

4 BICYCLING AND WALKING IN BUTTE COUNTY

INTRODUCTION

According to the Non-Motorized Transportation Action Element of the 2012 MTP/SCS, bicycling has become an increasingly popular method of travel throughout the region due to energy savings, environmental benefits, and health advantages. The Element also notes that pedestrian travel in Butte County is common for very short trips and for students traveling to school. To better understand bicycle and pedestrian activity in Butte County, this chapter reviews non-motorized travel in Butte County and highlights existing and planned facilities and amenities.

EXISTING LEVELS OF WALKING AND BICYCLING

The American Community Survey (ACS) is one of the only sources of data regarding existing levels of walking and bicycling within Butte County. The 2008-2012 ACS provides sample data about means of transportation to work. Figure 4-1 shows commuting mode share for Butte County and its jurisdictions according to the 2008-2012 ACS. Figure 4-2 shows the number of commuters by mode. These figures are for work trips only and do not include trips made for recreational or other utilitarian purposes. Non-work trips, such as shopping or errands, are more likely to be made by walking or bicycling. Therefore, it is reasonable to believe that actual levels of bicycling within Butte County are higher than those presented in Figure 4-1. Figure 4-1 shows mode share percentages for each jurisdiction. ACS data does not distinguish between intra-jurisdiction and inter-jurisdiction trips; however, it is likely that the bicycle and walking mode shares are higher among individuals who live and work in the same jurisdiction.

Figure 4-1 American Community Survey Mode Share %, 2008-2012

Jurisdiction	Bicycle	Walk	Car, Truck, or Van	Public Transit	Worked at Home/Other
Butte County (Total)	2.9	4	85.5	1.1	6.5
Biggs	0	2.8	93.8	0	3.4
Chico	5.8	5.6	81.6	1.1	5.9
Gridley	0	5.3	89.3	1.5	3.9
Oroville	0.2	7	85.3	1.8	5.7
Paradise	1	2	89	1.5	6.5

(American Community Survey, 2009)

Based on the 2008-2012 ACS data, approximately seven percent of Butte County residents bicycle or walk as their primary means of transportation to work. The walking or bicycling mode shares in Chico and Oroville are both above the county average while those in Gridley, Paradise, and Biggs are all below the average.

Figure 4-2 shows the number of commuters by mode.

Figure 4-2 American Community Survey Number of Commuters by Mode, 2008-2012

Jurisdiction	Bicycle	Walk	Car, Truck, or Van	Public Transit	Worked at Home/Other
Butte County (Total)	2,445	3,372	72,085	927	5,480
Biggs	0	15	496	0	18
Chico	2,239	2,161	31,456	424	2,277
Gridley	0	119	2,003	34	87
Oroville	11	379	4,614	97	309
Paradise	96	192	8,530	144	623

(American Community Survey, 2009)

Based on the 2008-2012 ACS data, over 11,000 commuters bicycle or walk as their primary means of transportation to work, representing over 22,000 trips per working day. Each commuter makes two trips each day: one trip from home to work and one trip from work to home.

EXISTING AND PLANNED WALKING AND BICYCLING INFRASTRUCTURE

Sidewalks are available on many arterial and collector streets throughout Butte County's jurisdictions and unincorporated towns. In many developing areas of the county, gaps in sidewalk coverage exist, which present barriers to walking.

Chapter 1000 of the *Highway Design Manual* (Caltrans, 2012) covers Bicycle Transportation Design. Section 1000.4 defines three classes of bikeways as follows:

- Class I Bikeway (Bike Path). Off-street bike paths are facilities for use exclusively by bicycles, pedestrians, equestrians, and other non-motorized users, with minimal cross-flow by motor vehicles. They are almost always located in an exclusive right-of-way.
- Class II Bikeway (Bike Lane). Bike lanes are areas within paved streets that are identified with striping, stencils, and signs for preferential (semi-exclusive) bicycle use.
- Class III Bikeway (Bike Route). Bike routes are on-street routes intended to provide continuity to the bikeway system. Bike routes are designated by signs or permanent markings and are shared by motorists. Many bike routes provide shoulders that can be used by bicyclists or pedestrians.

Figure 4-3, Figure 4-4, and Figure 4-5 show the existing and proposed bikeways in the various jurisdictions within Butte County.

City of Biggs

Existing

The City of Biggs has two bike paths: one along Rio Bonito Road east of 2nd Street and another at the City's northeastern limits with a connection to 2nd Street. Bike lanes exist on E Street/Rio Bonito Road between 8th Street and 2nd Street, 6th Street between B Street and E Street, and 8th Street between B Street and E Street. Biggs has bike routes on 2nd Street, 5th Street, C Street, Aleut Street, and Trent Street.

Proposed

Proposed bicycle facilities in the City of Biggs include a bike path following the Hamilton Slough between Biggs Gridley Road and B Street, and a regional bike path beginning south of B Street and following the railroad tracks south towards Gridley. Bike lanes are proposed on B Street and 6th Street. Additional bike routes are proposed on 5th Street and C Street.

City of Chico

Existing

Class I Bike Paths

The City of Chico has an extensive network of Class I bike paths. Bicycle paths are present alongside or parallel to several major arterial streets including Nord Avenue, Cohasset Road, State Route 99, Park Avenue and Midway, and Bruce Road. The City also has several bike paths that follow waterways or abandoned railroad. For example, Bidwell Park features several bike paths which serve as connections between other facilities north and south of the park.

Class II Bike Lanes

East Avenue, Nord Avenue, Warner Street, Manzanita Avenue, Easton Road, 20th Street, Notre Dame Boulevard, Forest Avenue, and Skyway Road are all corridors featuring Class II bike lanes along at least a portion of their route. Bike lanes are not available on all roadways; some simply feature a wide shoulder.

Class III Bike Routes

Several major arterials and collectors within Chico have been designated as Class III bike routes, with the majority concentrated in downtown and just north of downtown in the vicinity of CSU Chico. Bike routes also exist throughout the residential neighborhood immediately northwest of Bidwell Park, along Lassen Avenue, and along a portion of Dr. Martin Luther King Junior Parkway.

Proposed

The City of Chico has identified numerous improvements to its network of bicycle infrastructure. Components of the proposed network include:

- Construction of bike paths on Humboldt Road between Marsh Junior High School and the City's eastern limits, along the railroad right-of-way between the 9th Street/Walnut Street intersection in downtown and the City's southern limits, following the abandoned

railroad spur from Estes Road east to Skyway Road, following the Sacramento River tributary between State Route 32 and Cohasset Road, along the future Eaton Road between its existing terminus and Nord Avenue, and continuing along the Amtrak tracks between Lindo Avenue and the Sacramento River Tributary.

- Construction of bike lanes along sections of several roadways, including Sacramento Avenue, Nord Avenue, Chico River Road, Eaton Road, Cussick Avenue, Bruce Road, and Honey Run Road.
- Designation of bike routes on numerous city streets, focusing especially on downtown Chico and the neighborhoods to the north of CSU Chico.

City of Gridley

Existing

The City of Gridley does not currently have any bike paths. Bike lanes exist on Spruce Street between Biggs Gridley Road and State Route 99, on Gridley Road between Vermont Street and Washington Street, on Hazel Street between Virginia Street and the street's eastern terminus, and along the entire length of Washington Street. Gridley has not designated any streets as bike routes.

Proposed

The City of Gridley has proposed to add bike lanes to several north-south and east-west streets within its roadway grid. Additionally, the regional bike path between Biggs and Gridley will be accessible in Gridley near the Washington Street/Spruce Street intersection.

City of Oroville

Existing

Within the City of Oroville, there is one bike path which connects Riverbend Park and State Route 70 along the banks of the Feather River. Bike lanes are present on sections of Grand Avenue, Orange Avenue, and Foothill Boulevard. The City of Oroville has not designated any streets as bike routes.

Proposed

Oroville's network of proposed bicycle facilities calls for bike lanes on several of the city's long north-south and east-west corridors. Bike paths are proposed following the Feather River, parallel to Lincoln Boulevard, and following the paths of two high-tension power line easements to the east of downtown. The network proposal designates two corridors in downtown Oroville as bike routes.

Town of Paradise

Existing

The Paradise Memorial Trailway is the Town of Paradise's major bike path and currently connects the Neal Road/Skyway Road intersection with the Pentz Road/Skyway Road intersection. The

trail parallels Skyway Road for its length. A short bike lane exists on Pearson Road between Recreation Drive and Clark Road. There are currently no bike routes in the Town of Paradise.

Proposed

The Town of Paradise's current plan calls for the addition of bike lanes along several roadway corridors including Pentz Road, Wagstaff Road, Bille Road, Sawmill Road, Pearson Road, and Neal Road. Bike routes have been proposed on Pentz Road south of Pearson Road, Clark Road, and segments of Wagstaff Road and Nunnelley Road. A bike path that would connect Chico and Paradise has been proposed adjacent to Skyway Road.

Unincorporated Butte County

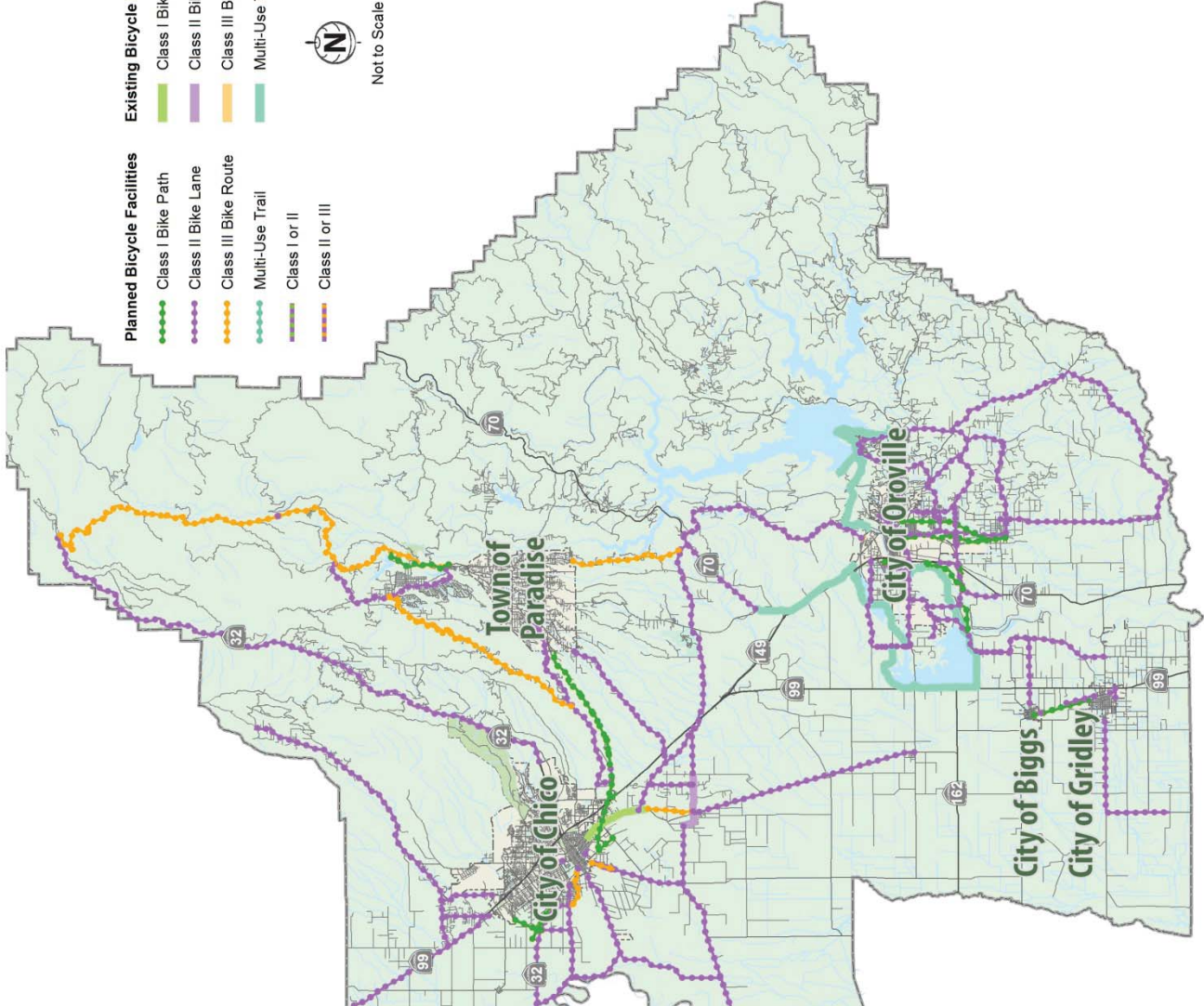
Existing

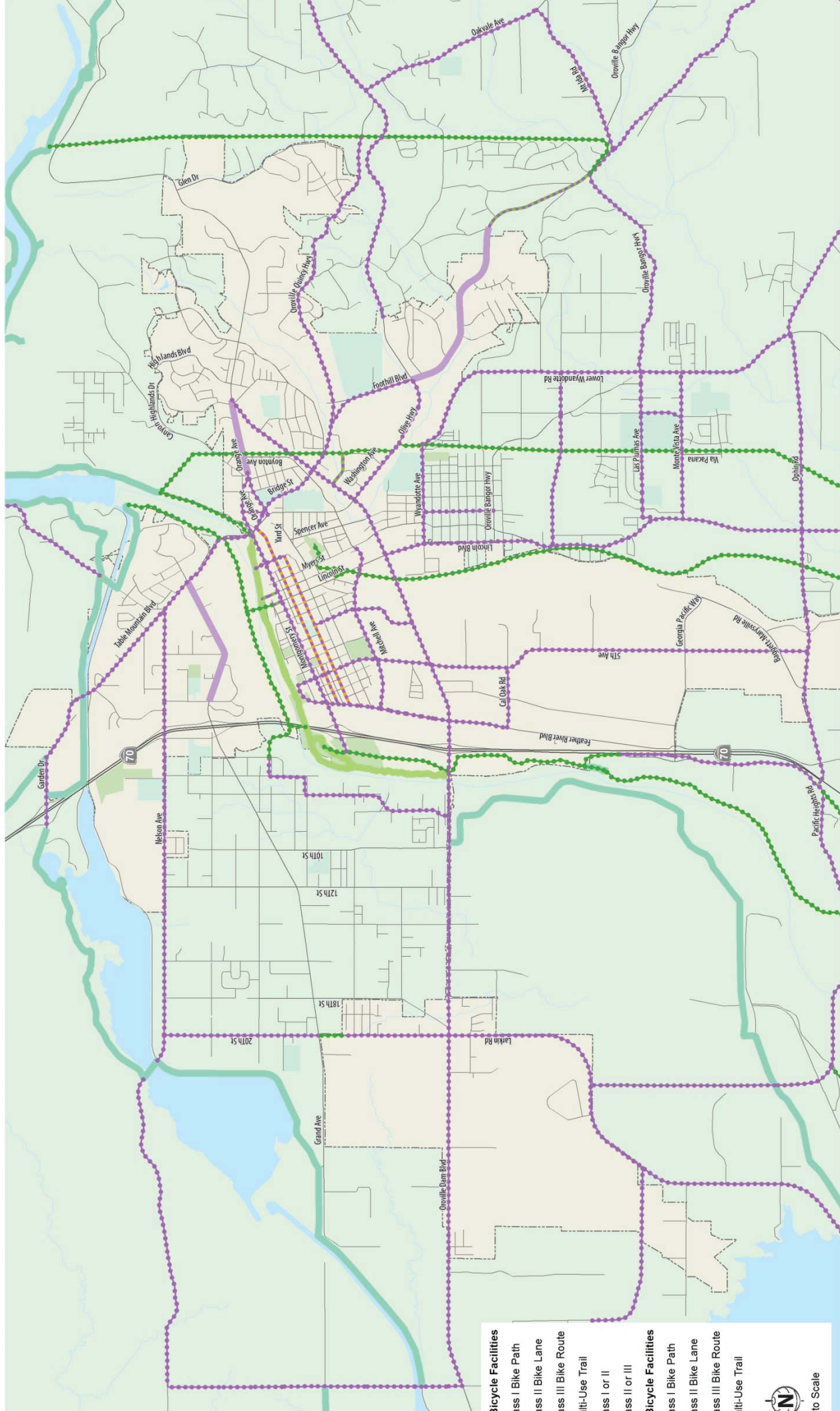
From Chico, the Chico-Durham Bike Path continues south along Midway to Jones Avenue in Durham. Additionally, several multi-use trails serve the area north and west of Oroville, continuing north along State Route 149 to the Butte College campus on Clark Road.

Proposed

An extensive network of bike paths, bike lanes, bike routes, and multi-use trails is proposed for the unincorporated areas of Butte County. Bike paths are proposed between Chico and Paradise along Skyway Road, and between Biggs and Gridley along the railroad right-of-way. Bike lanes are proposed on several state highways and county roadways. Bike routes are proposed on segments of Humboldt Road, Skyway Road, Pentz Road, and Jones Avenue.

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Bicycle Facilities

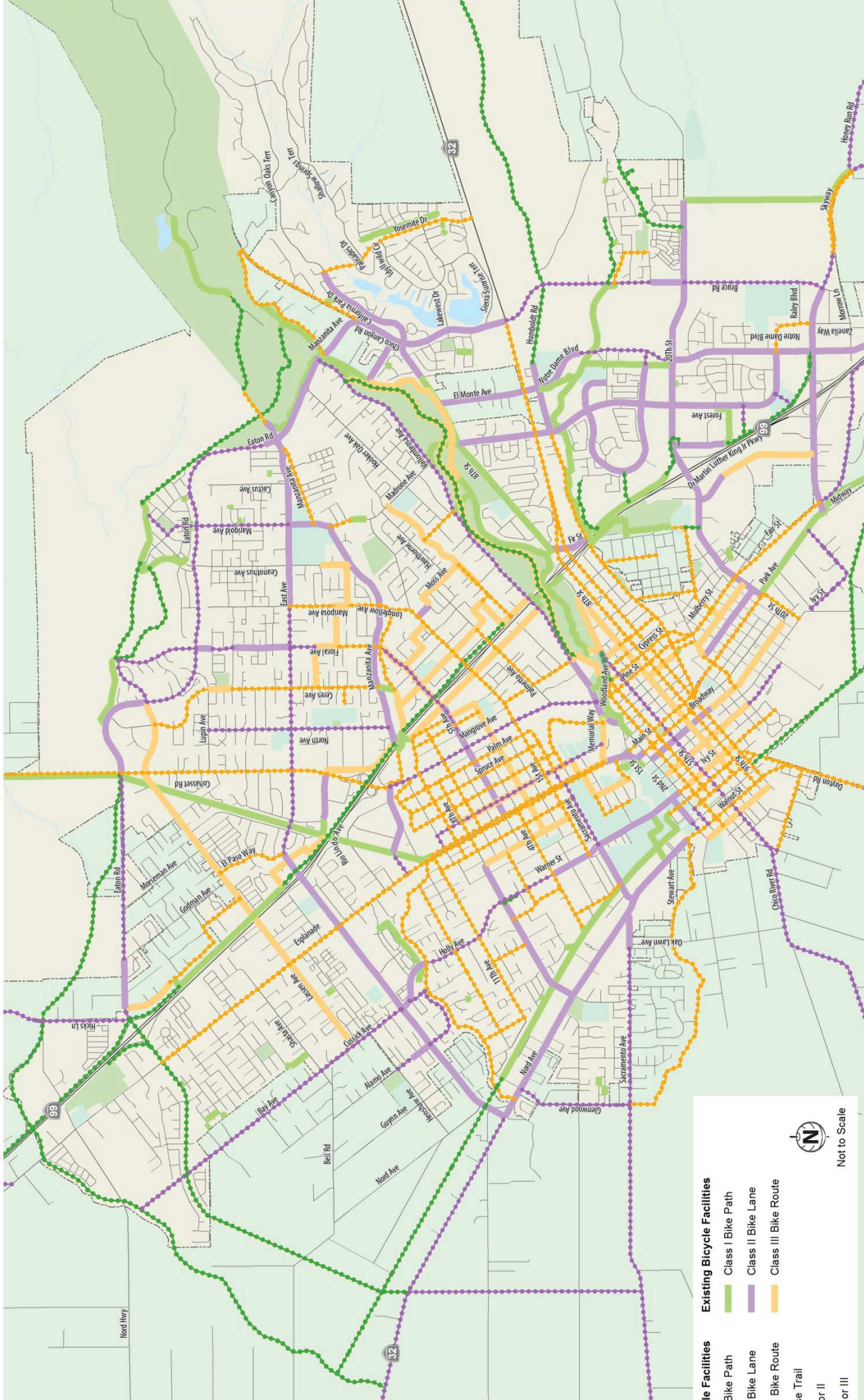
- Class I Bike Path
- Class II Bike Lane
- Class III Bike Route
- Multi-Use Trail
- Class I or II
- Class II or III

Bicycle Facilities

- Class I Bike Path
- Class II Bike Lane
- Class III Bike Route
- Multi-Use Trail



North Arrow



COLLISION ANALYSIS

Five years of California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS) data for injury or fatality collisions involving pedestrians or bicyclists was reviewed to identify collision locations and trends in Butte County. The SWITRS data was accessed using the Transportation Injury Mapping System (TIMS), a service available from the Safe Transportation Research and Education Center (SafeTREC) at the University of California, Berkeley. Figure 4-6 includes a summary of total, pedestrian-vehicle, and bicyclist-vehicle collisions occurring in Butte County between 2007 and 2011. Collision locations are mapped in Figure 4-7, Figure 4-8, and Figure 4-9.

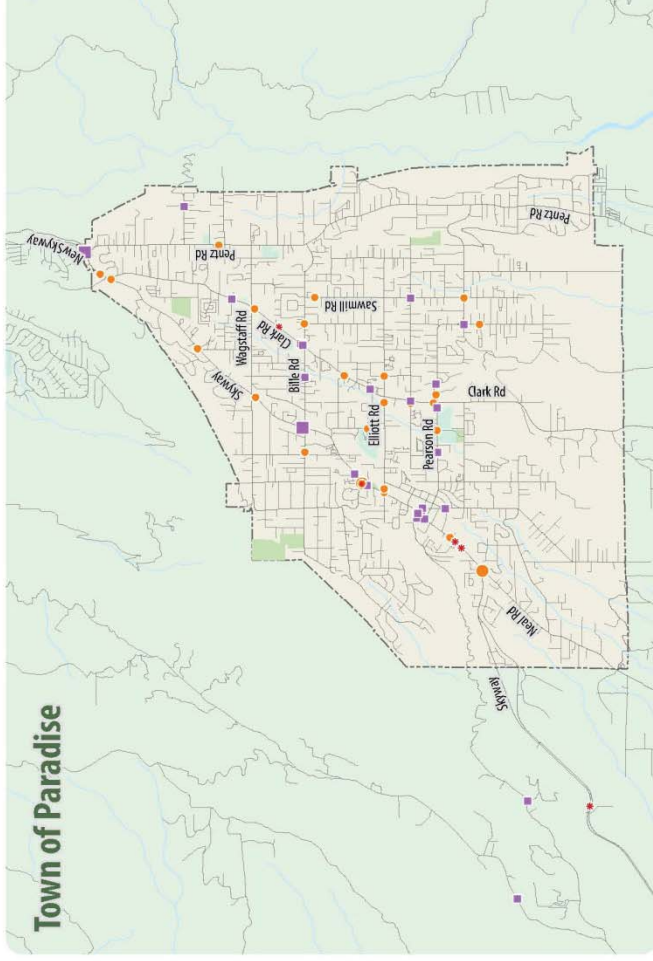
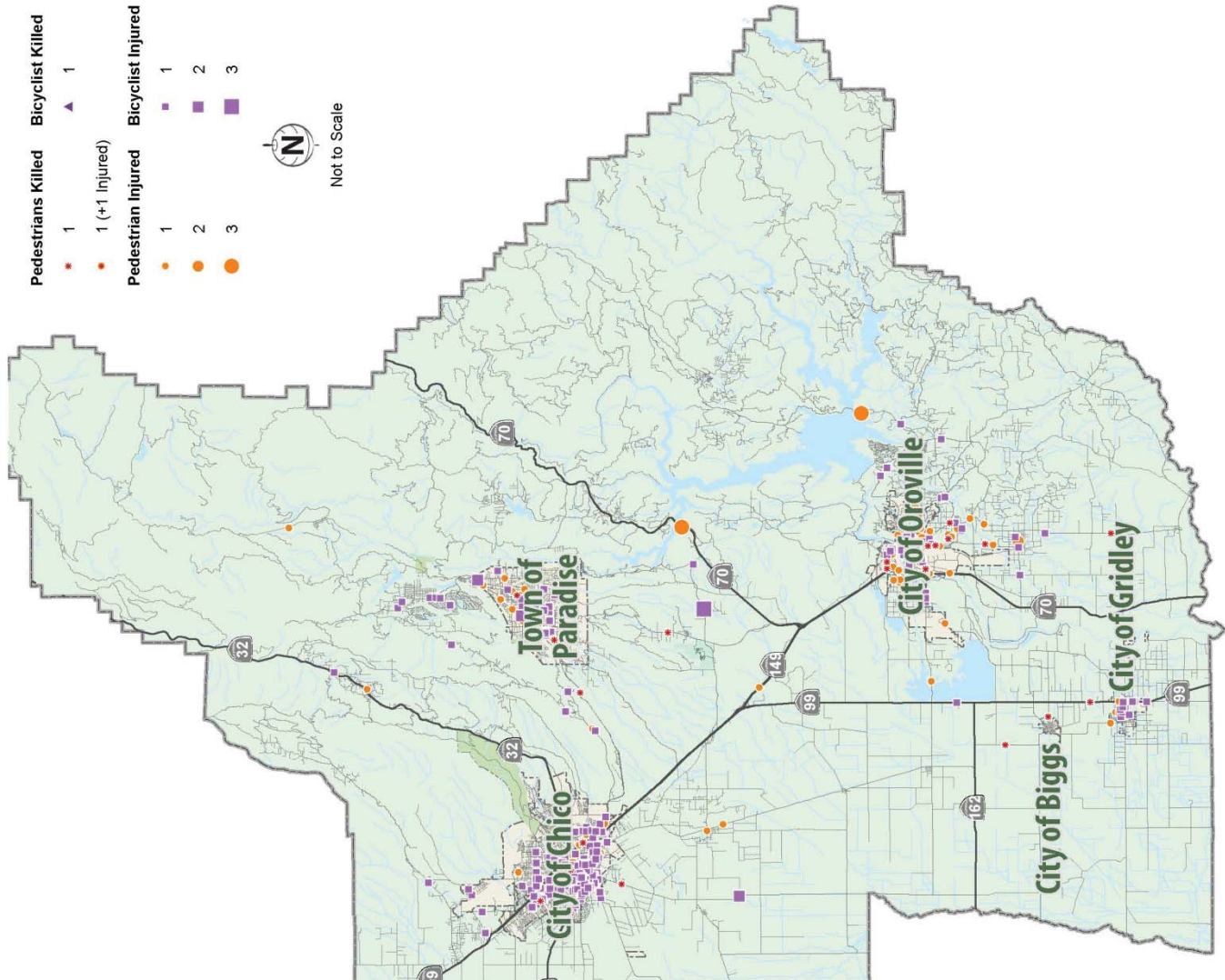
Figure 4-6 Summary of Butte County Injury and Fatal Collisions, 2007-2011

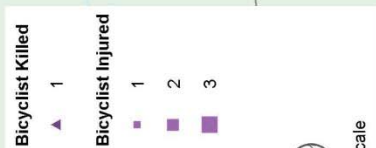
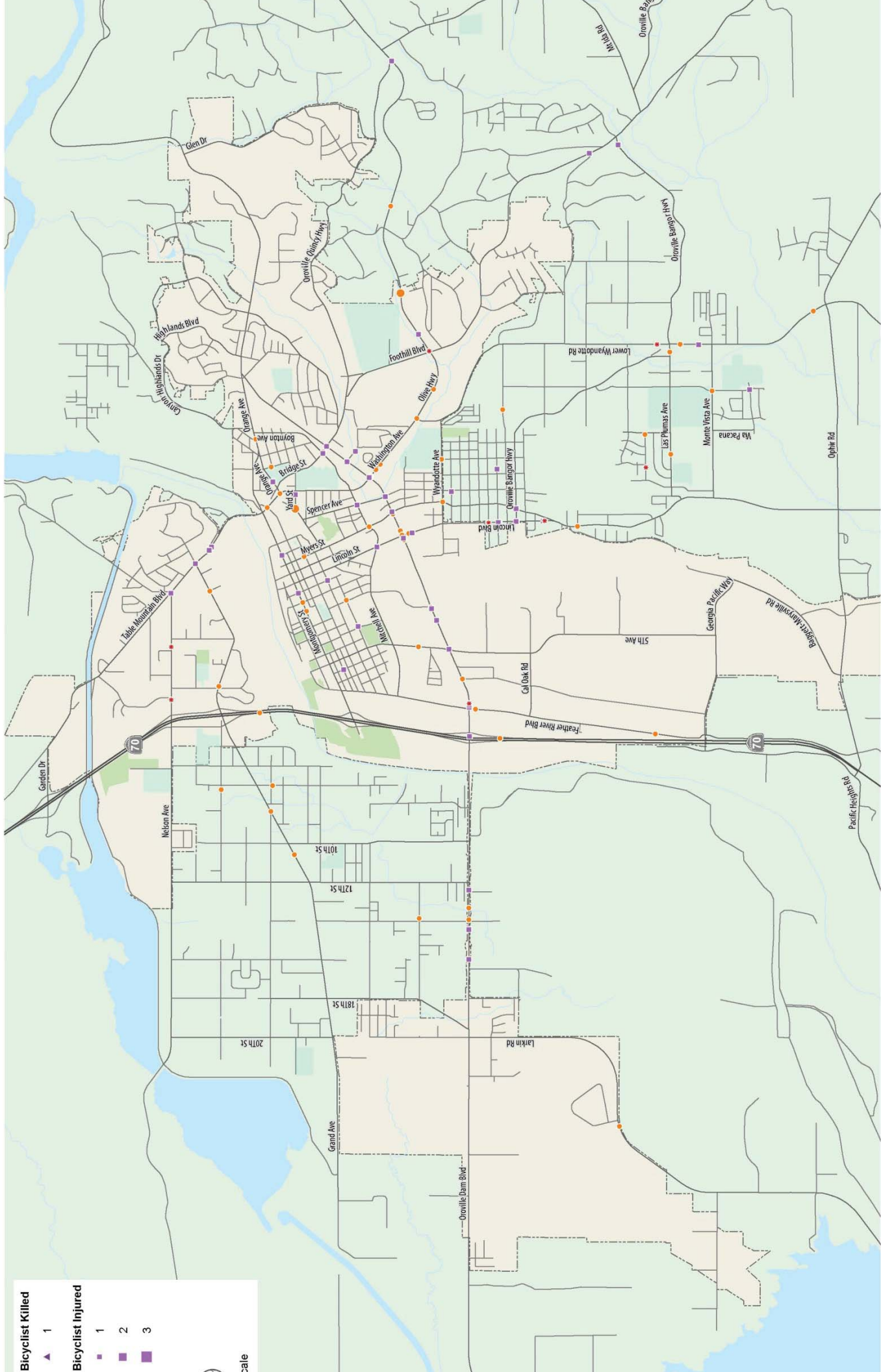
Year	Total Collisions		Pedestrian-Vehicle Collisions		Bicyclist-Vehicle Collisions	
	Injury	Fatal	Injury (%)	Fatal (%)	Injury (%)	Fatal (%)
2007	755	34	37 (5%)	5 (15%)	56 (7%)	1 (3%)
2008*	684	26	36 (5%)	5 (19%)	44 (6%)	0 (0%)
2009	667	17	35 (5%)	2 (12%)	46 (7%)	0 (0%)
2010*	864	33	38 (4%)	9 (27%)	85 (10%)	0 (0%)
2011	729	16	40 (5%)	5 (31%)	66 (9%)	0 (0%)
Total	3,699	126	186 (5%)	26 (21%)	297 (8%)	1 (1%)

* Note: One collision in 2008 and one collision in 2010 involved both a bicyclist and pedestrian.

Figure 4-1 shows that the Butte County's total walk and bicycle mode share is approximately seven percent. However, Figure 4-10 shows that pedestrian-vehicle and bicyclist-vehicle collisions account for 13 percent of all injury collisions and 22 percent of all fatal collisions in Butte County. Because pedestrians and bicyclists are particularly vulnerable in collisions with vehicles, infrastructure and programs aimed at reducing pedestrian or bicyclist injuries or fatalities could have a significant effect on reducing the County's overall numbers of traffic-related injuries and fatalities.

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WALKING AND BICYCLING TO TRANSIT

As described in Chapter 3, B-Line is the provider of public transportation services within Butte County. Services are provided from four transit centers (with two in Chico, one in Paradise, and one in Oroville). B-Line provides bicycle storage on buses on a first-come, first-served basis. Bike racks are available on the front of all buses in B-Line's fleet and can accommodate up to three bicycles. The agency does not advertise a policy regarding the ability of passengers to carry bikes with them onto buses. Supporting bicycle and pedestrian facilities are available at some of B-Line's transit centers.

Transit centers of regional significance are examined for their connectivity with existing bicycle and pedestrian infrastructure.

Chico Transit Facilities

Figure 4-10 and Figure 4-11 show the transit centers in Chico and their proximity to existing bikeways.

Downtown Chico Transit Center

B-Line's highest level of service is in downtown Chico at the transit center located near the intersection of 2nd Street and Normal Avenue. The transit center features short-term bicycle parking (bike racks). This transfer center is located between downtown Chico and CSU, both of which are currently served by a network of well-connected streets; however, few streets feature bikeways. Salem Street has bike lanes and there are bike routes on Ivy Street and Chestnut Street. Additionally, the bike paths through Bidwell Park connect to downtown Chico near the transit center.

Within downtown Chico, nearly all roadways feature high-quality pedestrian infrastructure including sidewalks and crosswalks. Elements of the streetscape contribute to an attractive environment for walking, including active storefronts, wide sidewalks, landscaping, and pedestrian-scale lighting. Some intersections are missing pedestrian infrastructure such as curb ramps and pedestrian signals. Additionally, there may be uncontrolled locations where it is difficult for pedestrians to cross the street.

Forest Avenue Transfer Point

The Forest Avenue transfer point is Chico's second transit center of regional significance. The transfer point is located on Forest Avenue south of Parkway Village Drive and serves six of B-Line's routes. In that vicinity, Forest Avenue features bike lanes on both sides of the street, although the transfer point does not feature bicycle parking. Sidewalk coverage is continuous on both Forest Avenue and Parkway Village Drive in the vicinity of the transit stop.

Chico Park and Ride at State Route 32 and Fir Street

The Park & Ride at State Route 32 and Fir Street on the east side of State Route 99, which is owned and maintained by Caltrans, is the only Park and Ride in Chico. The facility has 141 vehicle parking spaces combined in lots on both the east and west sides of Fir Street and 16 bike lockers. Currently, only B-Line Routes 5, 20 and 40X serve this Park and Ride. Changes to this facility that are being considered include: rebuilding the east lot to streamline bus stops and allow for easy entry from the inner lanes of State Route 32; marketing this Park and Ride as a regional

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transit connection for pedestrians and bicyclists; and providing a multiuse path connecting Fir Street and Forest Avenue or Bruce Street along the north side of State Route 32. As shown in Figure 4-11, Fir Street connects the Park and Ride to existing bike paths in Chico. Although there are several multifamily housing developments near the Park and Ride, pedestrian access to the Park and Ride is limited by missing walkways along State Route 32 and a lack of pedestrian crossings of State Route 32 to the Park and Ride. There are no bicycle facilities on State Route 32.

Figure 4-10 B-Line Transit Centers and Bicycle Facilities – Chico

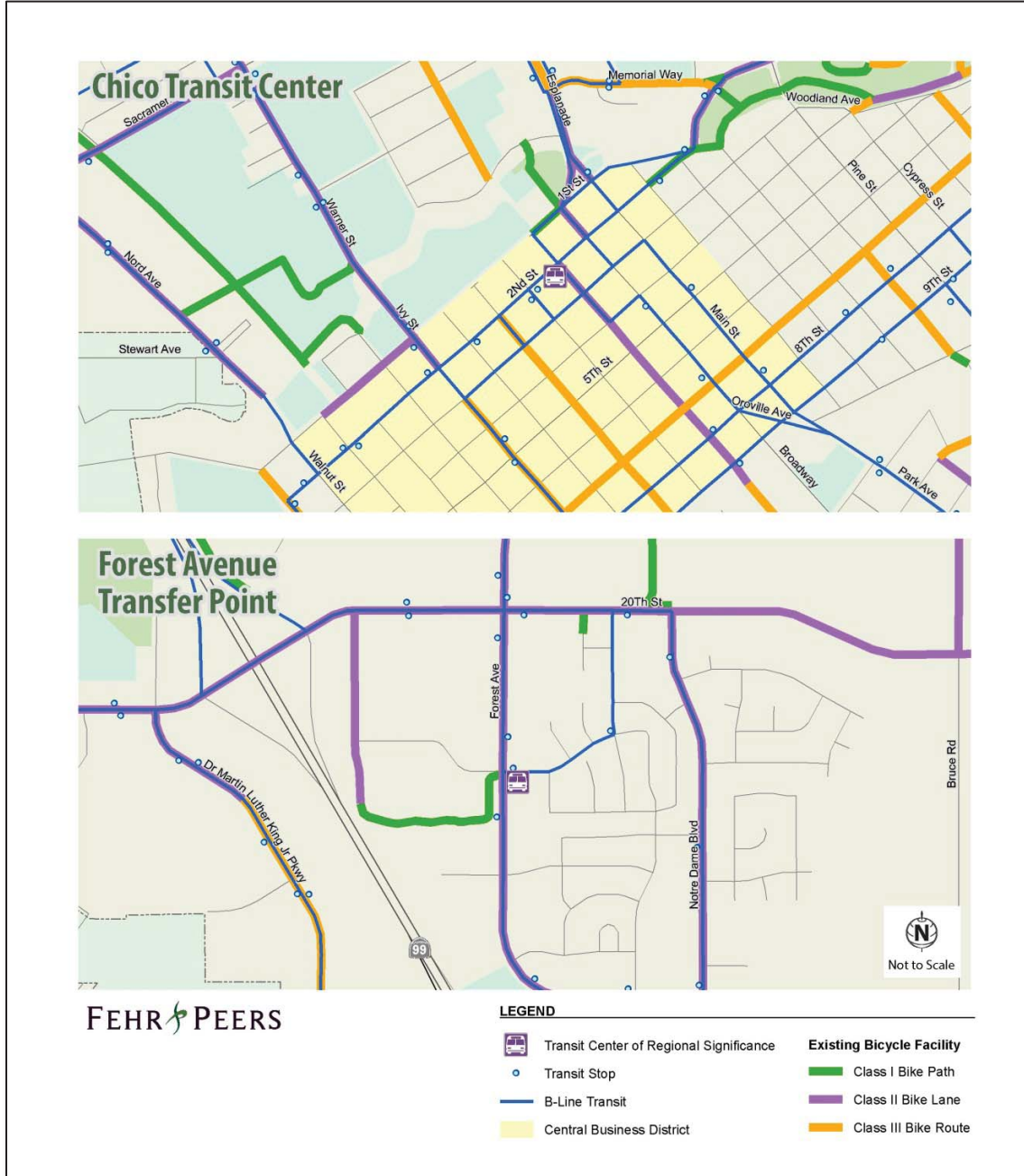
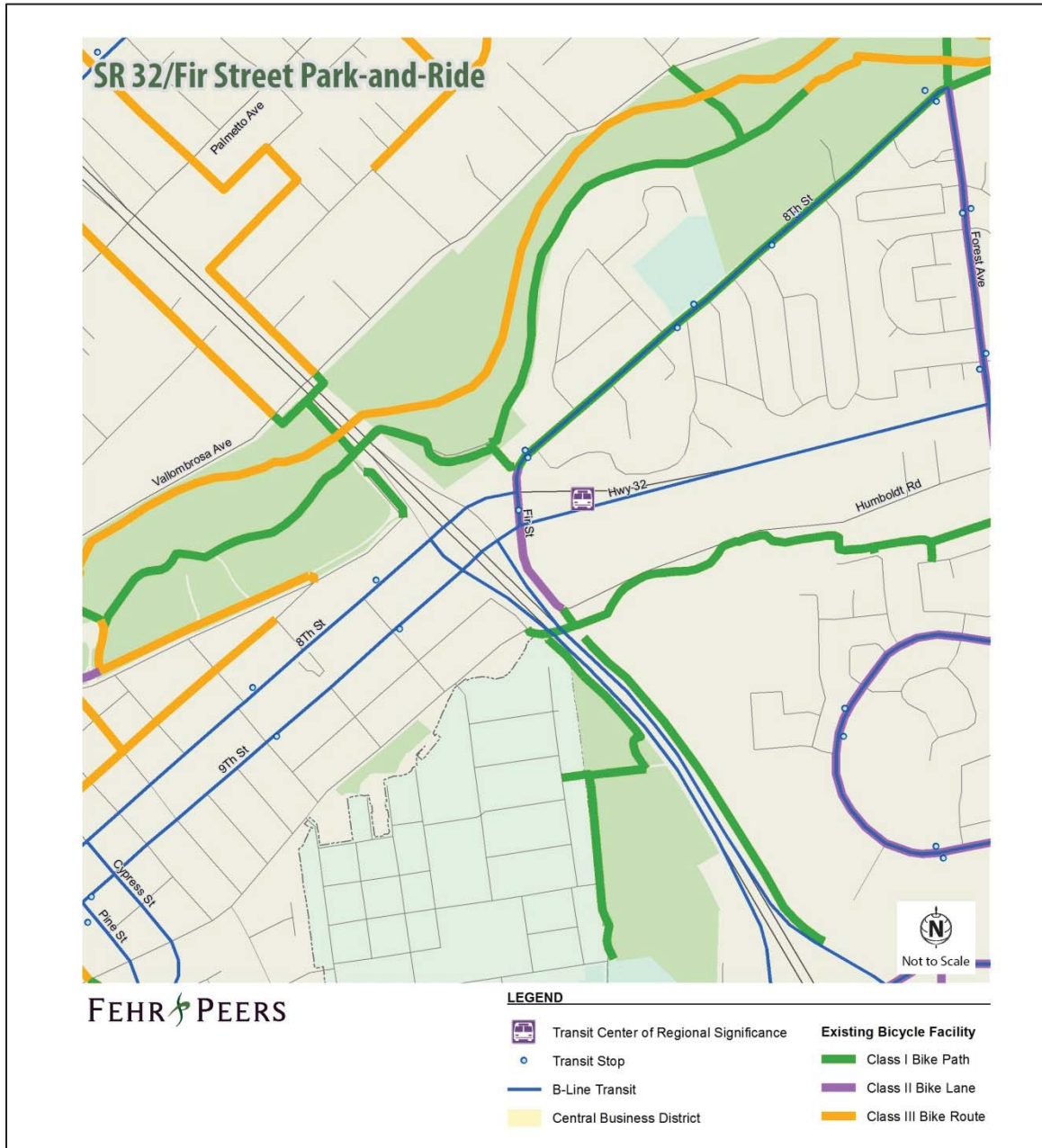


Figure 4-11 State Route 32 and Fir Street Park & Ride – Chico



Paradise Transit Center

The Paradise transit center is a bus shelter located on Almond Street between Cedar Street and Birch Street. The transit center is one block away from the Paradise Memorial Trail; however, there is no other nearby bicycle facilities. There are no sidewalks on the east side of Almond Street at the transit center and sidewalk coverage elsewhere in this part of Paradise is minimal.

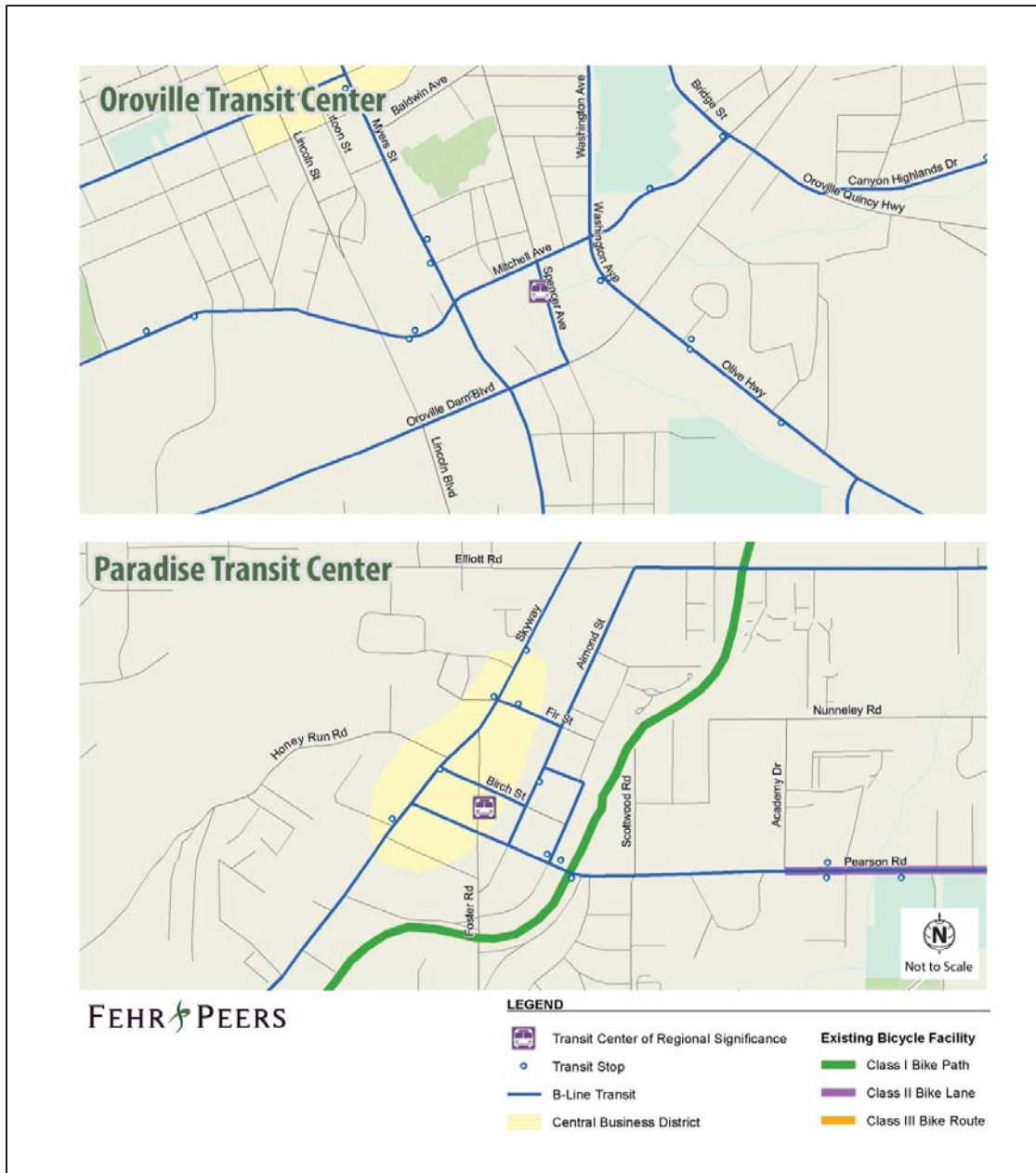
Figure 4-11 shows the transit center and its proximity to existing bikeways.

Oroville Transit Center

B-Line's transit center in Oroville is located on Spencer Avenue immediately south of the intersection with Mitchell Avenue. The center features wide sidewalks. There is no bike parking at the transit center. Although the immediate area surrounding the transit center is not very dense, most of the streets feature sidewalks. There are no bicycle facilities that connect directly to the transit center.

Figure 4-12 shows the transit center and its proximity to existing bikeways.

Figure 4-12 B-Line Transit Centers and Bicycle Facilities – Oroville and Paradise



SUITABILITY FOR WALKING AND BICYCLING

The greatest opportunity for increasing bicycling and walking mode share through capital projects is in areas that have the following characteristics:

- Density – dense, mixed residential and commercial areas
- Major employers – for example, California State University, Chico
- Attractions – provide access to active local and regional attractions
- Transit – provide connections to existing local and regional transit services, such as B-line, Amtrak bus, and Greyhound

To assess the greatest opportunity areas for walking and bicycling, Butte County was analyzed using a regional demand screening process to determine a suitability screening score for bicycling and walking. The regional demand screening process combined five variables selected from the Environmental Protection Agency (EPA)'s Smart Location Database (SLD) into a suitability screening score that indicates the relative suitability for bicycling and walking throughout the County. The variables selected address housing, population, and employment density, land use diversity, and urban design. High population and intersection density (a measure of urban design) are correlated with bicycling and walking mode share in academic literature, and housing density, employment density, and land use diversity intuitively reflect a built environment suitable for shorter trips that could be served by walking or bicycling. The "D" variables shown in Figure 4-13 were selected from the EPA's SLD.

Figure 4-13 U.S. Environmental Protection Agency Smart Location Database, Selected Variables

Factor	Metric	Source Data
Density	D1a : Housing density (units per unprotected acre) in 2010	Housing units: Census 2010
Density	D1b: Population density (people per unprotected acre) in 2010	Population: Census 2010
Density	D1c: Job density (jobs per unprotected acre)	Jobs: Census LED 2008
Land Use Diversity	D2: Entropy index of commercial/industrial/institutional, retail, recreational, and residential within a block group	Jobs and housing units: ESRI Business Demographics 2009
Urban Design	D3: Intersections per sq. mile (weighted by intersection type)	US Census TIGER/Line Shapefile 2009

According to the suitability screening scores shown in Figures 4-14 through 4-16, the areas that have the greatest potential to increase mode share can be found in the densest and most land use diverse areas of each jurisdiction.

Biggs

The City of Biggs was found to be low on the suitability index for non-motorized modes.

Chico

Areas with high suitability screening scores include the California State University, Chico and Downtown areas, the commercial and residential area in north Chico bound loosely by Cohasset,

White Ave., and Hwy 99. The corridor along Hwy 99 and Esplanade scores well and is also important as it connects several other smaller areas suitable for non-motorized travel.

Gridley

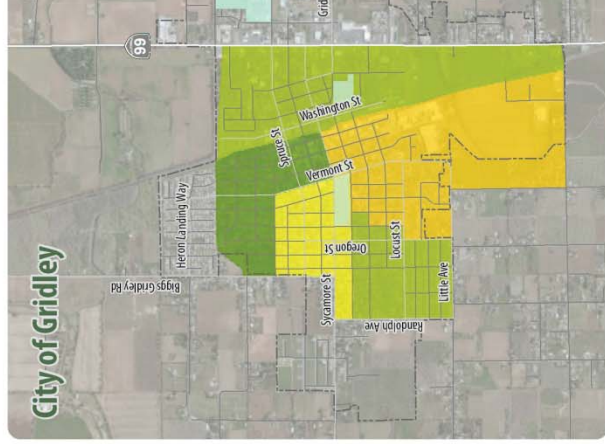
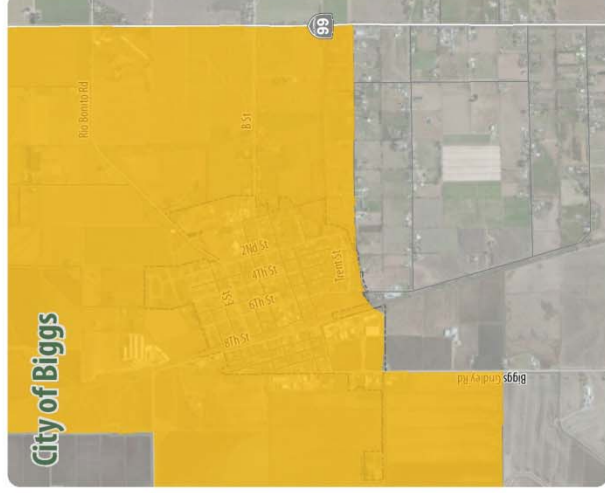
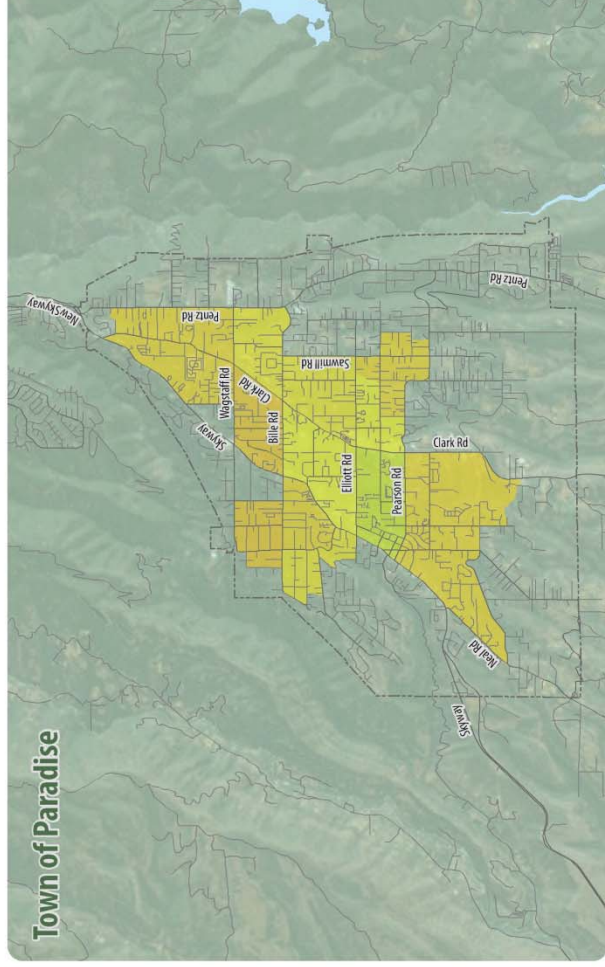
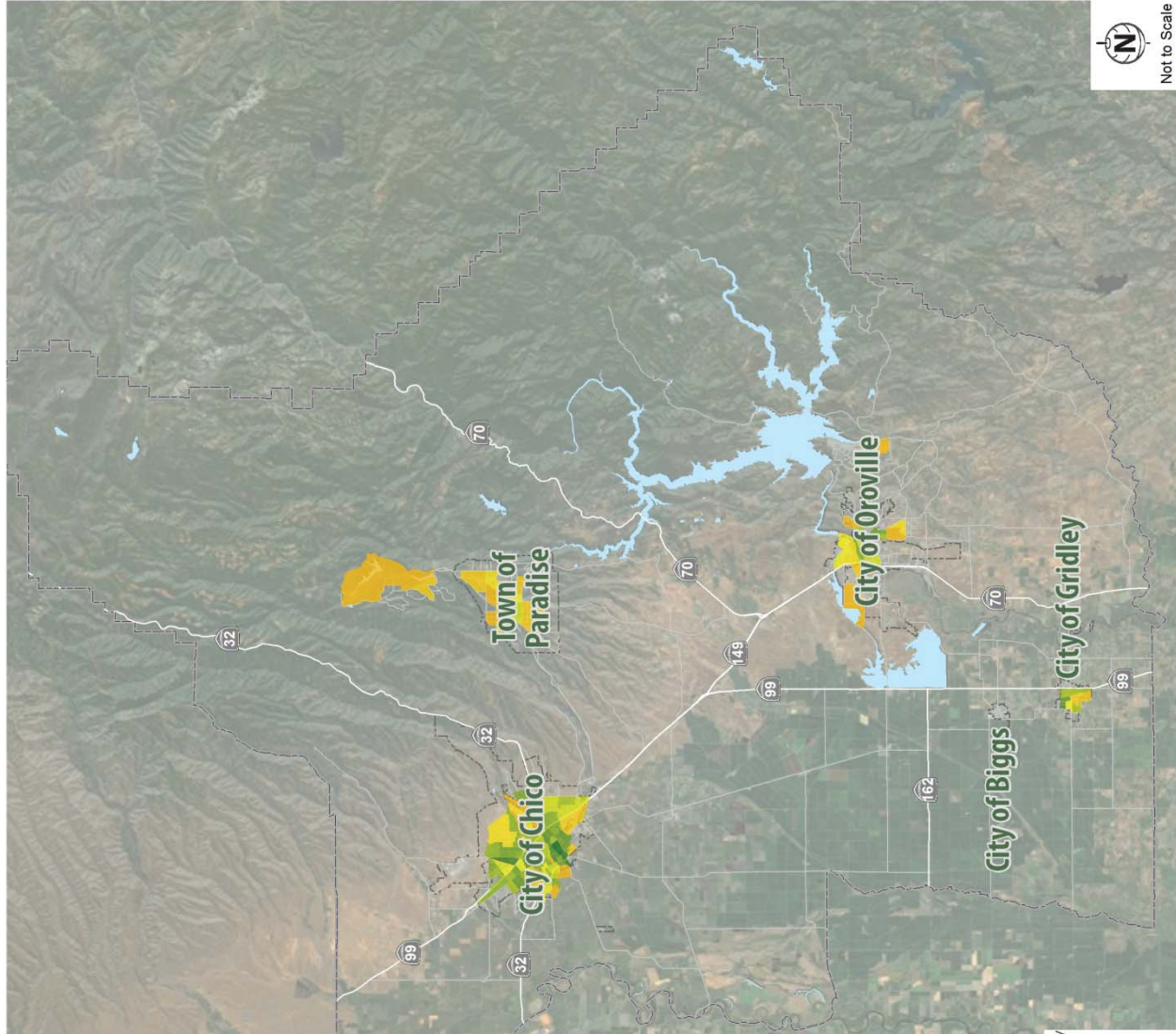
The most suitable area for non-motorized modes is in northwest Gridley in the commercial zone along Washington Street and the residential neighborhood to the northwest. Two areas score moderate-high: the eastern area between the railroad and Hwy 99; and in west Gridley, the area bound by Sycamore, Randolph, Little, and Oregon Streets.

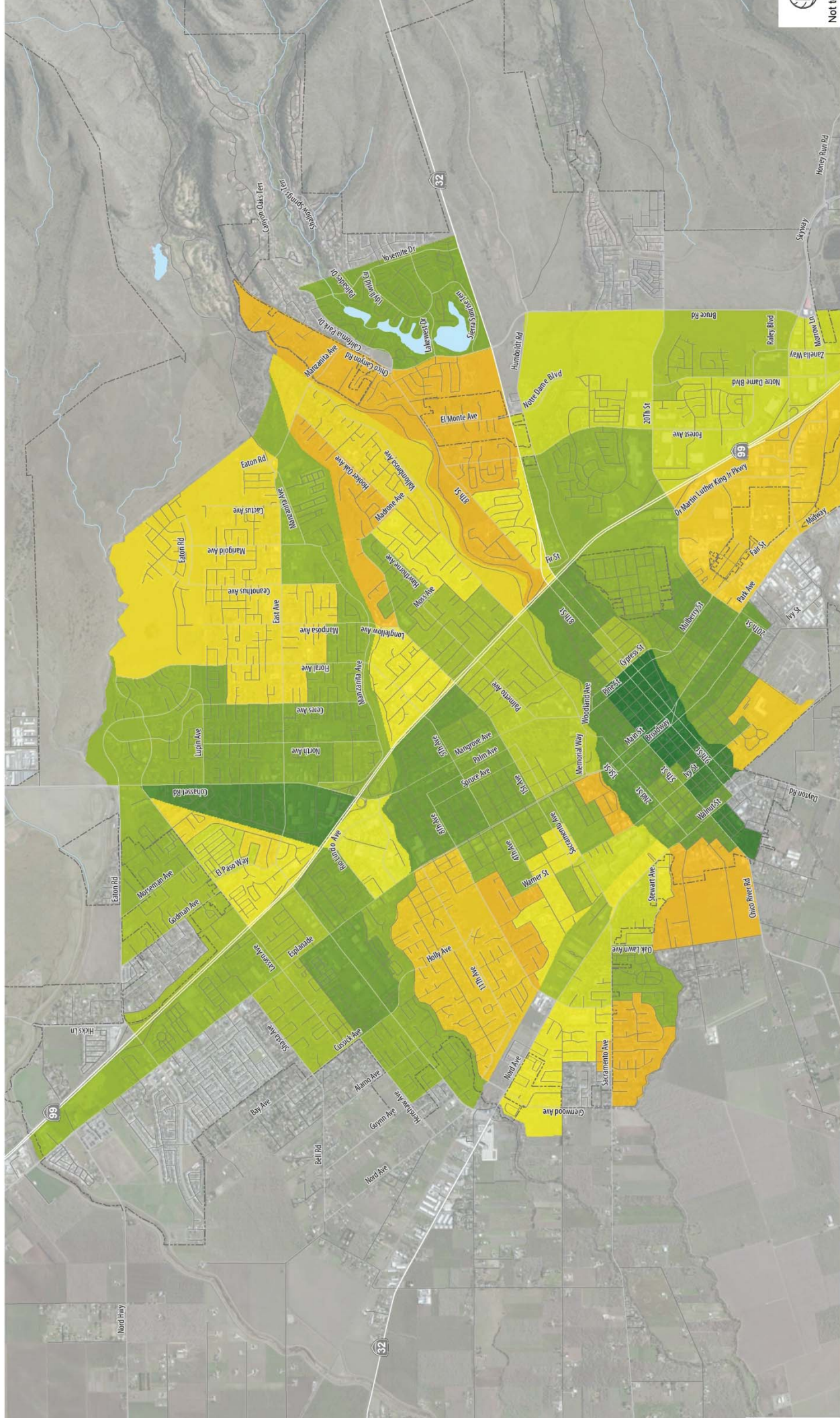
Oroville

Two areas in Oroville score moderately well as areas suitable for non-motorized travel: the residential and commercial area along Feather River, Hwy 70, Mitchell Avenue, and Lincoln Street; and in South Oroville, southeast of the Lincoln and Wyandotte Ave. intersection.

Paradise

The commercial and residential area bound by Feather River, west of the railroad tracks, and Mitchell Avenue scores moderately well on the suitability index.





IMPROVING TRANSIT ACCESS

Improving walking and bicycling access to transit centers, stops, and routes can increase transit ridership. One strategy for improving walking and bicycling access to transit facilities is to enhance infrastructure that serves “first mile” (access from home to transit) and “last mile” (access from transit to work, school etc.) walking and bicycling trips. The greatest opportunity for improving transit access is in areas that have high housing, population, and job density, areas with a diverse mix of land use, areas with dense roadway networks, and areas near transit stops with high ridership. Enhancing infrastructure in these areas is most likely to increase transit ridership by improving walking and bicycling access.

To identify areas of greatest opportunity for improving transit access, a transit access score was calculated for every B-Line stop in Butte County. The transit access score for a stop is based on the average regional suitability score within a quarter mile of the stop (which accounts for housing, population, and job density, diversity of land use, and roadway network density as shown in Figure 4-14 through Figure 4-16) and the stop’s number of weekday bus boardings and alightings. The transit access score evenly weights the average regional suitability score and weekday bus boardings and alightings.

Figures 4-17 through 4-19 show the transit access score for each stop. The transit access score identifies for which stops investments in walking and bicycling infrastructure are most likely to improve transit access. Comparisons can be made between stops both on a regional scale (for example, comparing stops in Chico to stops in Oroville) or on a local scale (for example, comparing stops within Oroville to each other).

Biggs

All of Biggs’ transit stops are on B Street. Although Biggs’ stops have a low transit access score compared to other stops in the region, investments in bicycling and pedestrian infrastructure on or connecting to B Street are most likely to improve transit access in Biggs.

Chico

Several clusters of stops in Chico have a high transit access score: Downtown Chico, the area near the Sacramento Avenue/Nord Avenue intersection, and the area near the State Route 99/Cohasset Road interchange. These stop clusters are amongst the highest scoring in the region.

Gridley

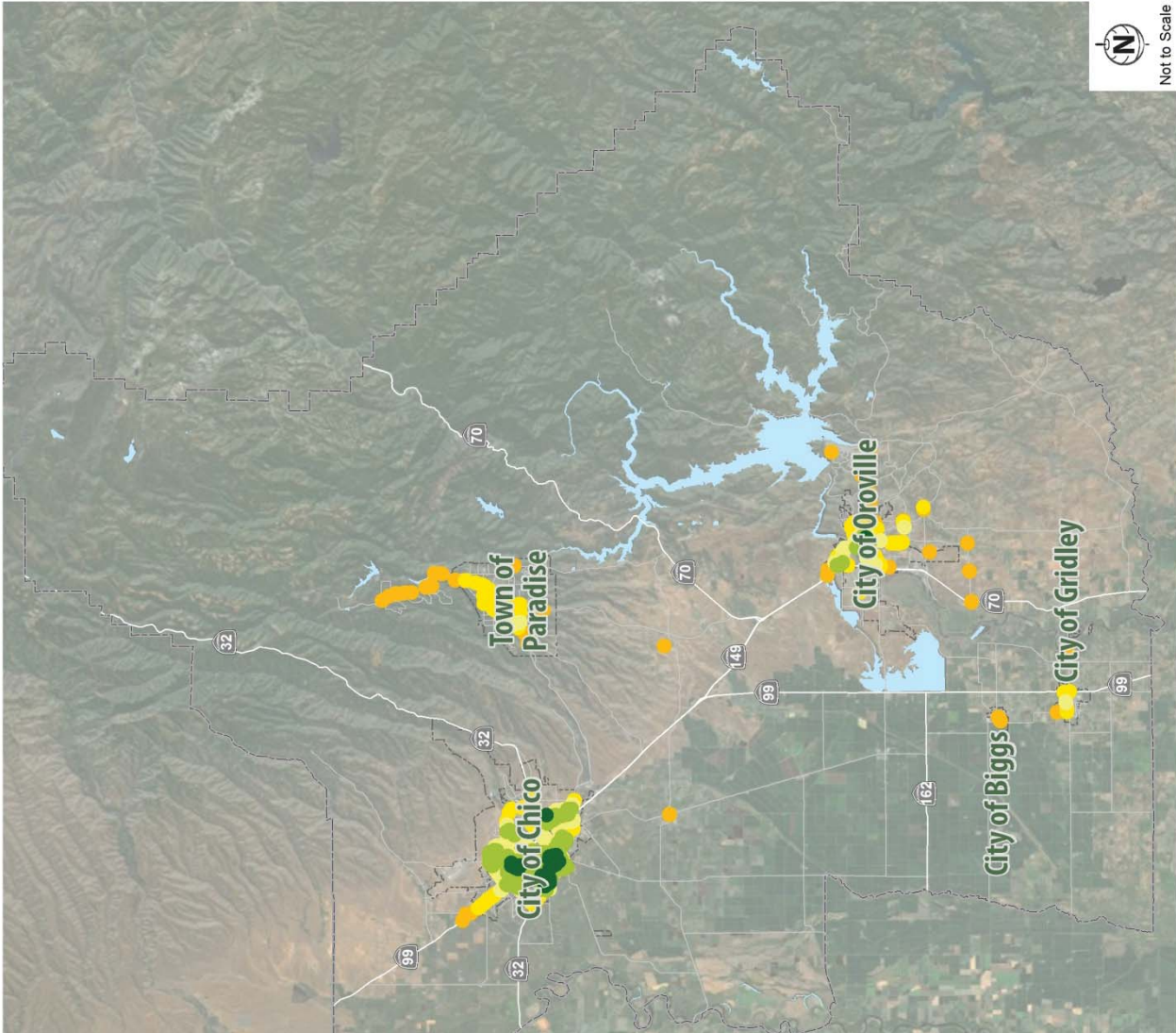
In Gridley, the stops on Spruce Street near Downtown Gridley have a moderately high transit access score. The areas near the Spruce Street/Biggs Gridley Road intersection and State Route 99/Spruce Street intersection have a relatively low transit access score. However, relative to transit access in the community, these two locations are good candidates for bicycle and pedestrian improvements.

Oroville

Two areas in Oroville have a high transit access score: north Oroville near the Nelson Avenue/County Center Drive intersection and the area near the Oroville Dam Boulevard/Washington Avenue intersection.

Paradise

The area near the Skyway Road/Pearson Road intersection has the highest transit access score in Paradise.



Stops

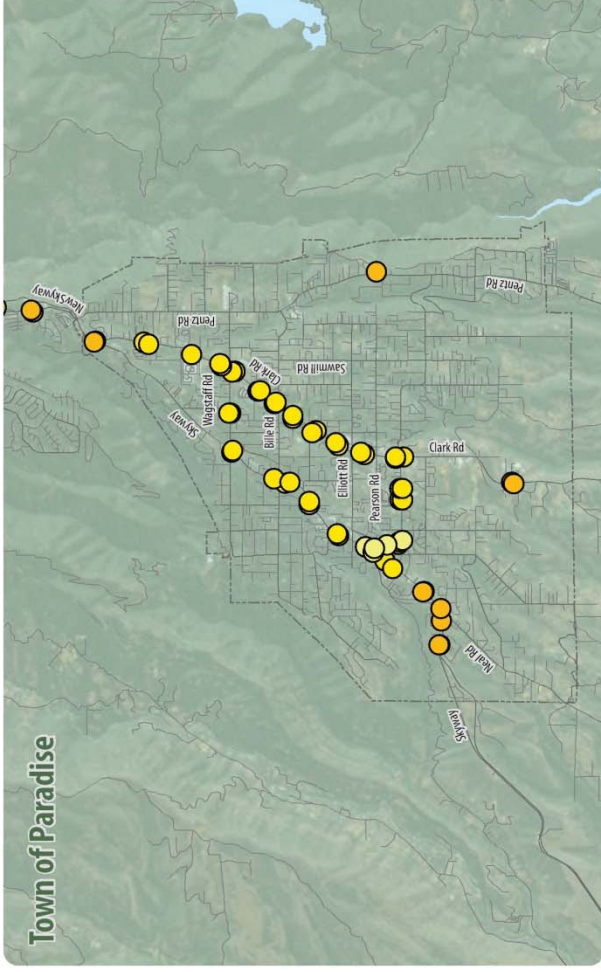
Low

Transit Access Score

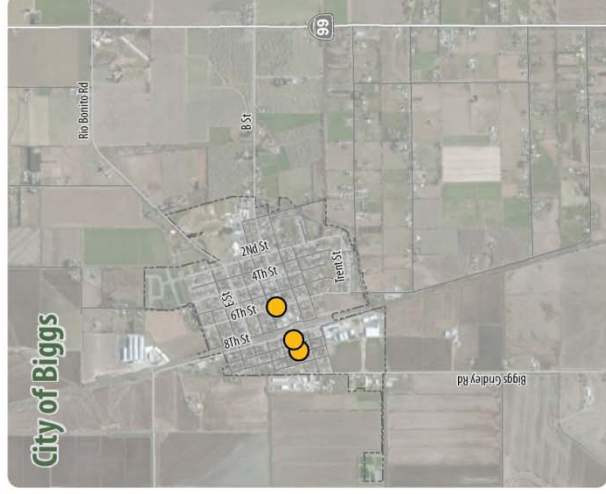
High



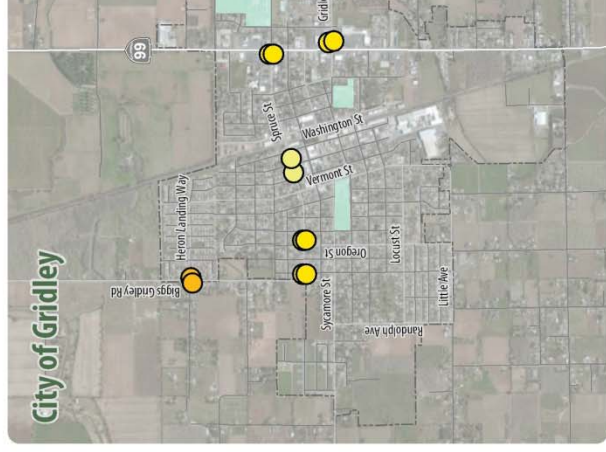
Not to Scale



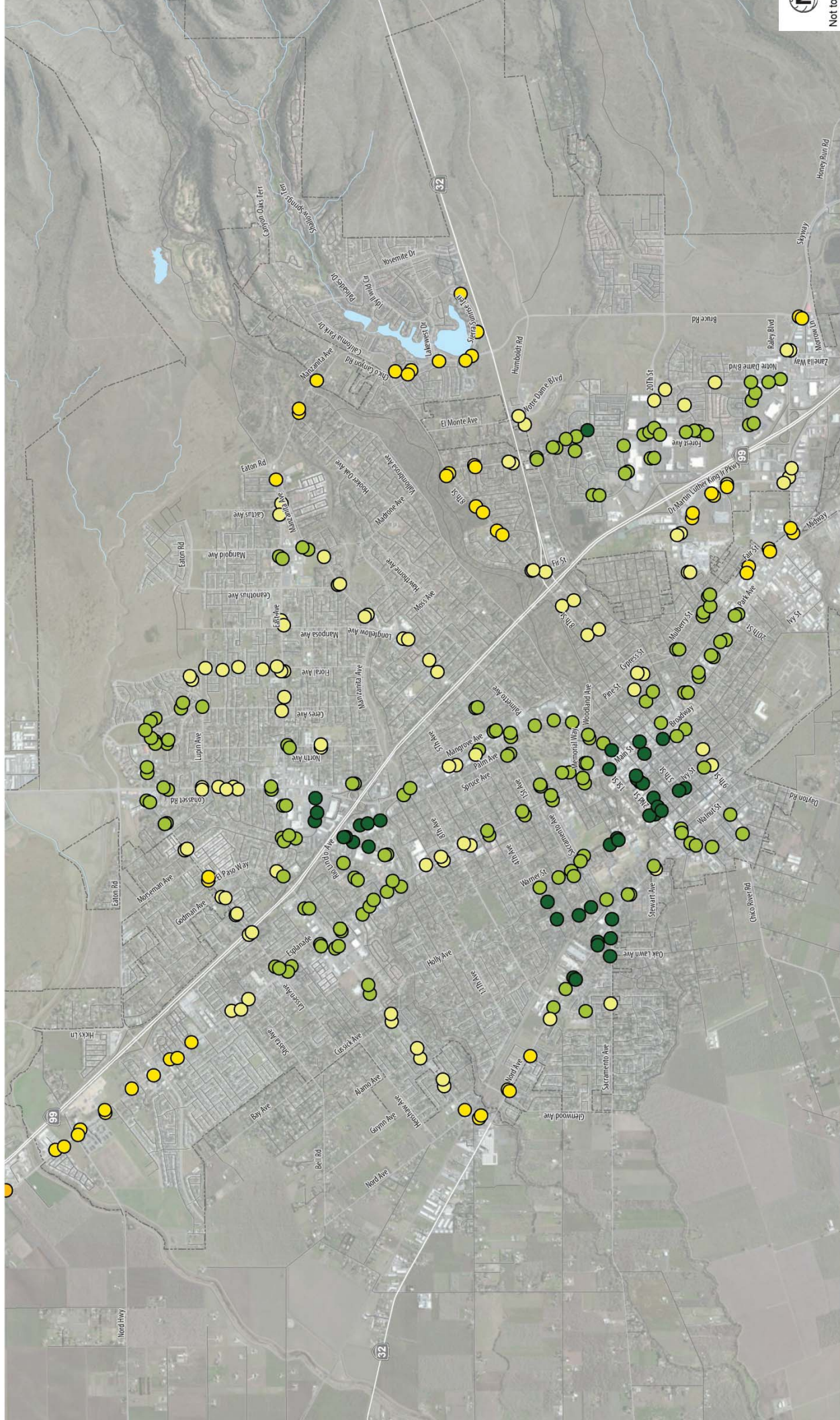
Town of Paradise



City of Biggs



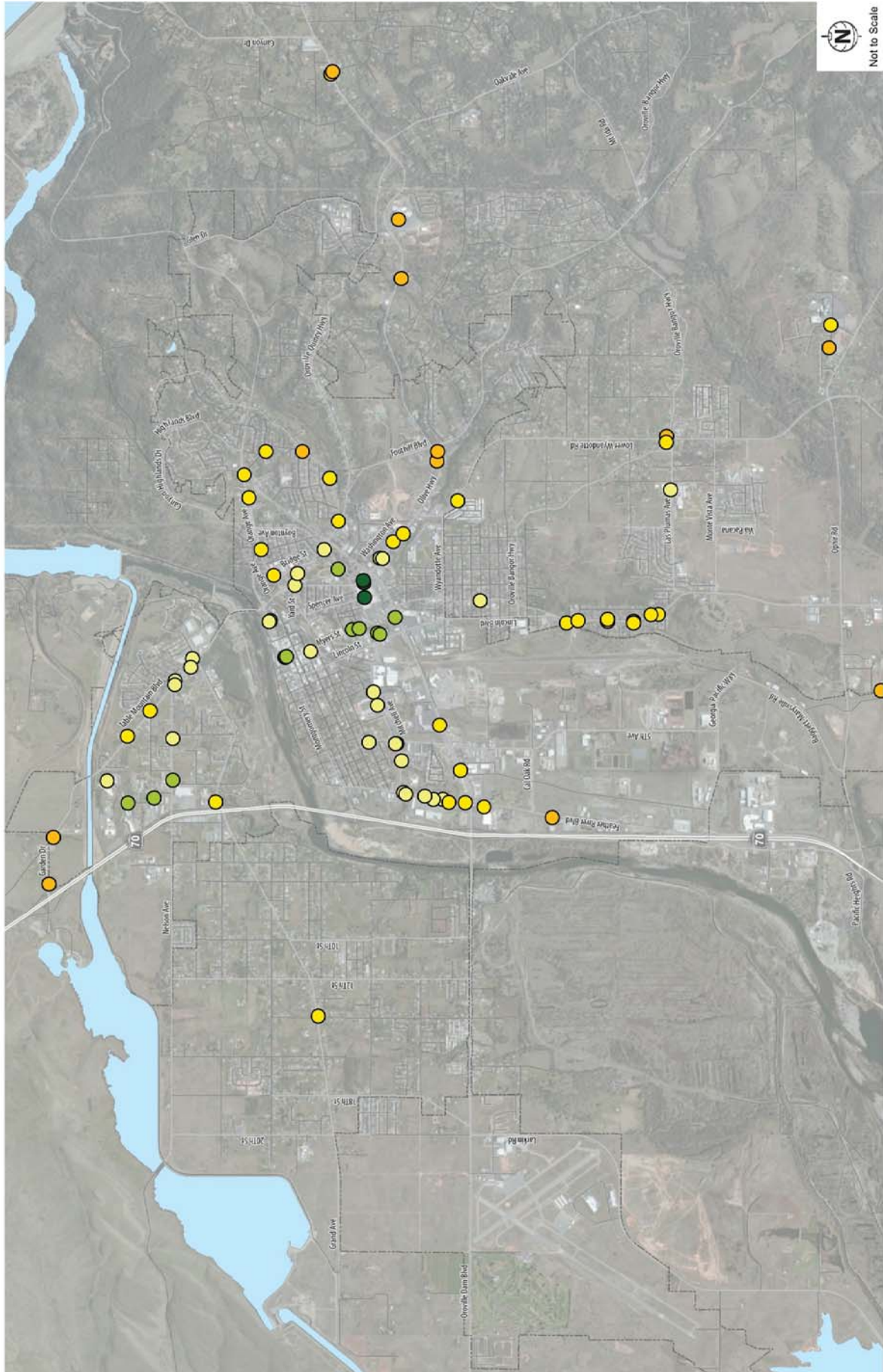
City of Gridley



- Low
- High
- Transit Access Score

Stops





North Arrow
Not to Scale

Low High
Transit Access Score

CITY OF OROVILLE
Regional Transit Access Score

CONCLUSION

Bicycling and walking are good transportation options in Butte County for local trips, but safety, appropriate amenities, and access issues have not been fully addressed. For regional trips, the bike infrastructure is fairly limited. Much of the county's street network is still very much planned around maximizing access for automobile trips, and many major streets outside of city and town centers lack sidewalks. Although much of the local bike infrastructure has been planned in the county's largest cities, little of it has been developed. Tools to increase the mode share of biking and walking in Butte County, as well as improving pedestrian access to transit, must be developed as part of a long-term sustainability strategy.

