.

Limited Midblock Crossings and Delay at Crossings

The western mile of the West Elizabeth Street Corridor currently offers no marked north/south pedestrian crossings opportunities, besides the Overland Trail and Taft Hill Road signalized intersections. One crossing is planned to be constructed approximately $\frac{1}{4}$ mile west of Taft Hill Road in fall 2015, but that leaves a $\frac{3}{4}$ mile segment of West Elizabeth without a north/south crossing location. At most signalized intersections, the average pedestrian delay is relatively high during both the AM and PM peak hours. Five of the nine intersections in the study area have a delay greater than 45 seconds in the AM peak hour and greater than 50 seconds in the PM peak hour.

Shields Street has a high demand for pedestrian crossings and a perceived low level of comfort. Aside from the Plum Street and West Elizabeth Street intersections, the next marked crossing to the north is 600 feet from Plum Street at Laurel Street and the next marked crossing to the south is 2,000 feet from West Elizabeth Street at Lake Street. There are also a high number of driveway conflicts in certain areas on Shields Street. As the area west of Shields continue to develop at a higher density, and as CSU's master plan is built out, demand for crossing in this area will likely increase.



Pedestrian Level of Service (LOS)
Figure 4

UNCOMFORTABLE AND INCONSISTENT BICYCLE FACILITIES

Improving bicycle facilities will address current safety and comfort issues as well as encourage new riders.

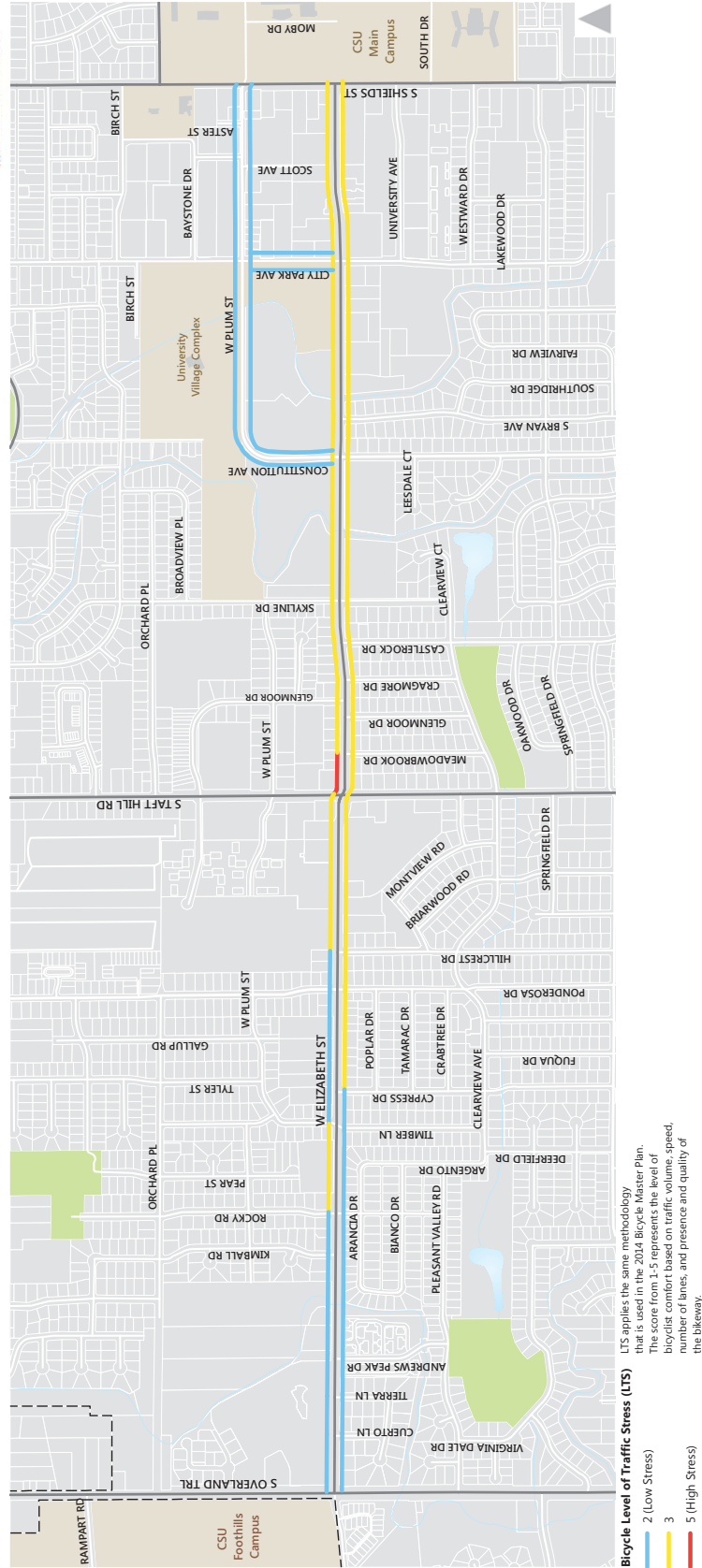
Incomplete Bike Lanes

Bicycle facilities within the study area are inconsistent in width, type and existence in some locations. Along West Elizabeth Street, bike lanes range from five feet to seven feet in width and are absent completely from certain segments. These inconsistencies in bicycle facilities lead to a perceived low level of comfort for bicyclists. Bike lanes on Shields Street within the study area have also been identified as having a low level of comfort.

Inadequate Intersection Treatments, and Driveway Conflicts

There are inadequate intersection treatments for bicyclists at several of the signalized intersections, both at the approach to a number of intersections as well as through the intersection. The intersection of West Elizabeth Street/Shields Street has the largest number of bicyclists in the peak hour, but does not have intersection treatments to assist with bicyclist turning movements. The intersections of West Elizabeth Street/City Park Avenue and West Elizabeth Street/Ponderosa Drive have more crashes than at similar intersections. There are also a high number of driveway conflicts for bicyclists in certain sections of West Elizabeth Street. There are more crashes along West Elizabeth Street than at similar segments. In addition, Average bicyclist delay at three intersections in the study area in both the AM and PM peak hour is greater than 30 seconds, LOS D or E. The highest average bicyclist delays are observed at the West Elizabeth Street/Constitution Avenue, West Elizabeth Street/City Park Avenue, Shields Street/Laurel Street, and Shields Street/Lake Street intersections. These inadequate intersection treatments and delays encourage risky bicycling behavior contributing to the safety issues observed in the corridor.

Figure 5 shows the Level of Traffic Stress for bicyclists within the study area, based on traffic volume, speed, number of lanes and presence and quality of bikeway.



Bicycle Level of Traffic Stress (LTS)
Figure 5

VEHICULAR MOBILITY, SAFETY AND ACCESS CONCERNS

A traffic and safety analysis identifies the current challenges related to vehicles in the corridor.

Safety

There is a higher than expected number of collisions at two intersections within the study area and three of the seven segments within the study area. The intersection with the largest number of crashes is the West Elizabeth Street/Shields Street intersection, followed by the West Elizabeth Street/Taft Hill Road and then the Shields Street/Plum intersections. A heat map of all crash types in the study area is shown **Figure 6**.

Intersection and Driveway Turning Conflicts (Access)

There are more than 20 access points along West Elizabeth Street between Shields Street and Constitution Avenue and more than 10 access points in the quarter mile west of Taft Hill Road, creating a number of conflicts from vehicles turning out of driveways, resulting in a history of crashes along these segments, and confusion and frustration for road users.

Queue Spillback at Signalized Intersections

Vehicular issues are resulting from the spillback of vehicles at signalized intersections, in some cases exacerbated by a low intersection level of service (LOS) and high approach delay. Of specific concern are movements where queued traffic spills back into moving travel lanes. The northbound left-turn at the West Elizabeth Street/Shields Street intersection has been identified by the public and stakeholders for its queue spillback issues; this movement currently operates at LOS F during the PM peak hour.

Safety issues resulting from turn conflicts and queue spillback at intersections will increase in the future if countermeasures to these issues are not developed. Additionally, high growth rates in vehicle travel resulting from a lack of improvements to transit service, walkways and bikeways may exacerbate these safety issues.

Alternative Routes/Cut-Through Traffic

Due to congestion and delay at several intersections in the study area, vehicles are finding alternative, more efficient routes. Common alternative routes include City Park Avenue and University Avenue. This rerouting has potential negative implications for surrounding neighborhoods and adjacent corridors including speeding, additional traffic and congestion.

LACK OF MODE CONNECTIVITY AND UNSAFE CONDITIONS

There is a lack of connectivity between modes, specifically walking, bicycling and transit. The first mile last mile problem describes the lack of facilities and accessibility between transit stops and stations and origins and destinations. The bus stops in the study area have very few patron amenities and are often not accessible using the pedestrian and bicycle networks. Providing pedestrian and bicycle access to transit stops is an important component of making riding transit safer, more accessible and comfortable. The study area does not provide complete and ADA accessible sidewalks, or bus stop loading and unloading areas and stops are not always located near signalized and enhanced midblock marked crossings. Bike lanes are also inconsistent with a lack of end of trip bike facilities such as bike parking. A bike share or car share program would help address the first mile last mile problem.

Unsafe conditions are present for pedestrians and bicyclists, as reflected by the higher than expected number of bicycle and pedestrian-related collisions in the study area. The Shields Street/Plum Street, West Elizabeth Street/ Shields Street, West Elizabeth Street/Castlerock Drive and West Elizabeth Street/Taft Hill Road intersections have the highest number of pedestrian-related crashes in the study area, and some of the highest in the City. The Plum Street/City Park Avenue, West Elizabeth Street/City Park Avenue, West Elizabeth Street/Constitution Avenue and West Elizabeth Street/Ponderosa Drive intersections also have pedestrian-related crashes.

The West Elizabeth Street/City Park Avenue intersection has the highest number of bicycle-related crashes in the study area, followed by the West Elizabeth Street/Taft Hill Road and West Elizabeth Street/Shields Street intersections.



All Crash Types - 2010 - 2014
Figure 6

Notes

