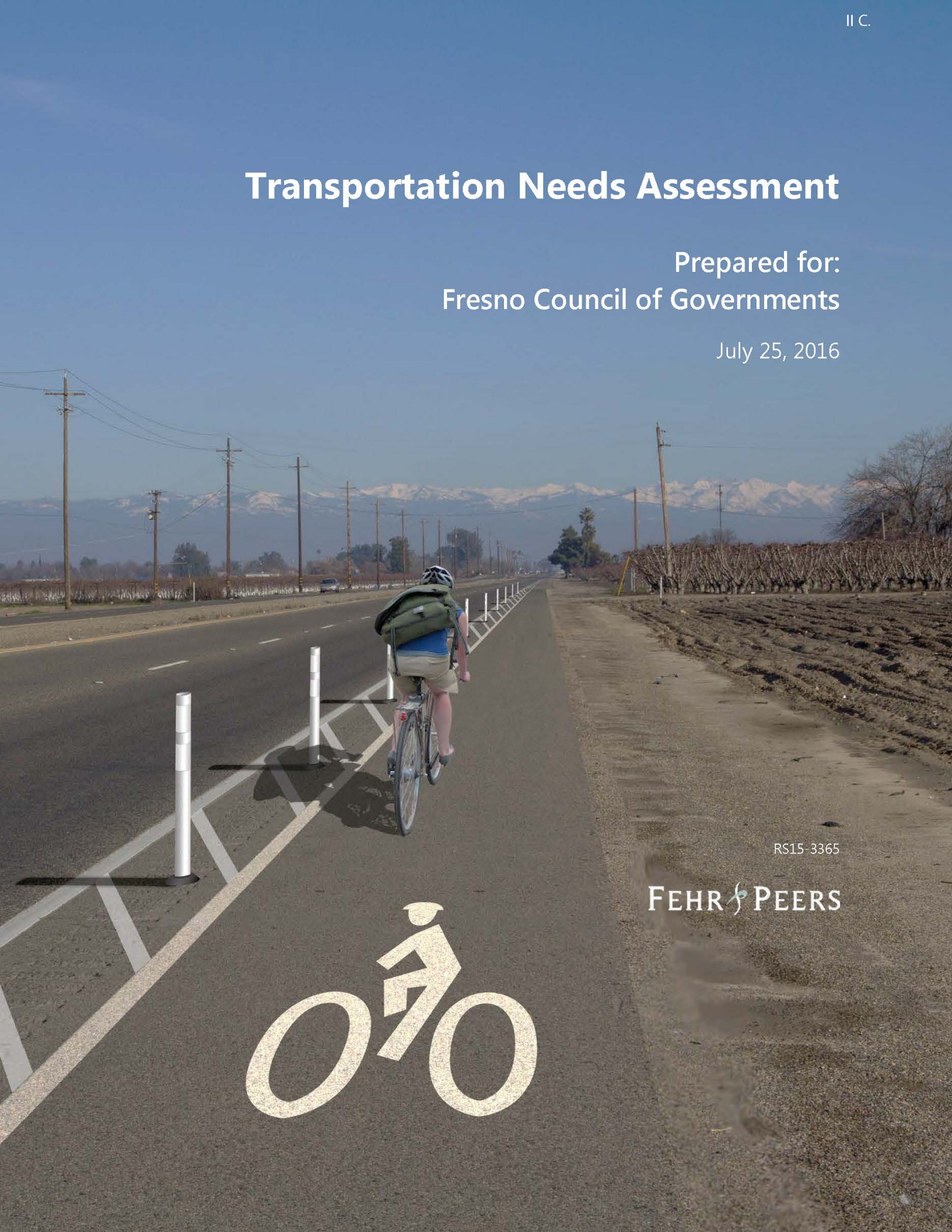
Transportation Needs Assessment

Prepared for:
Fresno Council of Governments

July 25, 2016



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INTRODUCTION

Availability and accessibility of transportation, in all its modes, has a major impact on the quality of life for the residents of Fresno County. Affordable and accessible transportation options allow residents to shop for necessities, attend school, visit the doctor, and conduct other key aspects of life without excessively draining household budgets or taking up large portions of time. Additionally, easily available options for non-motorized transportation modes such as biking and walking can directly encourage healthy habits that improve communities. Therefore, the Fresno Council of Governments (COG) created the Transportation Needs Assessment project to address significant accessibility problems within Fresno County, with a particular focus on disadvantaged communities.

To address these problems, the project focused on two tasks:

- Task 1 analyzed bicycle and trail facilities in the region, identified gaps between local jurisdictions, and recommended projects to remedy these gaps.
- Task 2 analyzed the connectivity between communities within the region and ten major regional and sub-regional facilities identified by Fresno COG and the Needs Assessment Committee.

TASK 1: REGIONAL GAP ANALYSIS FOR BICYCLE AND TRAIL FACILITIES

Fehr & Peers analyzed bicycle and trail facilities in Fresno County to identify gaps between local jurisdictions. The analysis was conducted in three steps:

1. Data collection and mapping
2. Missing connectivity and barrier analysis
3. Project prioritization

DATA COLLECTION AND MAPPING

Fehr & Peers collected data from available resources for the analysis, including data provided by Fresno COG, data from the American Community Survey, data collected for previous projects in the region, and other sources. Specific datasets included:

- Existing and planned trails, bicycle lanes and routes
- Streets and roadways
- Potential barriers to bicycle and pedestrian travel, including freeways, railroads, canals, and other waterways
- Incorporated cities and unincorporated communities
- Key destinations for bicycle trips, including
    - Primary and secondary hot spots (key activity centers) identified by Fresno COG
    - Schools
    - Transit stops and routes
    - Significant commercial and governmental destinations
    - Parks and open space
- Employment density
- Population density
- Youth populations (age 10-17)

- Households with zero automobiles
- Mix of land uses
- Bicycle collisions resulting in injuries
- Indicators of disadvantaged communities, including median income and Cal EnviroScreen 2.0 scores
- Vehicle speed limits, number of road lanes, and average daily traffic volume

MISSING CONNECTIVITY AND BARRIER ANALYSIS

Using this data, Fehr & Peers analyzed the region to identify and prioritize gaps in the trail and bicycle network. There were two main components of this analysis: a GIS-based analysis of demand and a detailed review of connections between and through high areas of demand. The analysis was accomplished as follows:

1. GIS layers were created scoring all areas of the region based on expected latent demand for bicycle transportation. Latent demand is defined as opportunities for bicycle trips that do not occur due to existing connectivity issues. Areas with low scores are likely to have low demand for bicycle facilities, and areas with high scores are expected to have high demand. The following factors were included in this final comprehensive demand score:
    a. Proximity to hot spots provided by the Needs Assessment committee
    b. Proximity to schools
    c. Proximity to transit stops
    d. Proximity to parks
    e. Proximity to other key destinations (landmarks), including Fresno State and municipal centers
    f. Employment density
    g. Population density
    h. Population 10-17 years old density
    i. Percentage of households with zero vehicles
    j. Land use mix
2. The following maps were overlaid on top of the map of comprehensive demand scores:
    a. Existing road network

b. Existing trail and bikeway network

c. Incorporated areas

3. Using this combined map view, the region was examined for missing bicycle network connections outside of incorporated areas between areas of high demand using a limit of six miles between destinations (limit development is discussed in Development of Distance Thresholds below).

4. Specific roadway and trail segments were identified for development of bicycle facilities to fill these missing connections by considering the following:

   a. Connectivity to existing bikeways

   b. Level of traffic stress

   c. Traffic volumes

5. Where possible, connections to existing bikeways were created and bikeways on lower stress and lower volume routes were identified.

6. These segments were grouped into projects that made logical connections between destinations or were near each other.

7. The projects were then prioritized as high, medium, or low priority by considering the following factors:

   a. Final composite demand score

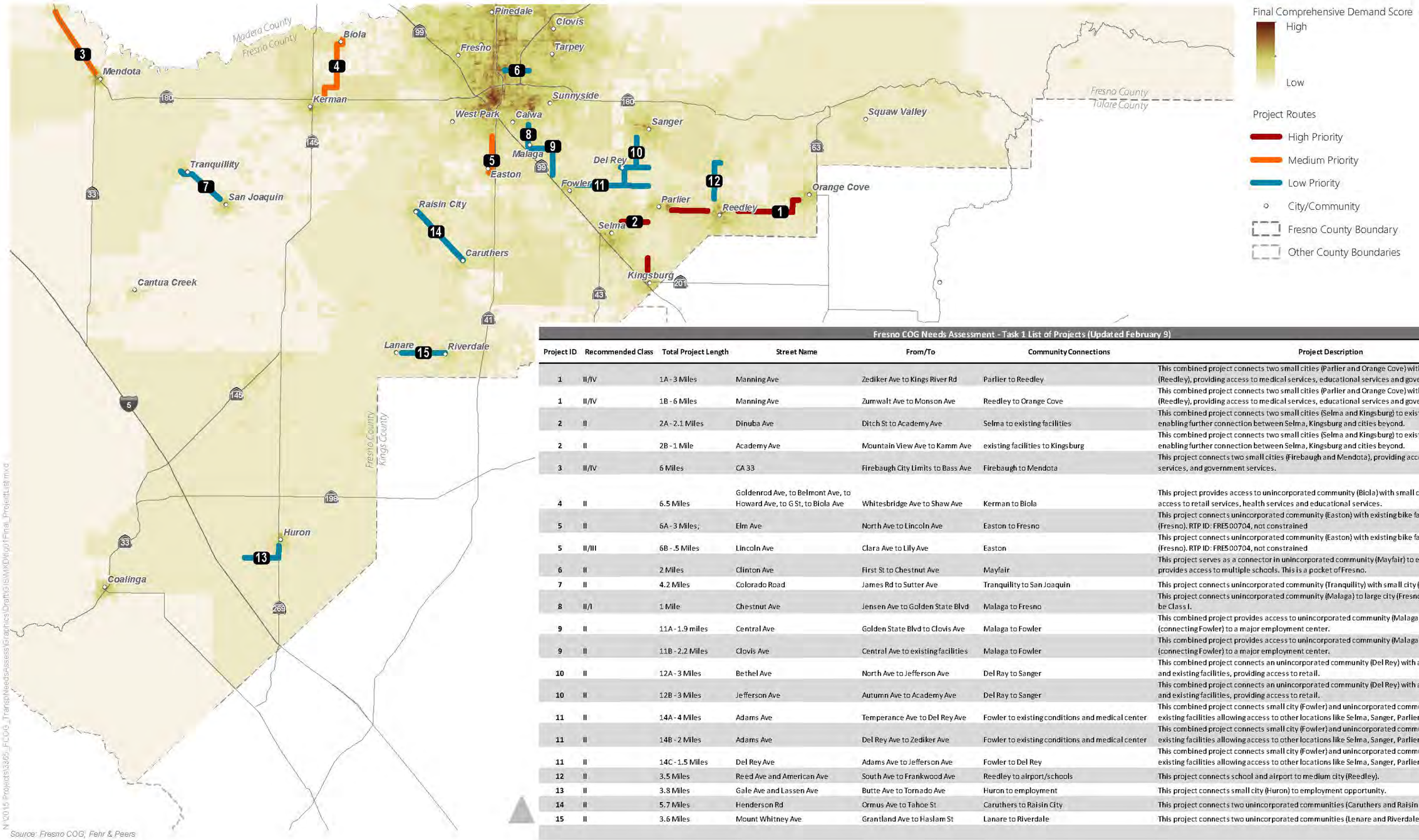
   b. Proximity to Needs Assessment hot spots and schools

   c. Disadvantaged community status as determined by annual median income

   d. Disadvantaged community status as determined by Cal EnviroScreen 2.0 score

PRIORITIZED PROJECTS

The final projects are shown in Figure 1. Project fact sheets for the high and medium priority projects, including maps, cost estimates, and statistics useful for grant applications, are provided in Figure 2 - Figure 6.



Source: Fresno COG; Fehr & Peers

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Fresno COG Needs Assessment - Task 1 List of Projects (Updated February 9)

Project ID	Recommended Class	Total Project Length	Street Name	From/To	Community Connections	Project Description
1	II/IV	1A - 3 Miles	Manning Ave	Zediker Ave to Kings River Rd	Parlier to Reedley	This combined project connects two small cities (Parlier and Orange Cove) with one medium city (Reedley), providing access to medical services, educational services and government services.
1	II/IV	1B - 6 Miles	Manning Ave	Zumwalt Ave to Monson Ave	Reedley to Orange Cove	This combined project connects two small cities (Parlier and Orange Cove) with one medium city (Reedley), providing access to medical services, educational services and government services.
2	II	2A - 2.1 Miles	Dinuba Ave	Ditch St to Academy Ave	Selma to existing facilities	This combined project connects two small cities (Selma and Kingsburg) to existing bicycle facilities, enabling further connection between Selma, Kingsburg and cities beyond.
2	II	2B - 1 Mile	Academy Ave	Mountain View Ave to Kamm Ave	existing facilities to Kingsburg	This combined project connects two small cities (Selma and Kingsburg) to existing bicycle facilities, enabling further connection between Selma, Kingsburg and cities beyond.
3	II/IV	6 Miles	CA 33	Firebaugh City Limits to Bass Ave	Firebaugh to Mendota	This project connects two small cities (Firebaugh and Mendota), providing access to educational services, and government services.
4	II	6.5 Miles	Goldenrod Ave, to Belmont Ave, to Howard Ave, to G St, to Biola Ave	Whitesbridge Ave to Shaw Ave	Kerman to Biola	This project provides access to unincorporated community (Biola) with small city (Kerman) providing access to retail services, health services and educational services.
5	II	6A - 3 Miles;	Elm Ave	North Ave to Lincoln Ave	Easton to Fresno	This project connects unincorporated community (Easton) with existing bike facilities and large city (Fresno). RTP ID: FRE500704, not constrained
5	II/III	6B - .5 Miles	Lincoln Ave	Clara Ave to Lily Ave	Easton	This project connects unincorporated community (Easton) with existing bike facilities and large city (Fresno). RTP ID: FRE500704, not constrained
6	II	2 Miles	Clinton Ave	First St to Chestnut Ave	Mayfair	This project serves as a connector in unincorporated community (Mayfair) to existing bike facilities and provides access to multiple schools. This is a pocket of Fresno.
7	II	4.2 Miles	Colorado Road	James Rd to Sutter Ave	Tranquility to San Joaquin	This project connects unincorporated community (Tranquility) with small city (San Joaquin).
8	II/I	1 Mile	Chestnut Ave	Jensen Ave to Golden State Blvd	Malaga to Fresno	This project connects unincorporated community (Malaga) to large city (Fresno). Portion of project can be Class I.
9	II	11A - 1.9 miles	Central Ave	Golden State Blvd to Clovis Ave	Malaga to Fowler	This combined project provides access to unincorporated community (Malaga) and existing facilities (connecting Fowler) to a major employment center.
9	II	11B - 2.2 Miles	Clovis Ave	Central Ave to existing facilities	Malaga to Fowler	This combined project provides access to unincorporated community (Malaga) and existing facilities (connecting Fowler) to a major employment center.
10	II	12A - 3 Miles	Bethel Ave	North Ave to Jefferson Ave	Del Ray to Sanger	This combined project connects an unincorporated community (Del Rey) with a medium city (Sanger) and existing facilities, providing access to retail.
10	II	12B - 3 Miles	Jefferson Ave	Autumn Ave to Academy Ave	Del Ray to Sanger	This combined project connects an unincorporated community (Del Rey) with a medium city (Sanger) and existing facilities, providing access to retail.
11	II	14A - 4 Miles	Adams Ave	Temperance Ave to Del Rey Ave	Fowler to existing conditions and medical center	This combined project connects small city (Fowler) and unincorporated community (Del Rey) east to existing facilities allowing access to other locations like Selma, Sanger, Parlier and employment.
11	II	14B - 2 Miles	Adams Ave	Del Rey Ave to Zediker Ave	Fowler to existing conditions and medical center	This combined project connects small city (Fowler) and unincorporated community (Del Rey) east to existing facilities allowing access to other locations like Selma, Sanger, Parlier and employment.
11	II	14C - 1.5 Miles	Del Rey Ave	Adams Ave to Jefferson Ave	Fowler to Del Rey	This combined project connects small city (Fowler) and unincorporated community (Del Rey) east to existing facilities allowing access to other locations like Selma, Sanger, Parlier and employment.
12	II	3.5 Miles	Reed Ave and American Ave	South Ave to Frankwood Ave	Reedley to airport/schools	This project connects school and airport to medium city (Reedley).
13	II	3.8 Miles	Gale Ave and Lassen Ave	Butte Ave to Tornado Ave	Huron to employment	This project connects small city (Huron) to employment opportunity.
14	II	5.7 Miles	Henderson Rd	Ormus Ave to Tahoe St	Caruthers to Raisin City	This project connects two unincorporated communities (Caruthers and Raisin City).
15	II	3.6 Miles	Mount Whitney Ave	Grantland Ave to Haslam St	Lanare to Riverdale	This project connects two unincorporated communities (Lenare and Riverdale).

Figure 1

FRESNO TRANSPORTATION NEEDS ASSESSMENT –
Preliminary High Priority Project Routes:

Parlier/Reedley/Orange Cove (Project # 1)

Notes: South Avenue is an alternative route between Reedley and Orange Cove.
Seven-foot protected bikeways may be considered as an option for all or portions of cycle tracks.

Existing Roadway Cross Sections

Project Statistics

Population Served by Project Route	**47,766**
Median Household Income	**$40,524**
Percent of Population Age 10-17	**15.0%**
CalEnviroScreen 2.0 Percentile Range	**81-100%**
Student Enrollment Served by Project Route	**13,078**
Percent of Students Eligible for Free or Reduced Meals	**90%**
Number of Injury Collisions Involving Bike/Ped Along Project Route '08-'11	**1 Bike / 1 Ped**

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Potential Benefits

- Connects two small cities (Parlier and Orange Cove) with one medium city (Reedley)
- Provides access to medical, educational and government services

Census Tracts IDs Along Project Route

06019006802, 06019006501, 06019006300

Connections to Existing Facilities?

YES at South Ave/Monson Ave in Orange Cove

Disadvantaged Community Indicators

CalEnviroScreen 2.0

Median Income Comparison

Potential Project Options

Option 1 - Cycle Track/Bike Lane

Total Length	**9.0 miles**
Existing Pavement Width	**24 ft - 48 ft**
Proposed Pavement Width	**34 ft - 64 ft**
Total Cost	**$9,008,413**

Option 2 - Bike Lane

Total Length	**9.0 miles**
Existing Pavement Width	**24 ft - 48 ft**
Proposed Pavement Width	**34 ft - 58 ft**
Total Cost	**$6,045,536**

FRESNO TRANSPORTATION NEEDS ASSESSMENT –
Preliminary High Priority Project Routes:

Selma/Kingsburg/Parlier (Project # 2)

Existing Roadway Cross Sections

East Dinuba Ave

South Academy Ave

Project Statistics

Population Served by Project Route	**49,095**
Median Household Income	**$43,428**
Percent of Population Age 10-17	**14.6%**
CalEnviroScreen 2.0 Percentile Range	**86-100%**
Student Enrollment Served by Project Route	**13,653**
Percent of Students Eligible for Free or Reduced Meals	**75%**
Number of Injury Collisions Involving Bike/Ped Along Project Route '08-'11	**0 Bike/0 Ped**

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Potential Benefits

- Connects three small cities (Selma, Kingsburg and Parlier) together
- Extends existing bicycle facility in Parlier

Census Tracts IDs Along Project Route

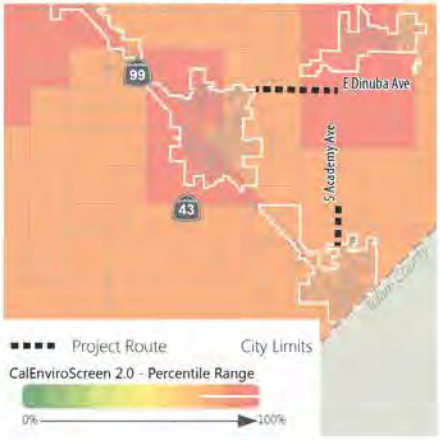
06019008501, 06019007004, 06019007201

Connections to Existing Facilities?

YES on South Academy Ave at Dinuba Ave and Mountain View Ave

Disadvantaged Community Indicators

CalEnviroScreen 2.0



Median Income Comparison

Potential Project Options

Option 1 - Bike Lane

East Dinuba Ave

South Academy Ave

Total Length	**3.1 miles**
Existing Pavement Width	**24 ft**
Proposed Pavement Width	**34 ft**
Total Cost	**$2,014,553**

FRESNO TRANSPORTATION NEEDS ASSESSMENT –
Preliminary High Priority Project Routes:

Firebaugh/Mendota (Project # 3)

Note: Seven-foot protected bikeways may be considered as an option for all or portions of cycle tracks.

Existing Roadway Cross Sections

Project Statistics

Population Served by Project Route	**18,563**
Median Household Income	**$28,131**
Percent of Population Age 10-17	**14.9%**
CalEnviroScreen 2.0 Percentile Range	**71-95%**
Student Enrollment Served by Project Route	**4,695**
Percent of Students Eligible for Free or Reduced Meals	**95%**
Number of Injury Collisions Involving Bike/Ped Along Project Route '08-'11	**0 Bike/1 Ped**

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Potential Benefits

- Connects two small cities (Firebaugh and Mendota)
- Provides access to educational and government services

Census Tracts IDs Along Project Route

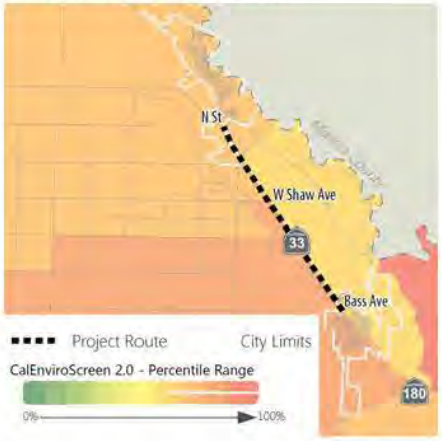
060190018301, 06019008302, 6019008401

Connections to Existing Facilities?

NO

Disadvantaged Community Indicators

CalEnviroScreen 2.0



Median Income Comparison

Potential Project Options

Option 1 - Bike Lane

Total Length	**6.0 miles**
Existing Pavement Width	**40 ft**
Proposed Pavement Width	**50 ft**
Total Cost	**$4,507,252**

Option 2 - Cycle Track

Total Length	**6.0 miles**
Existing Pavement Width	**40 ft**
Proposed Pavement Width	**56 ft**
Total Cost	**$7,225,710**

FRESNO TRANSPORTATION NEEDS ASSESSMENT –
Preliminary High Priority Project Routes:

Biola/Kerman (Project # 4)

Potential Benefits

- Connects one unincorporated community (Biola) with small city (Kerman)
- Provides access to retail, health and educational services

Census Tracts IDs Along Project Route

06019001800, 06019001000

Connections to Existing Facilities?

YES on North Goldenrod Ave at State Route 180 in Kerman

Existing Roadway Cross Sections

All Project Roads

Project Statistics

Population Served by Project Route	**15,167**
Median Household Income	**$41,402**
Percent of Population Age 10-17	**14.8%**
CalEnviroScreen 2.0 Percentile Range	**66-100%**
Student Enrollment Served by Project Route	**4,664**
Percent of Students Eligible for Free or Reduced Meals	**88%**
Number of Injury Collisions Involving Bike/Ped Along Project Route '08-'11	**1 Bike/1 Ped**

Disadvantaged Community Indicators

CalEnviroScreen 2.0

Median Income Comparison

Potential Project Options

Option 1 - Bike Lane

All Project Roads

Total Length	**6.5 miles**
Existing Pavement Width	**20 ft - 24 ft**
Proposed Pavement Width	**30 ft - 34 ft**
Total Cost	**$4,441,790**

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FRESNO TRANSPORTATION NEEDS ASSESSMENT –
Preliminary High Priority Project Routes:

Easton/Fresno (Project # 5)

Existing Roadway Cross Sections

Project Statistics

Population Served by Project Route	2,083*
Median Household Income	$37,149
Percent of Population Age 10-17	13.1%
CalEnviroScreen 2.0 Percentile Range	96-100%
Student Enrollment Served by Project Route	3,052
Percent of Students Eligible for Free or Reduced Meals	91%
Number of Injury Collisions Involving Bike/Ped Along Project Route '08-'11	4 Bike/3 Ped

*Project Population includes only the census designated place of Easton.

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Potential Benefits

- Connects one unincorporated community (Easton) to one large city (Fresno)
- Extends existing bicycle facility in Fresno

Census Tracts IDs Along Project Route

06019001800, 06019001000

Connections to Existing Facilities?

YES on South Elm Ave at West North Ave in Fresno

Disadvantaged Community Indicators

CalEnviroScreen 2.0

Median Income Comparison

Potential Project Options

Option 1 - Bike Lane

Total Length	3.5 miles
Existing Pavement Width	26 ft - 37 ft
Proposed Pavement Width	36 ft - 42 ft
Total Cost	$1,973,029

Option 2 - Bike Lane/ Sharrows

Total Length	3.5 miles
Existing Pavement Width	26 ft - 37 ft
Proposed Pavement Width	36 ft - 37 ft
Total Cost	$1,932,995

POTENTIAL FUNDING SOURCES

Federal, state, regional, county and local organizations provide funding for pedestrian and bicycle projects and programs. The most recent federal surface transportation funding program, Fixing America's Surface Transportation Act (FAST), was signed into law in December 2015. This is the first long-term federal transportation authorization enacted since 2012, and the first long-term funding since the signing of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005. The new authorization brings changes to typical funding sources and structures.

FAST funding is distributed to federal and state surface transportation funds. Most of these resources are available through Caltrans and Fresno COG.

This section includes details about current programs that are used to fund existing scheduled projects and an assessment of upcoming programs as of June 2016. These may change as state and local programs adapt to the new FAST funding.

Table 1 summarizes the applicability of these various funding sources to projects, planning efforts, and programs proposed in this plan. The most applicable funding sources for the improvements recommended by this Plan are the Active Transportation Program and Highway Safety Improvement Program.

More details of the task 1 analysis, including maps presenting data used in the analysis and details of potential funding sources, are provided in Appendix A: Regional Gap Analysis for Bicycle and Trail Facilities (Memorandum 1). A web-based story map with a guided explanation of the steps in this analysis is available at http://gis.fehrandpeers.com/fresnocogtask1.

TABLE 1: FUNDING SOURCES FOR BICYCLE AND PEDESTRIAN PROJECTS

Funding Source	Class I Bicycle Path	Class II Bicycle Lane	Class III Bicycle Route	Class IV Protected Bikeways	Pedestrian Projects	Other Projects	Planning and Programs
Highway Safety Improvement Program (HSIP) Grants	◒	●	◒	●	●	●	○
Caltrans Transportation Planning Grants	○	○	○	○	○	○	●
Local Transportation Fund (LTF)	●	●	●	●	●	●	○
California State Parks Recreational Trails Program (RTP)	●	○	○	○	○	○	○
Land and Water Conservation Fund (LWCP)	●	○	○	○	○	○	○
Active Transportation Program (ATP)	●	●	●	●	●	●	●
Transportation Development Act (TDA)	●	●	●	●	●	●	●
Affordable Housing and Sustainable Communities Program (AHSC)	◒	◒	◒	◒	◒	◒	◒
FCTA Measure C	●	●	●	●	●	●	●
SJVAPCD Bikeway Incentive Program	●	●	●	○	○	○	○

Notes:

1. ● Indicates that funds may be used for this category; ○ indicates that funds may not be used for this category, and ◒ indicates that funds may be used, though restrictions apply.

Source: Fehr & Peers, 2016.

TASK 2: TRANSPORTATION CONNECTIVITY AND ACCESSIBILITY ANALYSIS

Task 2 of this project complements the results of task 1 by analyzing the connectivity between communities within the region and ten major regional and sub-regional facilities identified by Fresno COG and the Needs Assessment Committee. Task 2 was based on the needs of the users of each facility. It is particularly focused on access to each hot spot for disadvantaged communities who may have limited transportation options. However, the scope of this analysis did not include a review of full system benefits, costs, and impacts (such as federal and state transit ridership thresholds or minimum transit farebox recovery requirements) of implementing the included recommendations. The task 2 recommendations are presented as opportunities for more detailed system analysis as funding is available for system improvements.

The ten facilities (Figure 7) are:

- Metropolitan area:
  - Fashion Fair Mall, 645 E. Shaw Ave., Fresno
  - Fresno City College, Fresno, 1101 E. University Ave., Fresno
  - Fresno County Superior Court, 1100 Van Ness Ave., Fresno
  - Wawona Frozen Foods, 100 W. Alluvial Ave., Clovis
- Northwest areas:
  - Mendota Department of Motor Vehicles, 642 Pucheu St., Mendota
  - Kerman Walmart, 14061 W. Whitesbridge Ave., Kerman
- Southwest areas:
  - Coalinga Regional Medical Center, 1191 Phelps Ave., Coalinga
  - Harris Ranch Inn & Restaurant/Dorris Avenue Interchange Commercial Center, Interstate 5 and State Route 198
- East areas:
  - Adventist Medical Center, 372 W. Cypress Ave., Reedley
  - Sanger Walmart Supercenter, 2761 Jensen Ave., Sanger

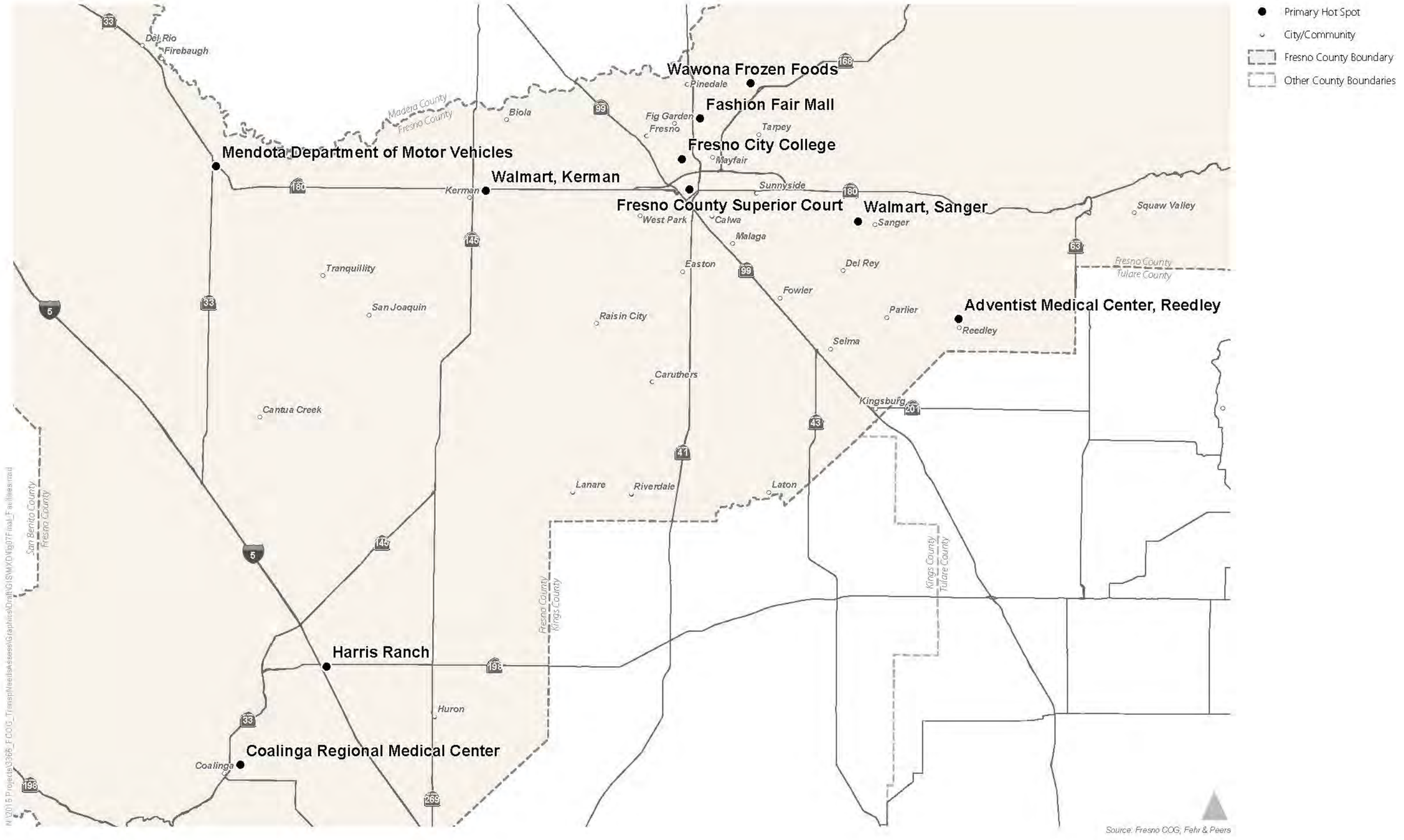


Figure 7

Facilities Analyzed

Fehr & Peers conducted the analysis in four steps:

1. Data collection and mapping
2. Missing connectivity and barrier analysis
3. Travelshed analysis
4. Project identification

DATA COLLECTION AND MAPPING

Fehr & Peers utilized the data collected for the Task 1: Regional Gap Analysis for Bicycle and Trail Facilities discussed above for this connectivity and accessibility analysis. In addition, the following additional datasets were utilized:

- Transit routes and stops
- Aerial imagery from Google Maps

MISSING CONNECTIVITY AND BARRIER ANALYSIS

Using the locations of the ten major regional and sub-regional facilities (hot spots) and the data collected as described above, Fehr & Peers evaluated the transportation system to assess the accessibility of each hot spot. The following steps were performed to complete this analysis:

1. Existing connectivity by mode was mapped via:
    a. Sidewalk network
    b. Transit network and stops
    c. Trail and bikeway network
    d. Road network
2. Collision locations for pedestrians, bicycles, and automobiles were mapped.
3. For pedestrian and bicycle modes, route directness was evaluated. Route directness is calculated as the ratio of the network distance (via street or path, if available) to the straight-line distance ("as the crow flies") from each point to the hot spot.

4. For each mode, the region was examined for missing network connections by reviewing the connectivity maps and examining aerial photos.
    a. Pedestrian: sidewalks within 1.5 miles of each hot spot were reviewed (limit development discussed below).
    b. Transit: pedestrian connections between the hot spot and the closest bus stop were reviewed. Additionally, the frequency of service at existing stops was reviewed. Availability of stops for the populations likely to utilize each hotspot was also reviewed.
    c. Bicycle: connections within six miles of each hot spot were reviewed (limit development discussed below).
    d. Automobile: road connections to arterials and highways were reviewed.
5. If enhancements were made that added new pedestrian, bicycle, or auto connections, the improved route directness was evaluated. Note that route directness was only evaluated if new connections were made (such as across a railroad track), not if quality or comfort was improved (such as by adding a sidewalk or bike lane).

TRAVELSHED ANALYSIS

Using the parameters described in Development of Distance Thresholds below, Fehr & Peers evaluated total connectivity for pedestrian, bicycle and transit modes for each of the analysis locations. This connectivity can be depicted as the walkshed, bikeshed, and transitshed for each location.

For the first portion of this task, Fehr & Peers calculated a network service area for each mode. A network service area is a region that encompasses all accessible streets for a mode. Using this function on the current roadway system, the walkshed for each hot spot was directly calculated using the maximum walking distance of 1.5 miles. Similarly, the bikeshed for each hot spot was calculated using the maximum bicycling distance of 6 miles.

To calculate the transitshed for each hot spot, three trip legs were considered:

- The walking distance from the start of the trip to the embarkation bus stop, using a 0.75-mile walking distance limit
- The distance of the transit ride on the transit network, from the embarkation bus stop to the disembarkation bus stop, using a 30-minute trip length (or longer for regional destinations as described above)
- The walking distance from the disembarkation bus stop to the end of the trip, using a 0.75-mile walking distance limit

Transit Trip Legs

This created a total transit trip of one hour. Assuming that people will ride transit farther distances if that is the only option available to them, that transit distance was expanded to evaluate other time periods (two, three, and four hours) for hot spots likely to draw people from more of the region.

PROJECT IDENTIFICATION

Fehr & Peers next identified specific projects to improve connectivity and safety for each mode. Projects were prioiritized as high, medium, or low priority by considering the following factors:

- Relative improvement created in connectivity
- Collisions associated with location
- Disadvantaged community status

On-street bike facilities are recommended for many street segments. Class II bike lanes are preferred, but in some cases sufficient street width may not be available. If bike lanes cannot be accommodated, Class III bike routes with sharrows are recommended. Fresno COG is also studying Class IV separated bikeways, which may be an alternative in some locations. That study is expected to be completed by the end of 2016.

For several sites, Fehr & Peers recommends additional bus stops or increased service frequency for existing stops. Long walking distances or infrequent service can make using transit difficult or impractical for some residents, especially those in the disadvantaged communities, which are the focus of this study. Thus, these recommendations have been made to better serve county residents likely to need access to each hotspot. However, the scope of this analysis did not include a review of full system benefits, costs, and impacts (such as federal and state transit ridership thresholds or minimum transit farebox recovery requirements) of implementing the included recommendations. The task 2 recommendations are presented as opportunities for more detailed system analysis as funding is available for system improvements.

Detailed summary sheets for each hot spot are presented in Figure 8 - Figure 17. Each summary sheet includes:

- Existing pedestrian, bicycle, transit, and auto facilities
- Route directness under existing conditions
- Assessment of disadvantaged community status based on Cal EnviroScreen 2.0 and median household income
- Findings and recommendations, including prioritized (high/medium/low) projects
- If enhancements were made that added new pedestrian/bicycle/auto connections, route directness after completion of recommended project connections. Note that this parameter was only evaluated if new connections were made (such as across a railroad track), not if quality or comfort was improved (such as by adding a sidewalk or bike lane)

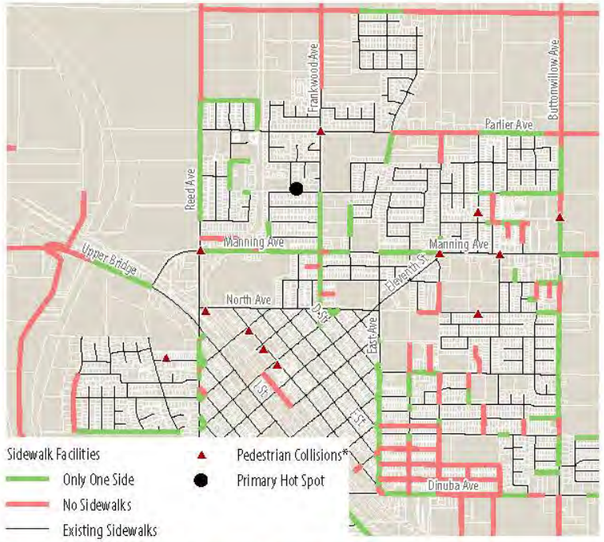
Further details of this analysis are included in Appendix B, Task 2 Transportation Connectivity and Accessibility Analysis (Memorandum 2). A web-based story map with results for each hot spot and a guided explanation of the steps in this analysis is also available at http://gis.fehrandpeers.com/fresnocogtask2.

FRESNO TRANSPORTATION NEEDS ASSESSMENT

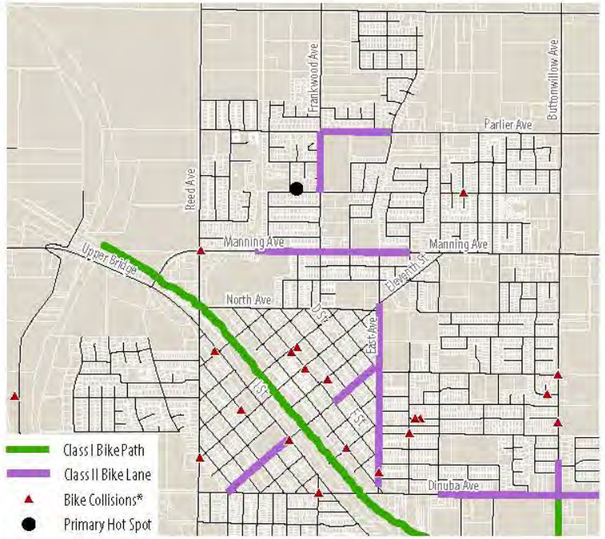
Transportation Connectivity and Accessibility Analysis

Adventist Medical Center, Reedley

Existing Pedestrian Facilities

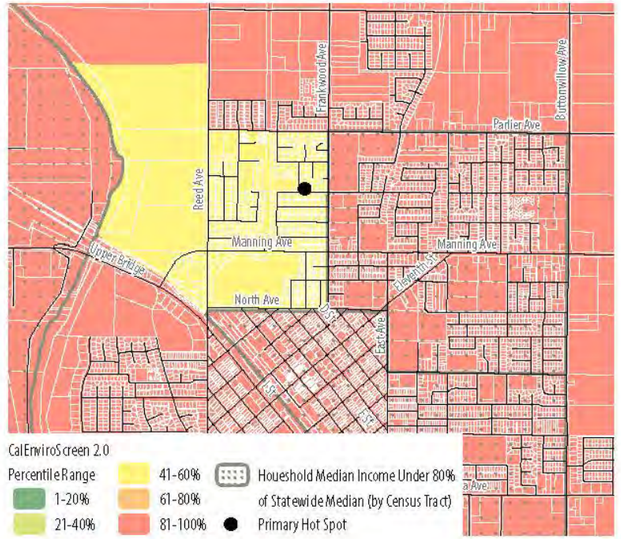


Existing Bike Facilities

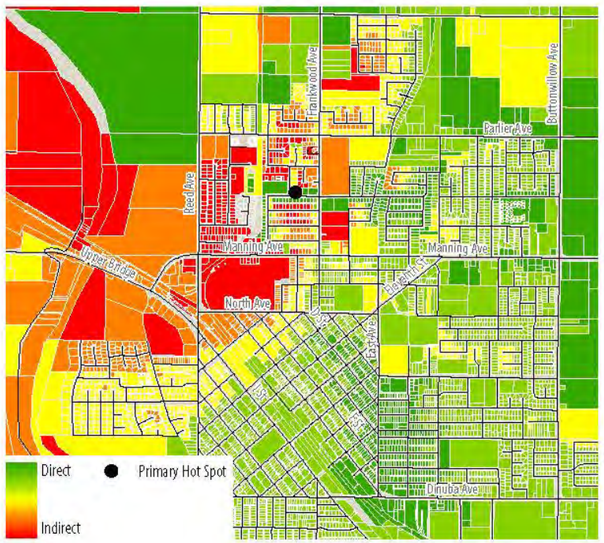


Existing Transit and Auto Facilities

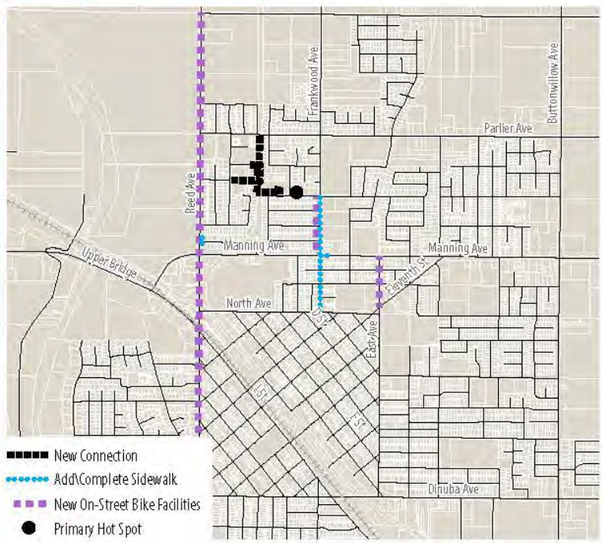
CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)



Findings and Recommendations



*Collisions shown are from 2008-2012.
Priority listed in all caps.

New Bike\Ped Connection:
- Add connection from the parking lot to Carob Ave on the northwest corner of the campus - **HIGH**
- Connect west side of lot to Kip Patrick Dr/ Hope Ave intersection (desire line) - **HIGH**

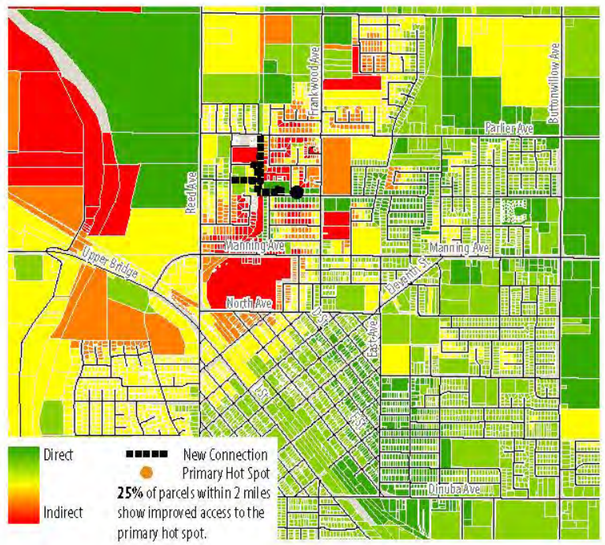
Add\Complete Sidewalk:
- Fill gap on north side of Manning Ave from Frankwood Ave to east for 100' - **HIGH**
- Fix sidewalk on the east side of Reed Ave from 100' north of Manning Ave to 130' south of Ponderosa Ave - **HIGH**
- Add sidewalks on both sides of Frankwood Ave from Cypress Ave to North Ave - **HIGH**

New On-Street Bike Facilities:
- Gaps on Frankwood Ave from Manning Ave to Cypress Ave - **HIGH**
- East Ave from Manning Ave to 11th St to connect to existing facilities - **MEDIUM**
- Reed Ave within City limits - **MEDIUM**

Transit:
- Add closer stop to Adventist location - **HIGH**

Auto:
- Good access to major roadways
- Parking on location and available nearby

Route Directness with Enhancements



25% of parcels within 2 miles show improved access to the primary hot spot.

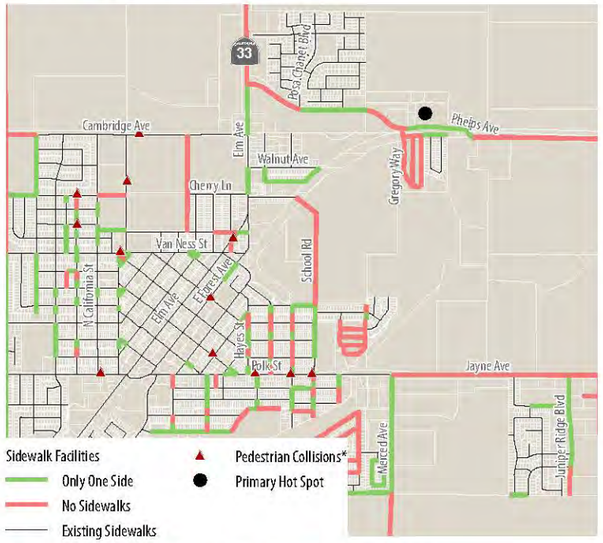
Fresno Council of Governments

FRESNO TRANSPORTATION NEEDS ASSESSMENT

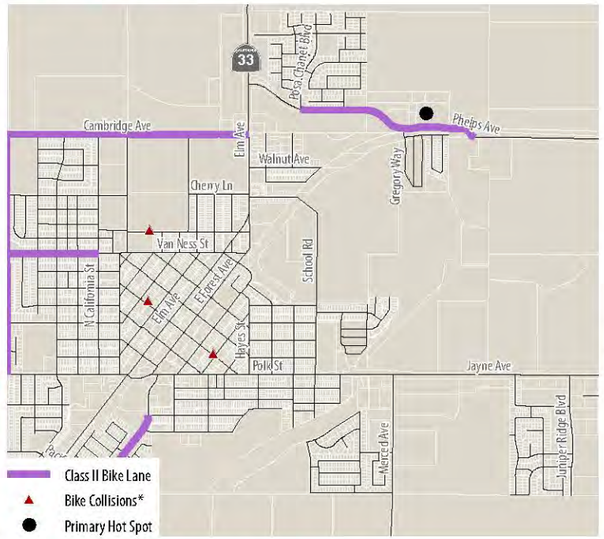
Transportation Connectivity and Accessibility Analysis

Coalinga Regional Medical Center

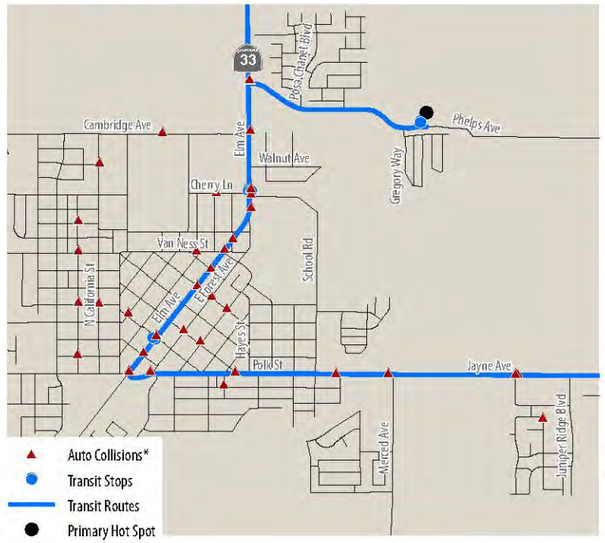
Existing Pedestrian Facilities



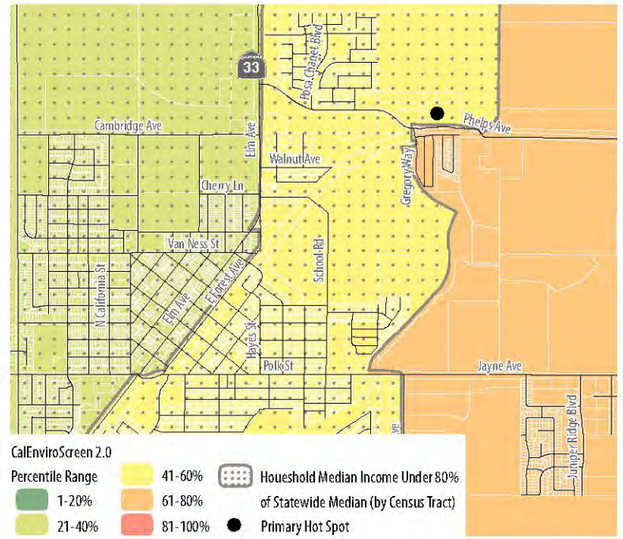
Existing Bike Facilities



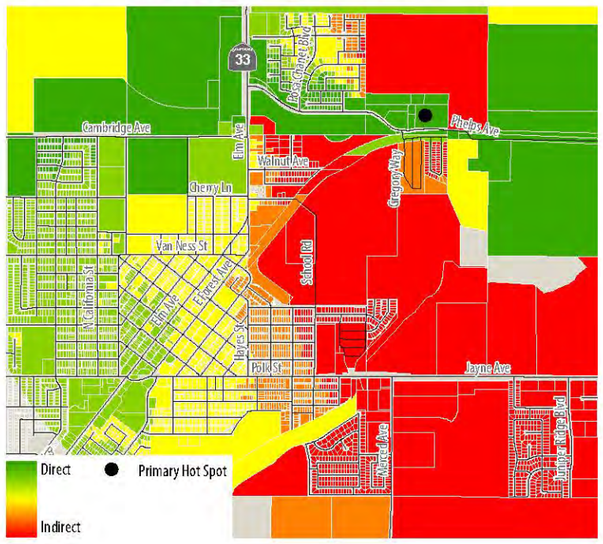
Existing Transit and Auto Facilities



CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)



Findings and Recommendations

*Collisions shown are from 2008-2012.
Priority listed in all caps.

New Bike\Ped Connection:
- Create off-street multi-use bike\ped path from Cherry Ln to Walnut Ave, and from Walnut Ave to Gregory Wy across existing bridge over Los Gatos Creek - **HIGH**
- Add pedestrian crossing at Gregory Wy and Phelps Ave - **HIGH**

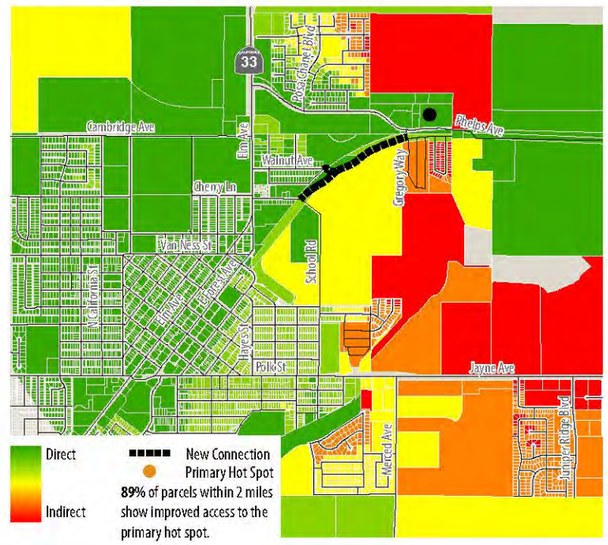
Add\Complete Sidewalk:
- North side of Phelps Ave from Medical Center property boundary west to existing sidewalk - **HIGH**

New On-Street Bike Facilities:
- Van Ness St from California St to Elm Ave (SR 33) - **HIGH**
- Elm Ave (SR 33) from Polk St to Phelps Ave - **HIGH**
- Phelps Ave from Posa Chanet Blvd to Elm Ave (SR33) - **MEDIUM**
- Polk St from Monterey Ave to Enterprise Pkwy - **LOW**
- Forest Ave from Polk St to Houston St - **MEDIUM**

Transit:
- Increase transit frequency at the Medical Center, and add shelter and bench - **HIGH**

Auto:
- Good access to major roadways
- Parking on location and available nearby

Route Directness with Enhancements

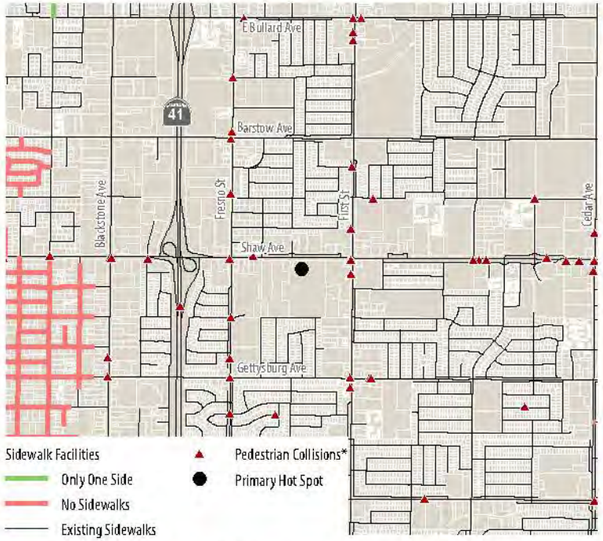


89% of parcels within 2 miles show improved access to the primary hot spot.

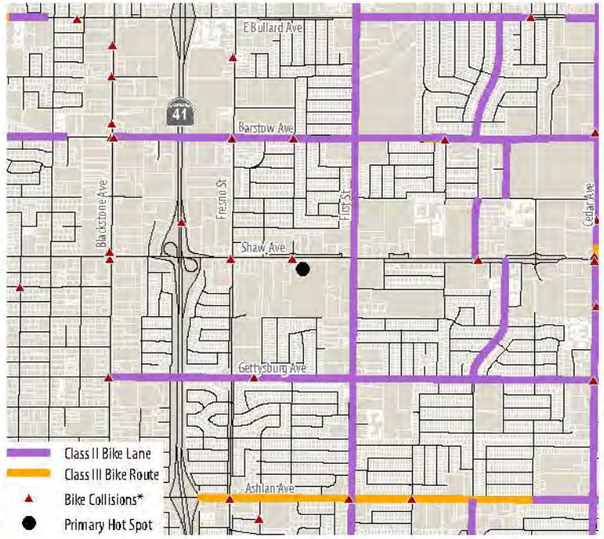
Fresno Council of Governments

Fashion Fair Mall

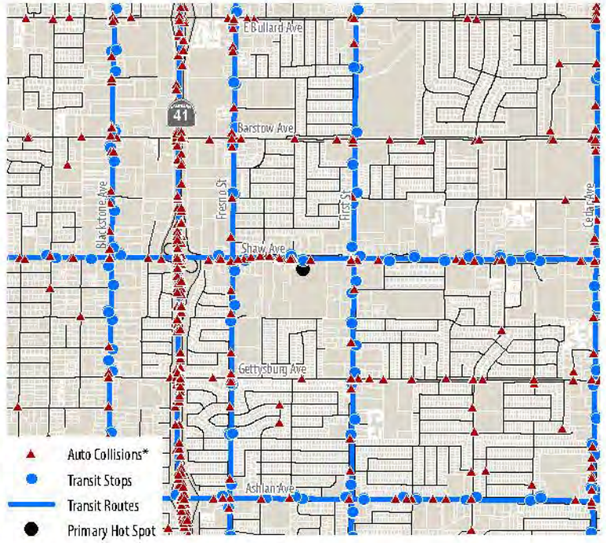
Existing Pedestrian Facilities



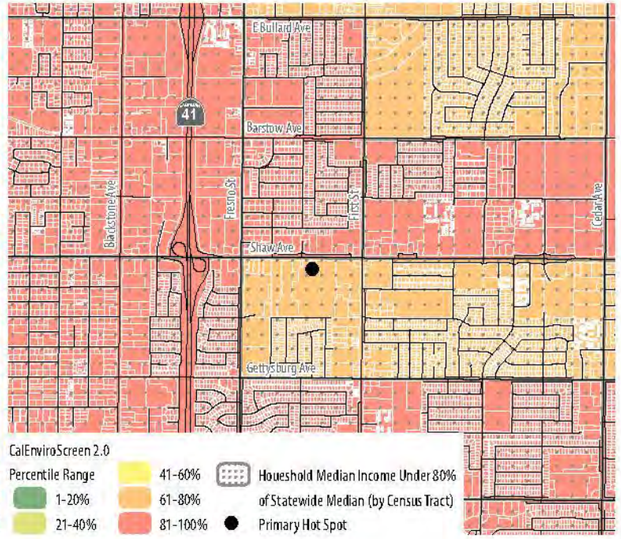
Existing Bike Facilities



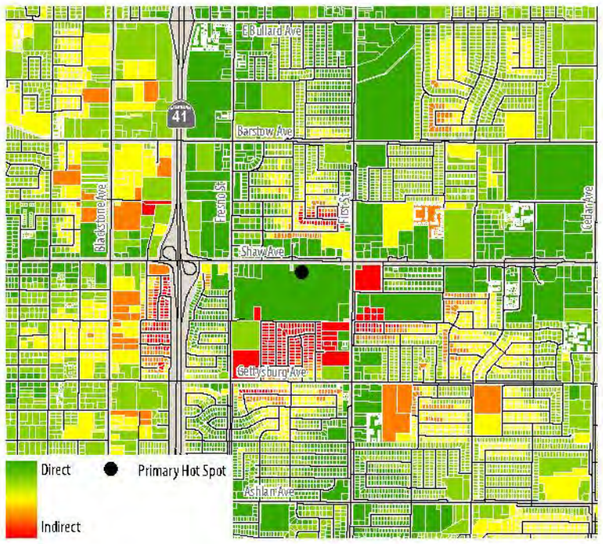
Existing Transit and Auto Facilities



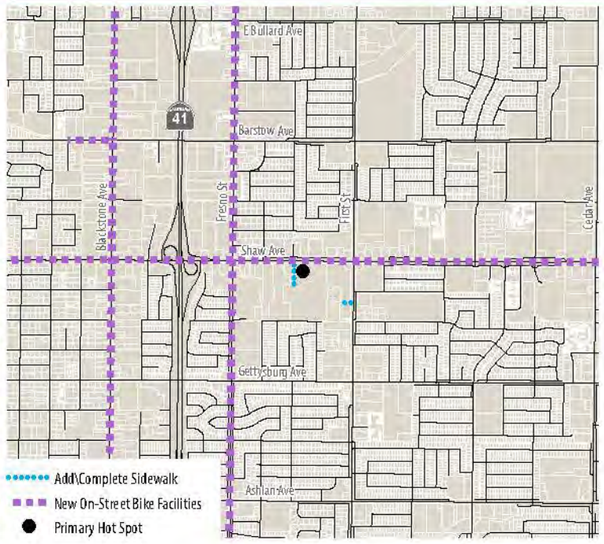
CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)



Findings and Recommendations



*Collisions shown are from 2008-2012. Priority listed in all caps.

Add/Complete Sidewalks:
- Add sidewalks inside property line to the north connecting to bus stops at Angus St and Shaw Ave - MEDIUM
- Add sidewalks inside property line connecting to bus stops at Fremont Ave and First Street - MEDIUM
- Fill gap on Barstow Ave west of Maroa Ave and east of Wilson Ave (located 1.4 miles west) - LOW

Add On-Street Bike Facilities:
- Shaw Ave from Palm Ave to Chestnut Ave - HIGH
- Fresno St from McKinley Ave to Sierra Ave - HIGH
- Blackstone Ave from Divisadero St to Herndon Ave - HIGH
- Maroa Ave from McKinley Ave to Barstow Ave - MEDIUM
- Fill gap at Barstow Ave from Blackstone Ave to San Pablo Ave - HIGH
- Dakota Ave from Blackstone Ave to Maroa Ave (located 2 miles southwest) - MEDIUM
- Complete Fresno State planned improvements on Barstow Ave between Willow Ave and Chestnut Ave (located 2.5 miles east) - LOW

Other Bike Facilities:
- Class I Path connecting Dakota Ave at Blackstone Ave with Dakota Ave at Palm Ave - LOW
- Complete Fresno State planned improvements adding Class I Path near Barstow Ave between Chestnut Ave and Cedar Ave (located 2 miles southwest) - LOW
- Add short term bike parking at all entrances, with at least two points of contact that allows both frame and wheel to be locked - MEDIUM
- Add long-term bike parking - LOW

Transit:
- Add shelter to stop at First St and southeast corner of property in front of Kaiser Permanente building - HIGH
- Add shelter to stop ID on Fresno St at southwest corner of property - HIGH

Auto:
- Good access to major roadways
- Parking on location and available nearby

Route Directness Enhancements

Not applicable, no added connections

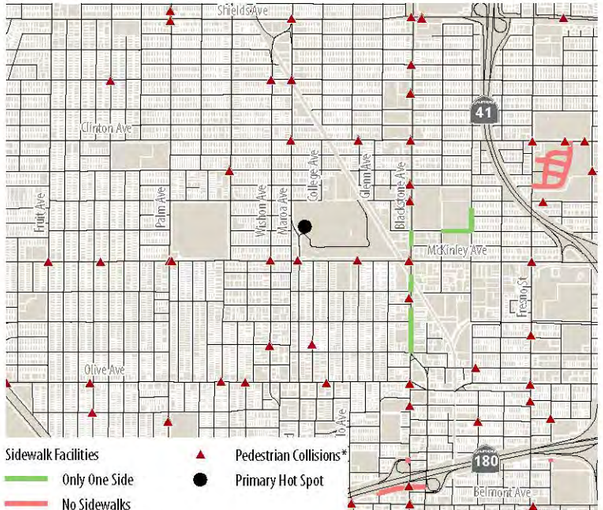
Fresno Council of Governments

FRESNO TRANSPORTATION NEEDS ASSESSMENT

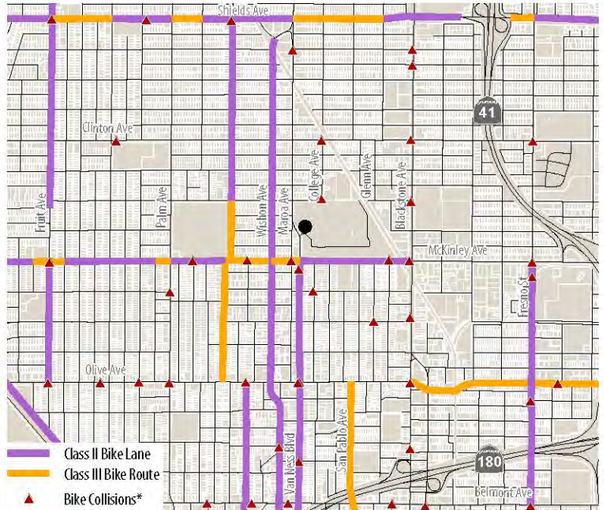
Transportation Connectivity and Accessibility Analysis

Fresno City College

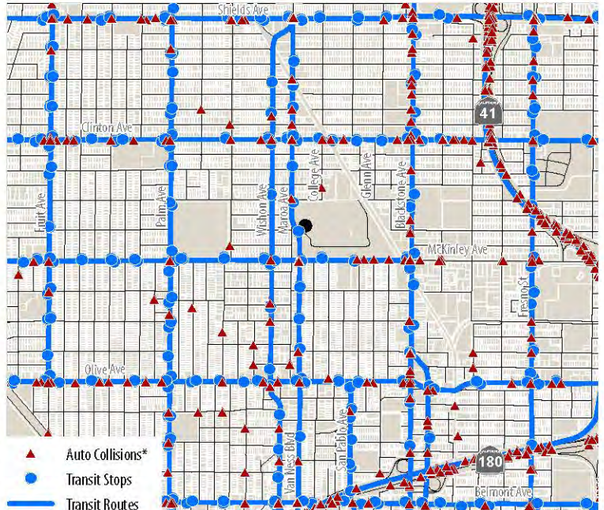
Existing Pedestrian Facilities



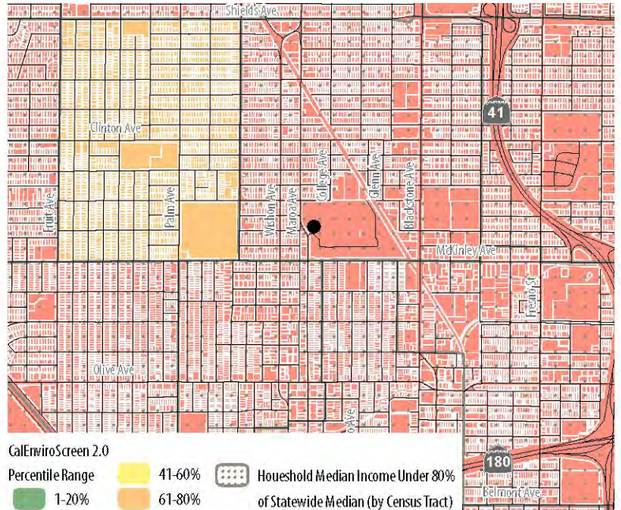
Existing Bike Facilities



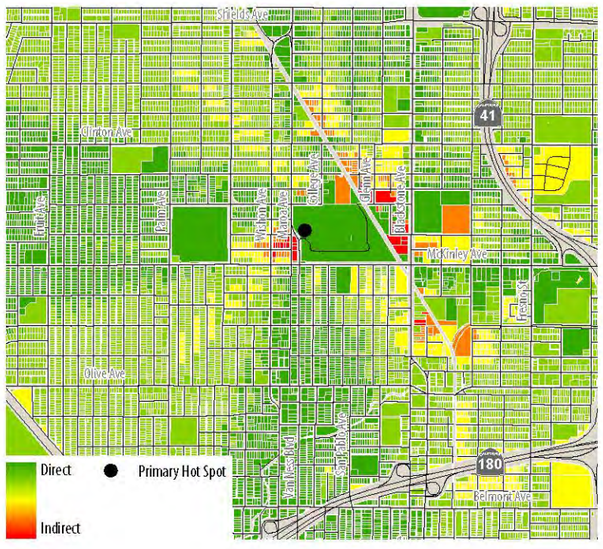
Existing Transit and Auto Facilities



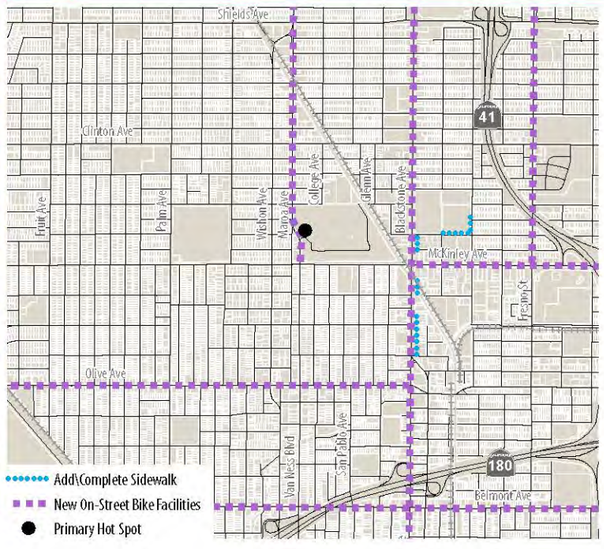
CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)



Findings and Recommendations



*Collisions shown are from 2008-2012.
Priority listed in all caps.

Add Sidewalk Facilities:

- East side of Blackstone Ave from McKinley Ave to Hammond Ave - **HIGH**
- East side of Blackstone Ave from University Ave to Peratta Wy - **HIGH**
- North side of University Ave from Effie St to Clark St - **HIGH**
- West side of Clark St from University Ave to Weldon Ave - **HIGH**

Add On-Street Bike Facilities:

- McKinley Ave from Chestnut Ave to existing facility at Blackstone Ave - **HIGH**
- McKinley Ave from West Ave to Cornelia Ave (located 2 miles west) - **LOW**
- Maroa Ave from McKinley Ave to Shields Ave - **HIGH**
- Maroa Ave from Barstow Ave to Shields Ave (located 2 miles north) - **MEDIUM**
- Blackstone Ave from Divisadero St to Barstow Ave - **HIGH**
- Belmont Ave from Cedar Ave to H St (located 1 mile south) - **LOW**
- Fresno St from McKinley Ave to Shaw Ave - **LOW**

Transit:

- Good access
- Multiple stops and frequent service

Auto:

- Good access to major roadways
- Parking on location and available nearby

Route Directness Enhancements

Not applicable,
no added connections

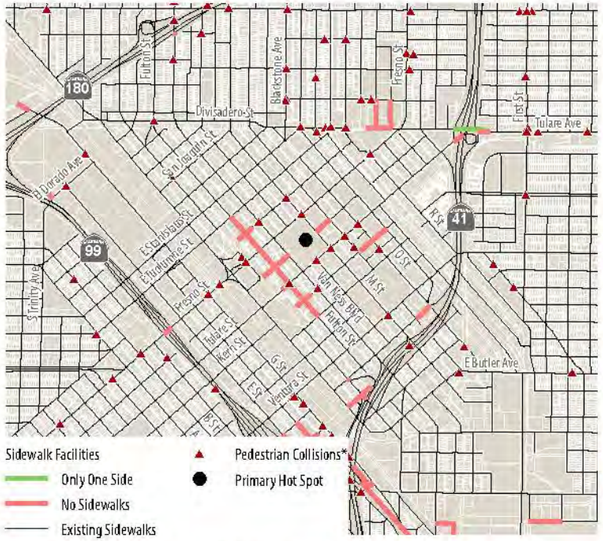
Fresno Council of Governments

FRESNO TRANSPORTATION NEEDS ASSESSMENT

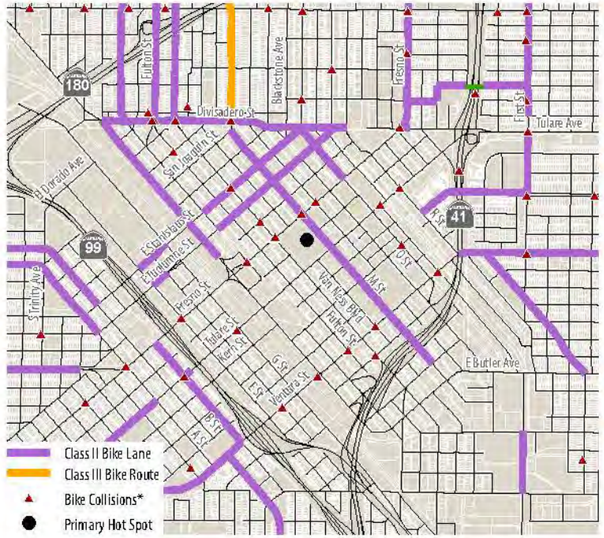
Transportation Connectivity and Accessibility Analysis

Fresno County Superior Court

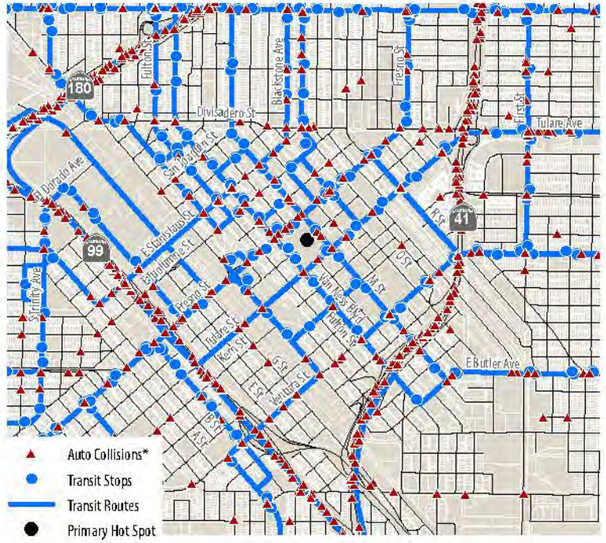
Existing Pedestrian Facilities



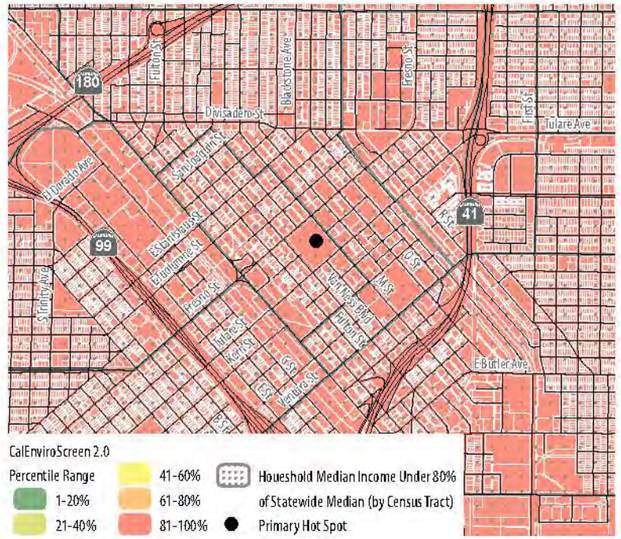
Existing Bike Facilities



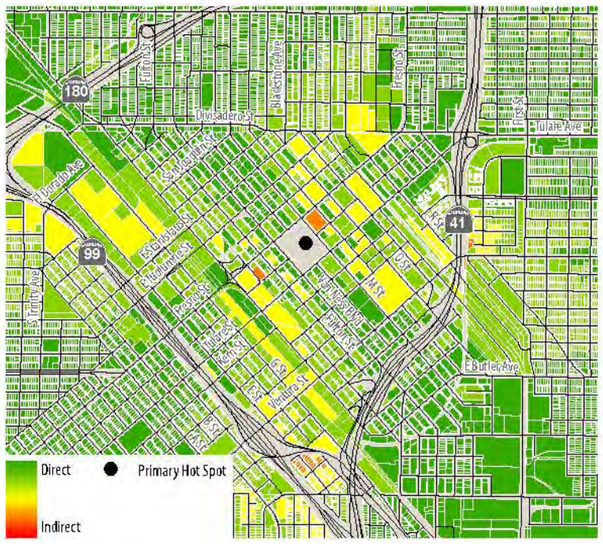
Existing Transit and Auto Facilities



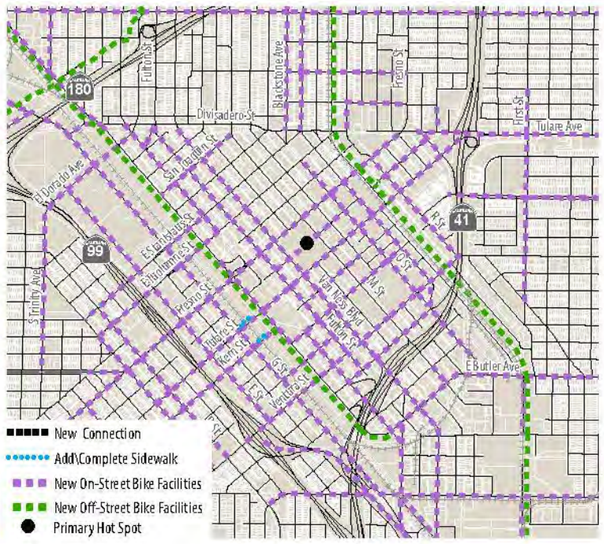
CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)



Findings and Recommendations



*Collisions shown are from 2008-2012.

Priority listed in all caps.

Add/Complete Sidewalks:
- Complete gap in sidewalk on Tulare St from rail crossing to G St - **HIGH**
- Complete gap in sidewalk on Kern St across rail crossing - **HIGH**

Add On-/Off-Street Bike Facilities:
- Currently showing 2010 BMP planned facilities, upcoming modifications from the Fresno Active Transportation Plan, the High Speed Rail Station Plan, and the Downtown Plan will reassess this area.

Transit:
- Good access via multiple routes

Auto:
- Good access

Route Directness Enhancements

Not applicable, no added connections

Fresno Council of Governments

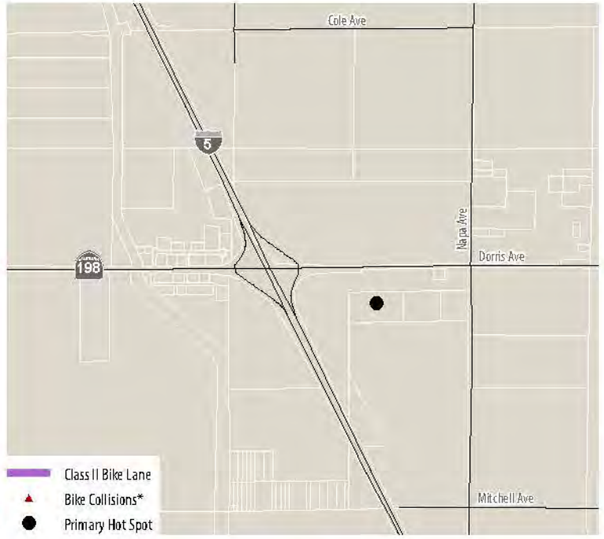
FRESNO TRANSPORTATION NEEDS ASSESSMENT

Transportation Connectivity and Accessibility Analysis

Harris Ranch

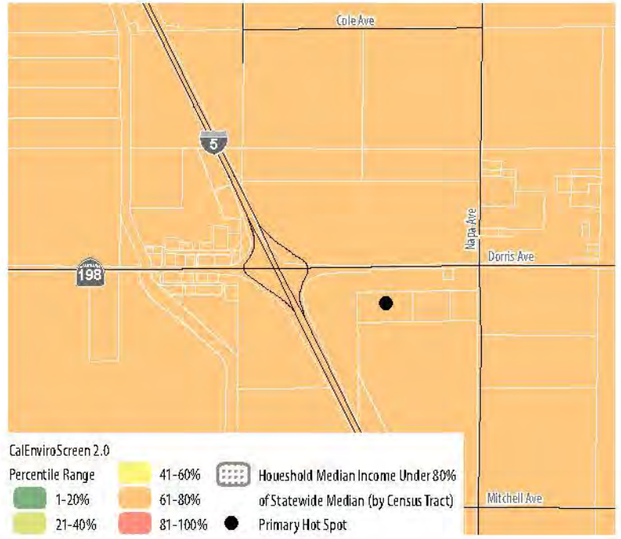
Existing Pedestrian Facilities

Existing Bike Facilities



Existing Transit and Auto Facilities

CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)

Findings and Recommendations

*Collisions shown are from 2008-2012.
Priority listed in all caps.

Add\Complete Sidewalk:
- Connect bus stops to employment center - **HIGH**
- Connect to other side of I-5 on Dorris Ave (SR 198) - **LOW**

Add On-Street Bike Facilities:
- Dorris Ave (SR 198) from Harris Ranch exit to other side of I-5 - **LOW**

Transit:
Four stops per day, connecting to Huron and Coalinga
- Add additional transit service - **MEDIUM**
- Add shelters for transit stops - **HIGH**

Auto:
- Good access to major roadways
- Parking on location and available nearby

Route Directness Enhancements

Not applicable,
no added connections

Fresno Council of Governments

FRESNO TRANSPORTATION NEEDS ASSESSMENT

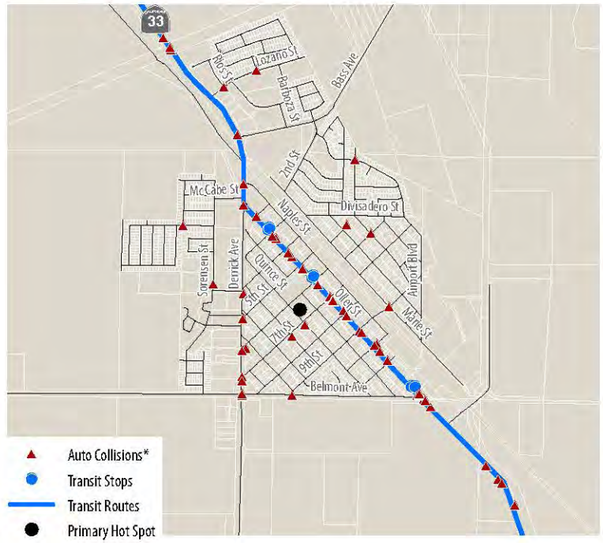
Transportation Connectivity and Accessibility Analysis

Mendota Department of Motor Vehicles

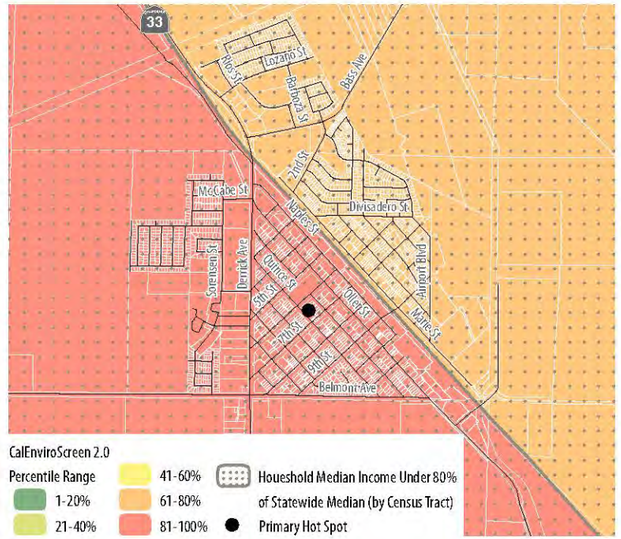
Existing Pedestrian Facilities

Existing Bike Facilities

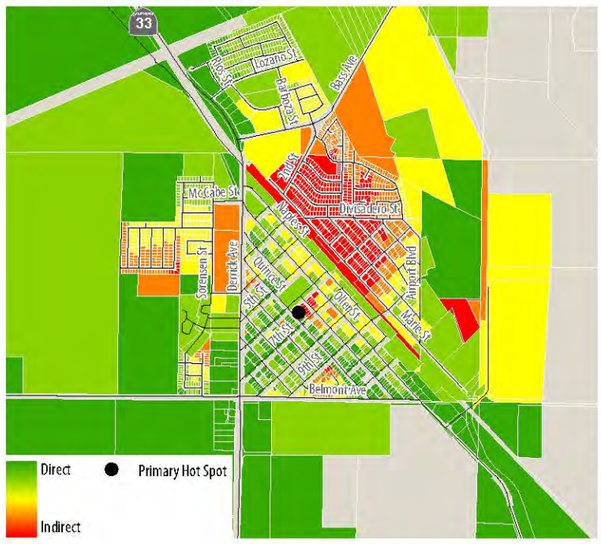
Existing Transit and Auto Facilities



CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)



Findings and Recommendations

*Collisions shown are from 2008-2012.
Priority listed in all caps.

New Bike\Ped\Auto Connection:
- Between 2nd St\Marie St and 2nd St Naples St (across rail) - **HIGH**
- Between 5th St\Marie St and Naples north of 5th Ave (across rail) - **HIGH**

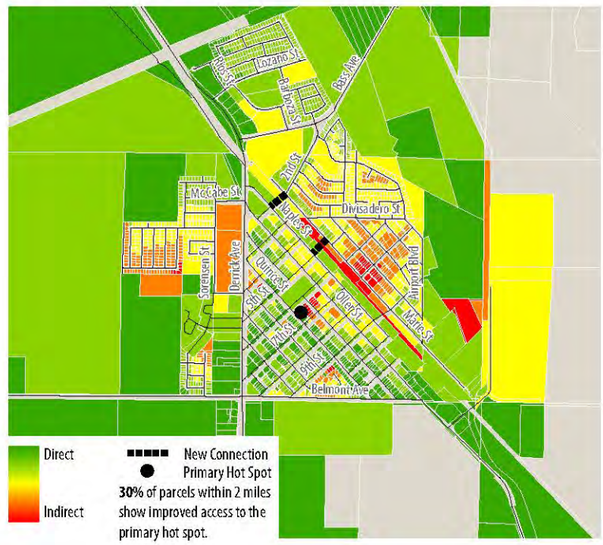
Add\Complete Sidewalk:
- Bass Ave from Barboza St to SR 33 - **MEDIUM**
- Lozano St from SR 33 to Rios St - **MEDIUM**
- SR 33 from Lozano St to McCabe St - **MEDIUM**
- Across greenbelt from Lozano St\SR 33 to connect paved path (desire line) - **MEDIUM**

Add On-Street Bike Facilities:
- 7th St from SR 33 to Oller St - **HIGH**
- Oller St from McCabe St to Belmont Ave - **HIGH**
- SR 33 From Lozano St to McCabe Ave - **MEDIUM**
- 9th St from Belmont Ave to Oller St - **LOW**
- 9th St from Oller St to Airport Blvd - **MEDIUM**

Transit:
Intracity service available twice daily each direction (Firebaugh, Mendota, Kerman, Fresno)
- Add more frequent service - **HIGH**

Auto:
- Good access to major roadways
- Parking on location and available nearby

Route Directness Enhancements



30% of parcels within 2 miles show improved access to the primary hot spot.

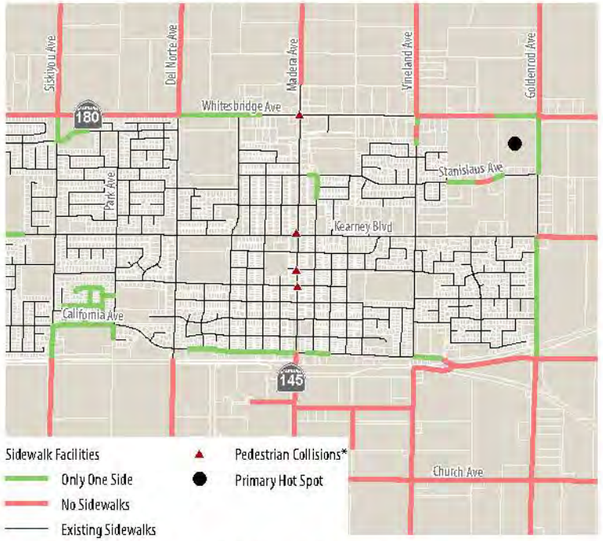
Fresno Council of Governments

FRESNO TRANSPORTATION NEEDS ASSESSMENT

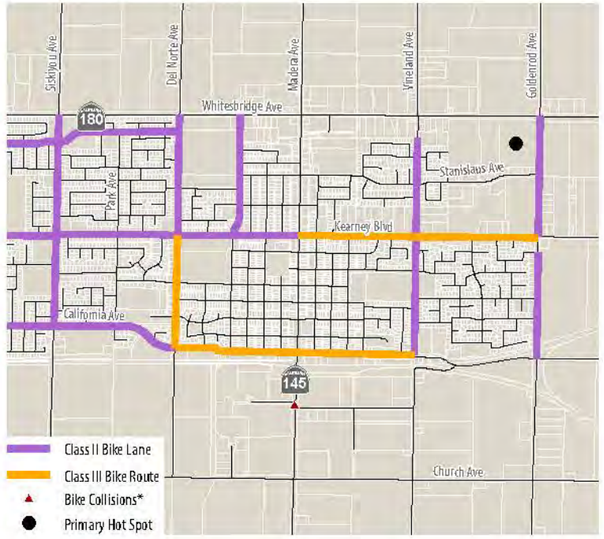
Transportation Connectivity and Accessibility Analysis

Walmart, Kerman

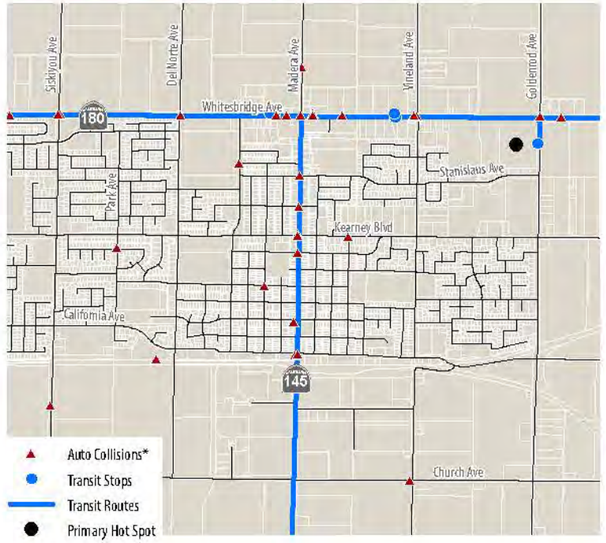
Existing Pedestrian Facilities



Existing Bike Facilities



Existing Transit and Auto Facilities



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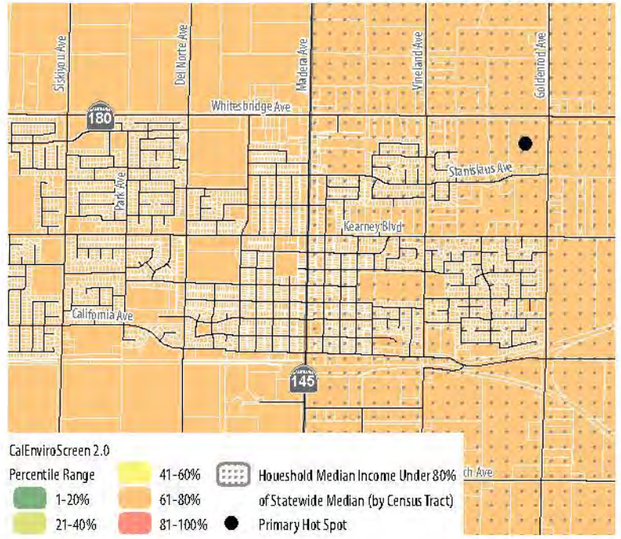
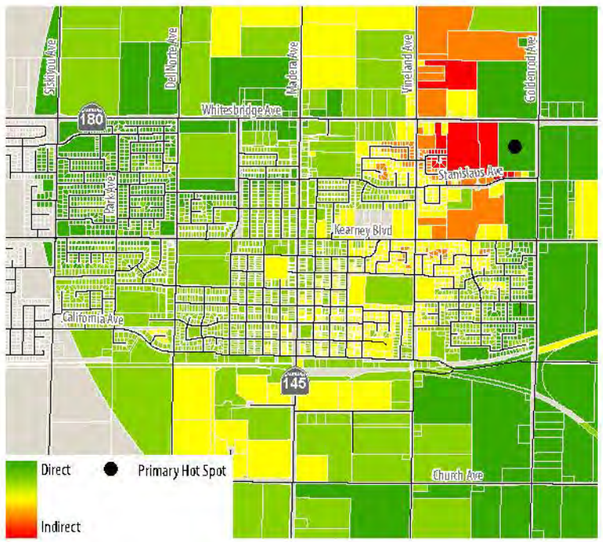
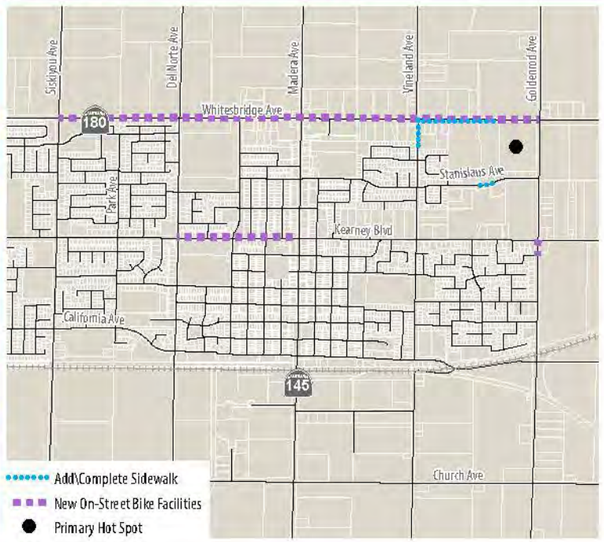


Route Directness (Existing Conditions)



Findings and Recommendations



*Collisions shown are from 2008-2012.
Priority listed in all caps.

Add\Complete Sidewalk:

- Complete sidewalk on southside of Whitesbridge Ave (SR 180) from Walmart parking lot to Vineland Ave - **HIGH**
- Complete sidewalk on Vineland Ave from Whitesbridge Ave (SR 180) to existing sidewalk north of San Joaquin Ave - **MEDIUM**
- Complete sidewalk on north side of Stanislaus Ave from roundabout to existing sidewalk - **LOW**

Add On-Street Bike Facilities:

- North side of Kearney Blvd from Del Norte Ave to Madera Ave (SR 45) (Class III recommended due to width considerations) - **HIGH**
- Goldenrod Ave from Kearney Blvd to G St (Class III recommended due to width considerations)- **MEDIUM**
- Whitesbridge Ave (SR 180) from Siskiyou Ave to Goldenrod Ave - **MEDIUM**

Transit:
Four stops per day, connecting to Huron and Coalinga

- Increase service frequency and improve signage to stop on Goldenrod Avenue on east side of Walmart property - **HIGH**

Auto:

- Good access to major roadways
- Parking on location and available nearby

Route Directness Enhancements

Not applicable,
no added connections

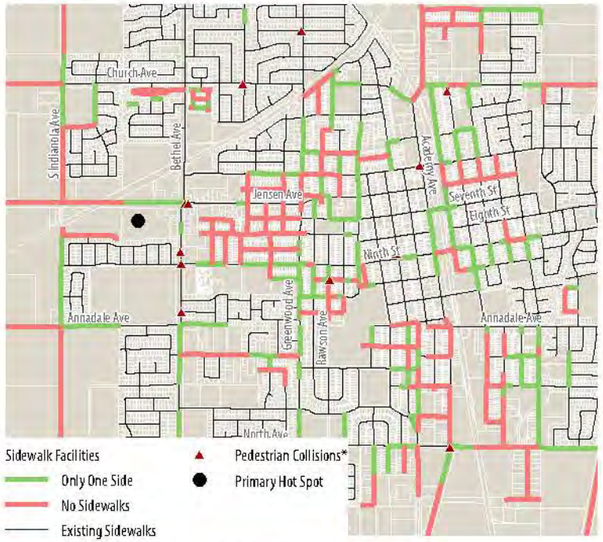
Fresno Council of Governments

FRESNO TRANSPORTATION NEEDS ASSESSMENT

Transportation Connectivity and Accessibility Analysis

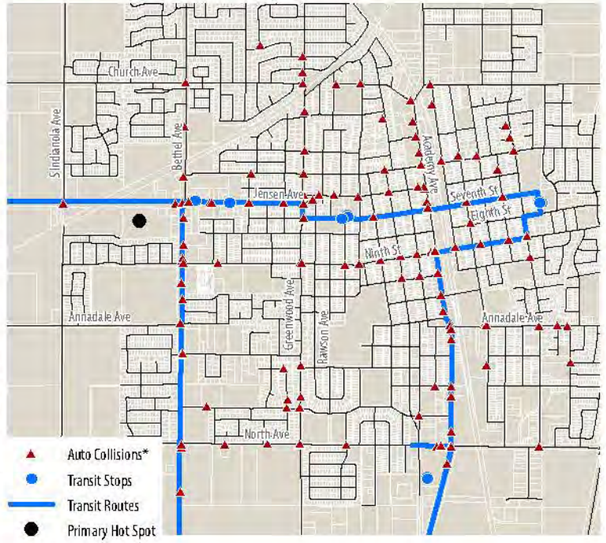
Walmart, Sanger

Existing Pedestrian Facilities

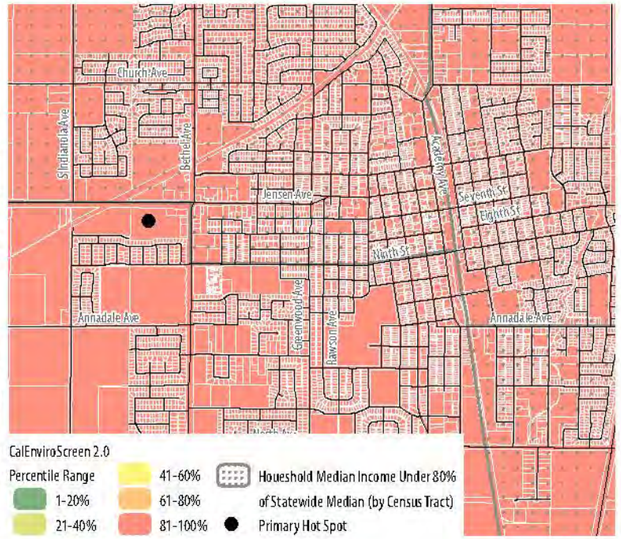


Existing Bike Facilities

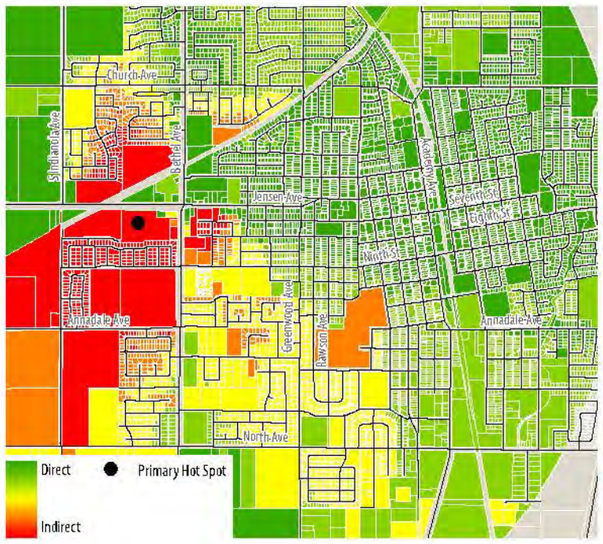
Existing Transit and Auto Facilities



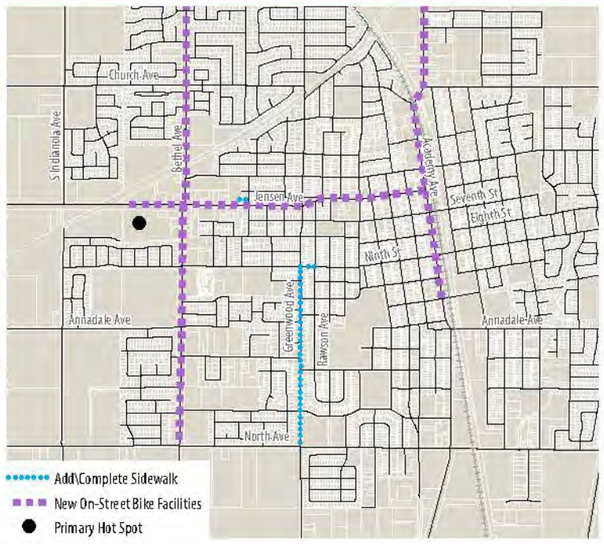
CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)



Findings and Recommendations



*Collisions shown are from 2008-2012.
Priority listed in all caps.

Add\Complete Sidewalk:

- Fill gap on north side of Jensen Ave from Lyon Ave to the west for 150' - **HIGH**
- Fill gap on Ninth St from Rawson Ave to mid-way to Greenwood Ave - **HIGH**
- Greenwood Ave between Ninth St to North Ave - **HIGH**

Add On-Street Bike Facilities:

- Bethel Ave from North Ave to Acacia Ave - **MEDIUM**
- Jensen Ave from west end of Walmart parking lot to Academy Ave - **HIGH**
- Upgrade Academy Ave from Eleventh St to California Ave to Class II with striping and signing - **MEDIUM**

Transit:

- Increase transit service - **HIGH**
- Install bus shelter on eastbound Jensen Ave - **HIGH**
- Add signage to both east and westbound locations on Jensen Ave - **HIGH**

Auto:

- Good access to major roadways
- Parking on location and available nearby

Route Directness Enhancements

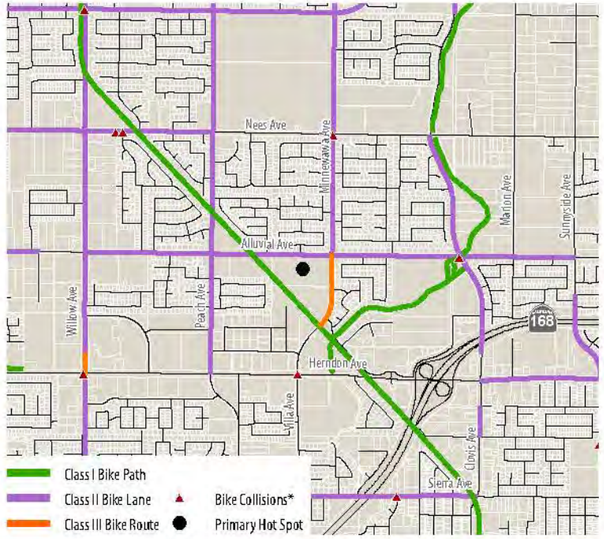
Not applicable,
no added connections

Fresno Council of Governments

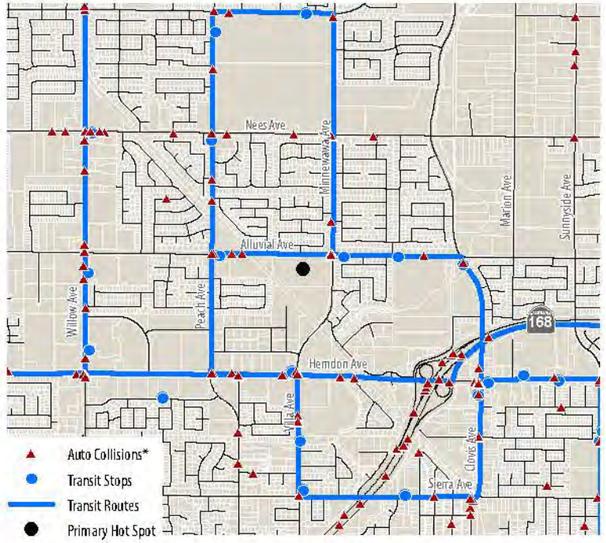
Wawona Frozen Foods

Existing Pedestrian Facilities

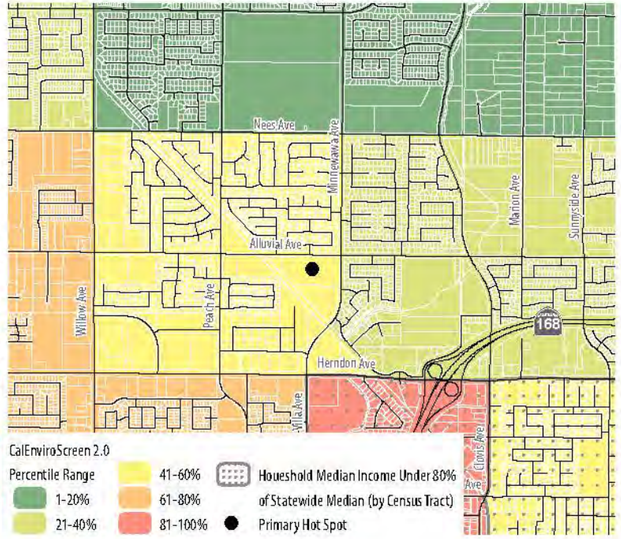
Existing Bike Facilities



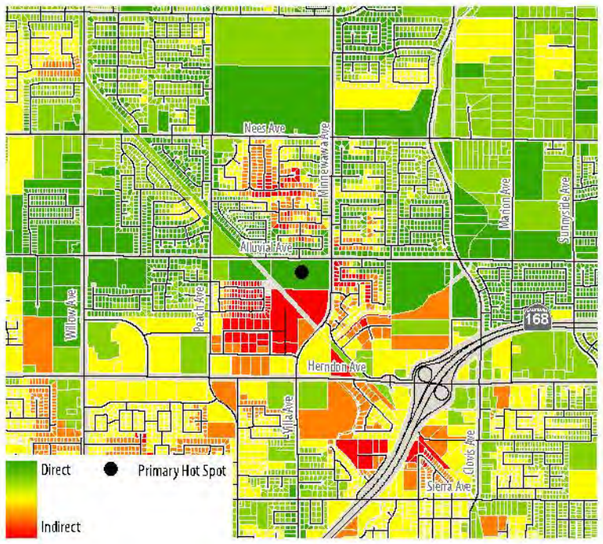
Existing Transit and Auto Facilities



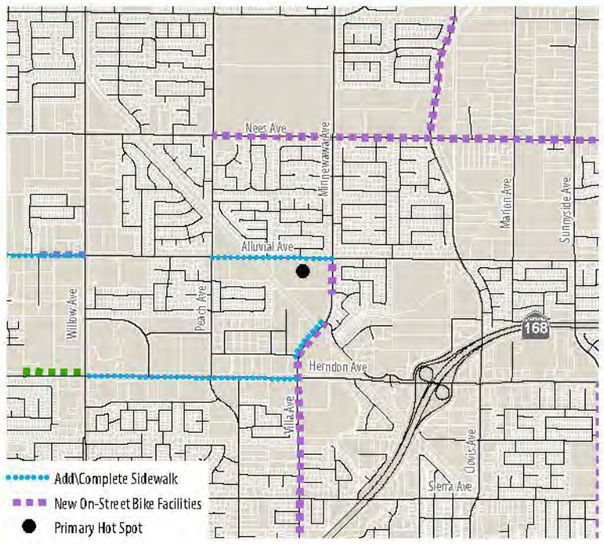
CalEnviroScreen 2.0 Percentile and Low Median Income



Route Directness (Existing Conditions)



Findings and Recommendations



*Collisions shown are from 2008-2012.
Priority listed in all caps.

Add\Complete Sidewalk:
- Fill gap in sidewalk on Villa Ave between Fir Ave and Minnewawa Ave - **HIGH**
- South side of Alluvial Ave between Minnewawa Ave and Peach Ave - **HIGH**
- Fill gaps on both sides of Herndon Ave between Willow Ave and Villa Ave - LOW
- Gaps on Alluvial Ave between Backer Ave and Chestnut Ave - MEDIUM

New On-Street Bike Facilities:
- Clovis Ave between Nees Ave and Teague Ave - LOW
- Nees Ave between Peach Ave and Locan Ave - MEDIUM
- West side of Minnewawa Ave from Chennault Ave to Alluvial Ave - MEDIUM
- Villa Ave from Alluvial Ave to Gettysburg Ave - MEDIUM
- Sunnyside Ave between Gettysburg Ave and Herndon Ave - LOW
- Bullard Ave from Willow Ave to Fowler Ave (located 1.5 miles south)- LOW
- Chestnut Ave from Bullard Ave to Herndon Ave (located 1.4 miles south) - LOW
- Fill gaps on Alluvial Ave from Willow Ave to Paula Ave - MEDIUM

New Off-Street Bike Facilities:
- Fill gaps in Class I Path on north side of Herndon Ave between Willow Ave and existing Class I Path - MEDIUM

Transit:
- Good access

Auto:
- Good access to major roadways
- Parking on location and available nearby

Route Directness Enhancements

Not applicable,
no added connections

Fresno Council of Governments

DEVELOPMENT OF DISTANCE THRESHOLDS

WALKING AND BICYCLING

Fehr & Peers performed an investigation to identify appropriate maximum distances that pedestrians and bicyclists are likely to travel to set reasonable bounds on the analysis of the hot spots. There will always be some particularly strong people who will have trips longer than nearly any particular distance, but the goal was to capture the behavior of the large majority of the population. A maximum analysis distance of 1.5 miles for pedestrians, which encompasses approximately 90% of trips, and a maximum distance for bicycling trips of 6 miles, which encompasses more than 90% of all trips, were determined.

To calculate these numbers, Fehr & Peers reviewed the 2012 California Household Travel Survey (CHTS) data to examine trip distances for walking and biking by trip purpose (home based other (HBO), home based work (HBW), and non-home based (NHB). To gather sufficient data points, the Sacramento Valley was added to the San Joaquin Valley (SJV) as a whole due to a lack of statistical significance if SJV data were used solely.

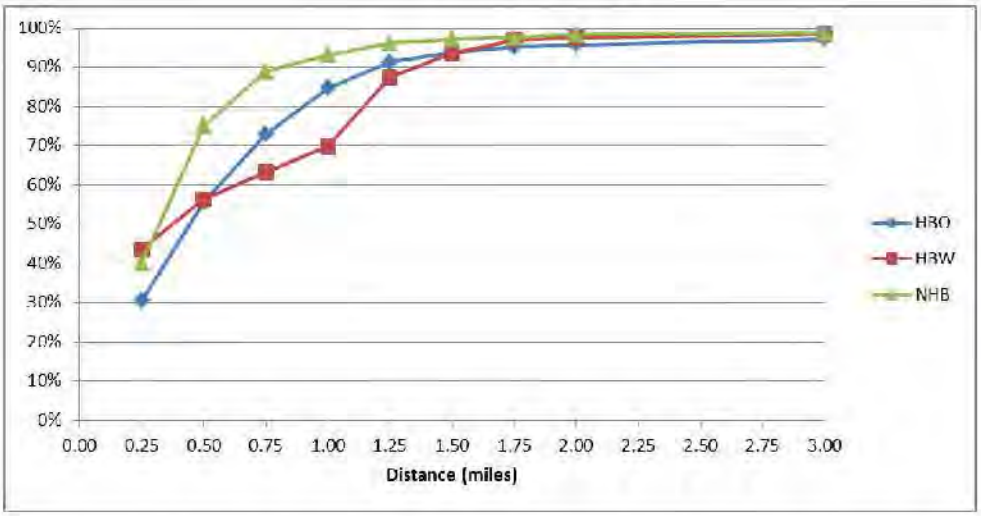
A walking trip distance of 1.5 miles encompasses approximately 90% of both HBW and HBO trips in SJV (data were reviewed to the nearest quarter mile) (shown below). Distances for HBO trips were somewhat shorter, with a distance of 1.5 mile encompassing approximately 97% of trips.

These distances are significantly longer than the assumed walking limit for most people of 0.25 to 0.5 mile. However, from the CHTS data, these shorter distances appear to represent medians more closely than maximums.

Additionally, 1.5 miles encompasses a 30 minute walking trip at the typical average walking speed of 3.1 mph (or 1.55 miles in 30 minutes).

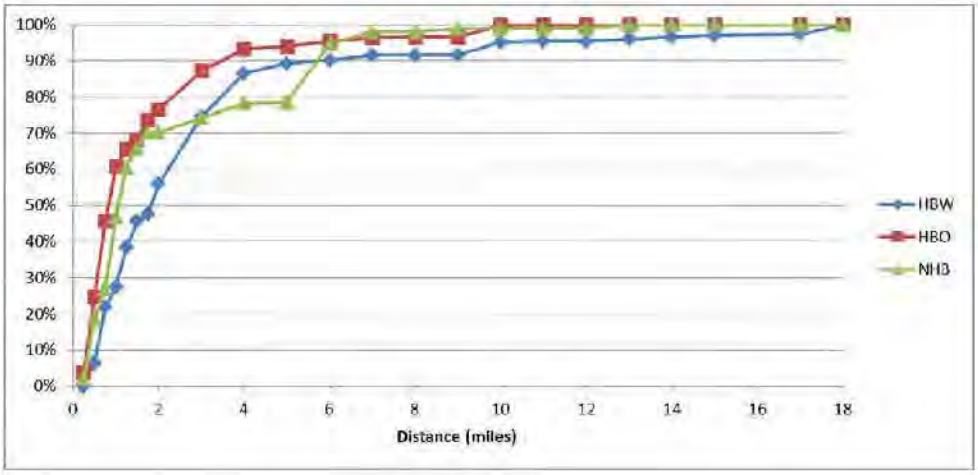
Therefore, 1.5 miles was used as a practical walking distance limit for our analysis. For transit trips (discussed below), a 0.75 mile walking limit was used between the bus stop and hot spot due to likely walking at both transit ends and time associated with the bus trip itself.

Cumulative Walk Trips



A biking trip distance or 6 miles encompasses approximately 90% of HBW trips (shown below). Distances for HBO and NHB trips were shorter, with 6 miles covering approximately 95% of both HBO and NHB trips. A typical biking speed of 11 mph for 30 minutes yields a distance of 5.5 miles, which is comparable to the number derived above. Therefore, a maximum bicycling distance of 6 miles was selected.

Cumulative Bicycle Trips



TRANSIT

In both the walking and bicycling distance analyses shown above, 30 minutes was the maximum travel time used. For the transitshed analysis, Fehr & Peers adhered to the 30 minute walking threshold and added a base of a 30 minute transit ride, creating a total transit trip of one hour. Assuming that people

will ride transit farther distances if that is the only option available to them, that transit distance was expanded to evaluate other time periods (two, three, and four hours) for hot spots likely to draw people from more of the region.

Fehr & Peers completed this calculation for each hot spot as follows:

- First, a 0.75-mile buffer was created around the hot spot location. All transit stops that fell inside this buffer were used as our starting points for the next step.
- Next, using those starting points, a service area along the transit routes network was determined using a bus travel distance of 15 miles in rural regions or 7 miles in urban regions. These distances are estimates for a 30-minute transit ride (or longer for regional destinations as described above).
- Lastly, all of the transit stops that fell inside this service area were selected, and another 0.75-mile buffer was created for each.

RESULTS PRESENTATION

Results of this analysis were presented at a meeting of the Fresno COG Transportation Needs Assessment Committee on June 8, 2016. Additional comments were received in two letters from the public. All comments were reviewed and incorporated into the analysis where appropriate. A summary of all comments, responses to them, and actions taken is provided in Appendix C, Response to Comments Received.

APPENDIX A: REGIONAL GAP ANALYSIS FOR BICYCLE AND TRAIL FACILITIES (MEMORANDUM 1)

APPENDIX B: TRANSPORTATION CONNECTIVITY AND ACCESSIBILITY ANALYSIS (MEMORANDUM 2)

APPENDIX C: RESPONSE TO COMMENTS RECEIVED