CHAPTER 3

ASSESSMENT OF INTERCITY BUS SERVICES

There are several ways to examine whether or not the current intercity bus network meets public need for intercity bus service. One way is to identify areas within the state that have a higher relative need for public transportation services, and treat these areas as potential trip origins or destinations that should be served as a matter of policy, or as places that are most likely to generate ridership.

Because certain types of people are more likely to use intercity bus services than others are, the relative need for intercity bus service in different areas of the state can be estimated by comparing the areas' population characteristics. For example, people who do not own automobiles are considered autoless and are more likely to use intercity buses than people who do. Therefore, areas with high densities of auto-less households are more likely to generate ridership on an intercity bus route than other areas with higher levels of car ownership.

In this report, several population characteristics have been identified as factors that assist in the identification and, ultimately, the geographical representation of this transit dependent population. Autoless households are one factor considered in the identification of the transit dependent population. With respect to the Year 2000 Census data collected and analyzed, five data types were used in the identification and analysis of the transit dependent population.

Another means of identifying need for intercity services involves mapping the location of facilities that are likely to be major trip destinations. Likely intercity bus destinations include such places as colleges and universities, major hospitals and medical centers, correctional facilities, military bases, shopping/marketing facilities, recreation, major employment centers (i.e. town of Mammoth Lakes, ski resort), and connections to other modes of transportation (i.e. Greyhound, Amtrak, Regional services).

This section includes analyses of transit need based on population characteristics and on major trip generators. The results of both analyses were then compared against the existing intercity bus network to determine whether there are places or areas in California that are currently unserved or underserved.

POPULATION CHARACTERISTICS AND INFERRED NEED FOR INTERCITY BUS SERVICES

The need for any type of transit service, including intercity bus service, depends on the size and distribution of an area's population, and on the composition of that population. The

following analysis provides a review of relative transit need in California in terms of those population segments that indicate a higher need for potential intercity bus transportation.

Potentially transit dependent population segments are those parts of the population that, because of characteristics such as age, income, or automobile availability, may require transit service to meet mobility needs. Data on such characteristics is available at the Block Group level from the Year 2000 Census. For the purposes of this analysis, potentially transit-dependent population segments were defined as:

1. **Youth (ages 18 to 24)**: Enlisted military personnel and college students typically fall into this age range. These persons often study or are stationed far from home, and may not have access to an automobile or may be more likely to travel by themselves.

2. **Elderly Persons (ages 65 and above)**: Advancing age can mean diminished ability or desire to drive (particularly on a long trip) and a need for access to medical facilities on a regular basis.

3. **Persons living below the poverty level**: Persons in this group typically do not have the economic means to own or operate a vehicle, or a vehicle perceived as capable of a long trip.

4. **Persons with a disability:** This group may be reliant on local accessible public transit services and would therefore also consider public transit options to make non-local trips. This analysis used the Year 2000 Census' "go-outside-home" disability definition for persons aged 16 and above.

5. **Autoless households**: Persons without access to a car must rely on alternative transportation services.

These factors were chosen because of national data regarding intercity bus passenger characteristics. Some data is available from the 2001 National Household Travel Survey (NHTS) conducted by the U.S. Department of Transportation's Bureau of Transportation Statistics. Its purpose was to collect information about the travel behavior of households generally, but it included questions about the characteristics of long-distance trips, defined as trips over 50 miles in length to the furthest one-way destination. It included information on the trip itself, the modes used, and the characteristics of the traveler. Table 3-1 presents a summary of information from the NHTS. This summary indicates that persons using scheduled intercity bus trips (over 50 miles in length), are more likely to be traveling for leisure or personal business, are more likely to be female, and are making longer trips than users of either the train or the personal vehicle, but shorter trips than airline passengers. Earlier data from the 1995 American Travel Survey, which defined long-distance trips as 100 miles or more, found that bus users are more likely to be young adults or seniors, have lower incomes, and are more likely to lack alternative personal transportation.

Table 3-1: COMPARISON OF INTERCITY MODAL TRIP CHARACTERISTICS

	Intercity Bus	Train	Commercial Airplane	Personal Vehicle
Long-Distance Trip Length:				
Median (miles)	287	192	2,068	194
Long-Distance Trips by Mode and Sex:				
Female	55	42	43	42
Male	45	58	57	58
Trip Purpose:				
Commute	0.5	1.7	1.5	96.4
Business	0.8%	1.6%	17.8%	79.3%
Pleasure	2.2%	0.5%	6.7%	90.4%
Personal Business	5.6%	0.3%	4.7%	89.3%
Other	0.5%	0.0%	1.9%	96.6%

Source: Compiled by KFH Group from data in the U.S.Department of Transportation, Bureau of Transportation Statistics, 2001 National Household Travel Survey, preliminary long-distance trip file. All data for trips over 50 miles in length.

NOTE: Percentages may not sum to 100 percent due to rounding.

This description of intercity bus rider characteristics is supported by the limited information Greyhound has presented from its annual market research survey. Greyhound's annual 10K report to the Securities and Exchange Commission for 2004[1] states that their average customer travels to visit friends or relatives has an annual income below $35,000, and may own an automobile that they think is reliable enough for the trip, but travel by bus because the cost of the bus trip is lower than driving alone.

Methodology

In order to conduct this analysis of transit needs, it was first necessary to extract the data for the total population for each of the previously mentioned five variables from the Year 2000 Census. The analysis was conducted at the Census Block Group level, for which the raw data was summarized for the targeted variables. The numbers of people in each category are not added together in each Block group because the categories are not mutually exclusive. A person 65 years of age may also have an income below the poverty level and/or have no automobile available to them for personal use. Instead, each category is evaluated individually. Every Block Group is given a ranking based on the density (number of persons divided by the area of the Block Group) of population with the characteristic and the rankings are summed to give each Block Group an overall ranking for the five "needs" characteristics.

[1] Following Greyhound's purchase by Laidlaw, it no longer files a separate 10K report with the SEC, so this is the most recent public data from Greyhound.

Given the expansive project area in this study, land areas among the Block Groups vary, and subsequently it is not particularly meaningful to compare the raw numbers of persons in each category. Therefore, population density (person per square mile) of persons with these high need characteristics was calculated for each Block group. This method gives us a measure of the relative size of the population by identifying Block groups with more concentrated populations.

Results

A set of maps were developed that represent the overall relative density per Census Block Group. Figures 3-1, 3-2, and 3-3 present this demographic information for each of the sections of the state: Those block groups with the highest densities of people in all five segments are grouped under "high". Those block groups with moderate densities in all five segments, or high densities in some segments and low densities in others tend to fall into the "moderate" category. Meanwhile, those block groups with generally low densities of all potentially transit dependent populations are grouped under "low".

It follows from the figures that the greatest concentrations of transit dependent populations correspond to the state's major population centers. Thus, most transit dependent people appear to live in California's major urban areas, i.e. Greater Los Angeles, the San Francisco Bay Area, and the cities along State Route (SR-) 99 in the Central Valley. However, pockets of transit dependent populations also exist in the more rural sections of the state, i.e. along SR-299, and have been identified; but given the comparably smaller concentration levels of populations are not as obvious on the representations. In this regard, the public outreach efforts contributed greatly in identifying rural places in the state that have identified a need for intercity transportation services. In Figure 3-1 "high" and "moderate" transit needs areas were identified in the Los Angeles metro area with areas of concentration located along the following corridors: Interstate I-10 towards Palm Desert, I-15 towards Barstow, and SR-14 north of the Los Angeles metro area towards Bakersfield. In Figure 3-2 "high" and "moderate" transit needs were identified as mostly occurring along the following corridors: SR-99 between Bakersfield and Sacramento, United States Highway-(US-)-101 and I-280, I-80, I-880, and I-580 in the San Francisco-Oakland-San Jose metro areas, and US-101 north of San Francisco towards Cloverdale. In Figure 3-3 "high" and "moderate" transit needs were identified as mostly occurring in the following corridors: I-80 between the San Francisco Bay area and Sacramento, SR-99 between Sacramento and Red Bluff, and US 101 between Arcata and Fortuna.

As discussed in Chapter 2, most people living in or near urbanized areas are relatively well served by the current intercity bus network. However, there are many smaller concentrations of transit dependent populations located more than ten miles from the nearest intercity bus stops; in some cases more than 25 miles. Figures 3-4, 3-5, and 3-6 illustrate the intercity bus network overlaid onto the relative density of transit dependent population segments. Figure 3-4 represents the corridors I-5, I-10, I-15, SR-14, SR-86, and SR-99 with multiple operators in Southern California. Figure 3-5 represents the corridors SR-99, SR-41, SR- 49, I-5, (US-101), I-80, and I-580 with multiple operators of service in Central California. Figure 3-6 represents corridors US 101, I-5, SR-99, SR-299, SR-89, SR-44, and I-80 with multiple carriers in Northern California. The corridors identified in these maps essentially align the existing services with "high" and "moderate" need areas. However, as will be discussed later, proximity

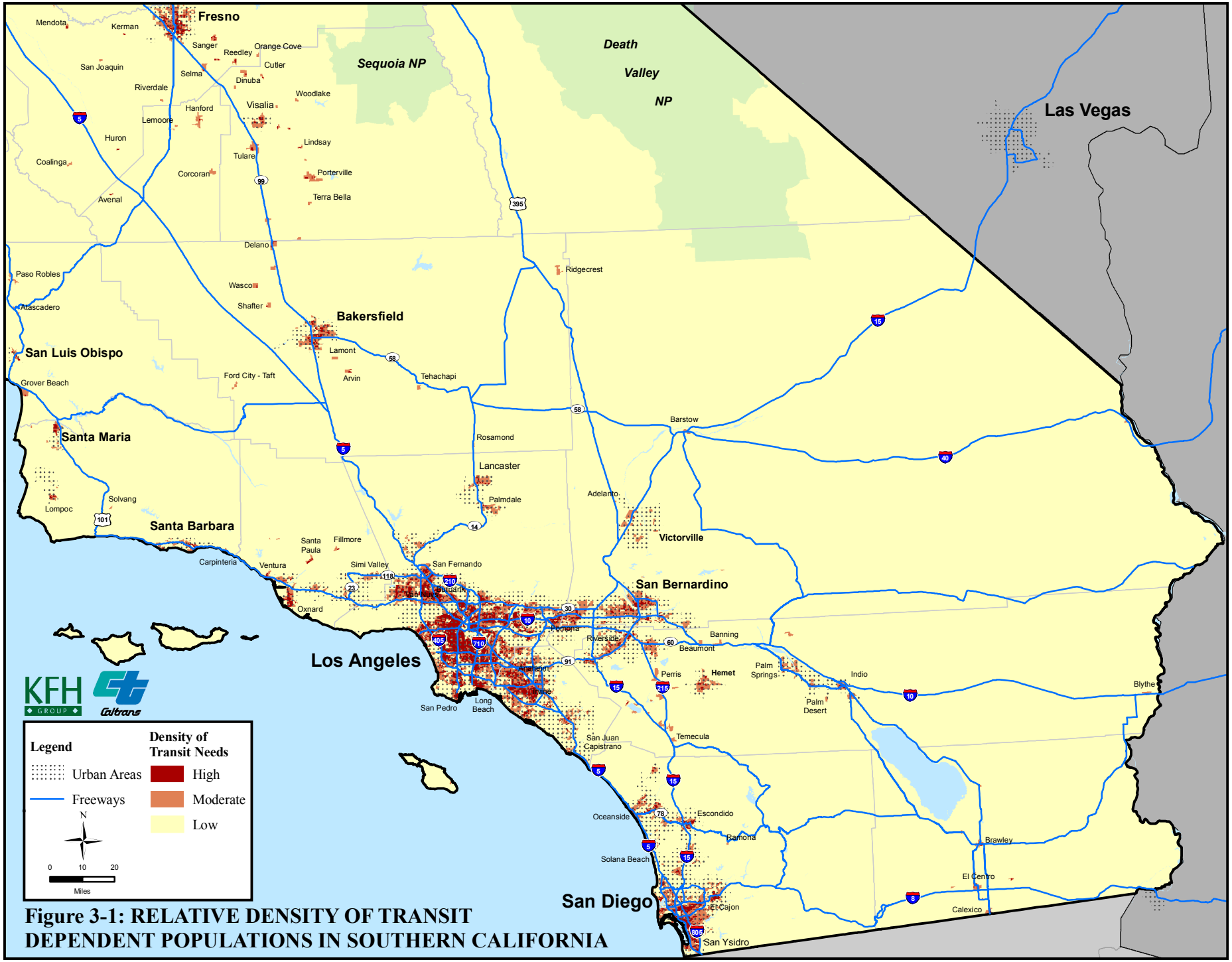

Figure 3-1: RELATIVE DENSITY OF TRANSIT DEPENDENT POPULATIONS IN SOUTHERN CALIFORNIA

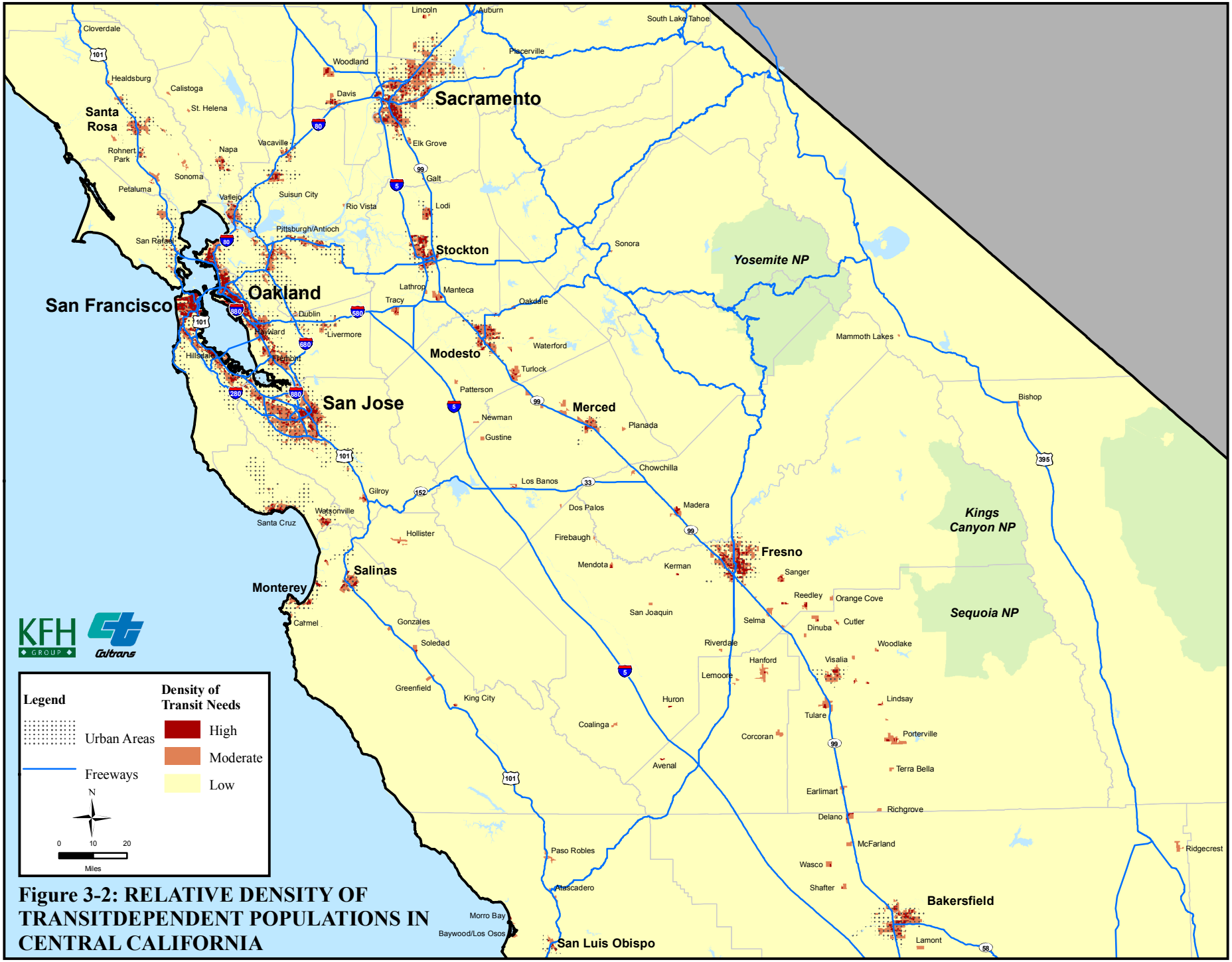

Figure 3-2: RELATIVE DENSITY OF TRANSITDEPENDENT POPULATIONS IN CENTRAL CALIFORNIA

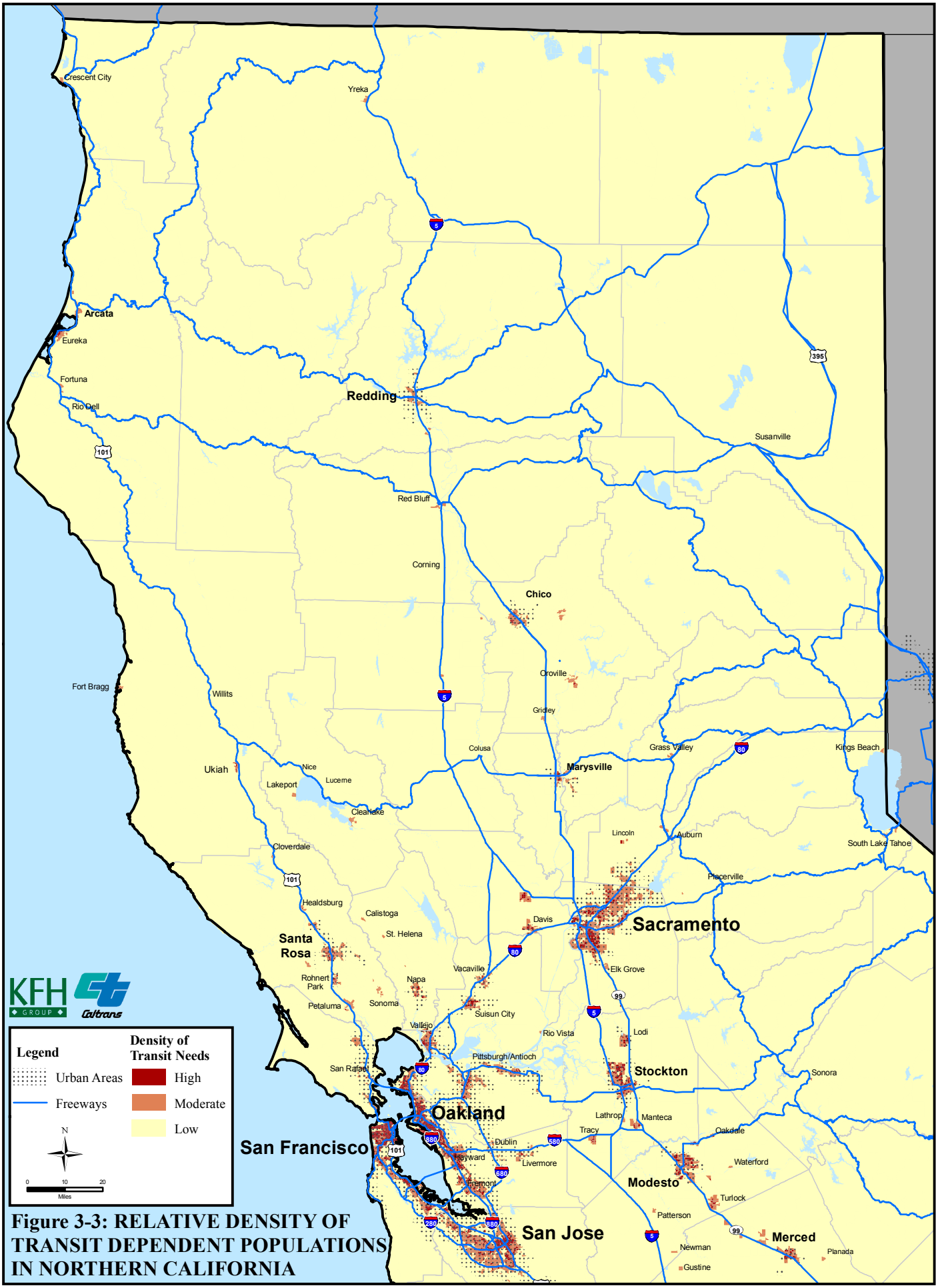

Figure 3-3: RELATIVE DENSITY OF TRANSIT DEPENDENT POPULATIONS IN NORTHERN CALIFORNIA

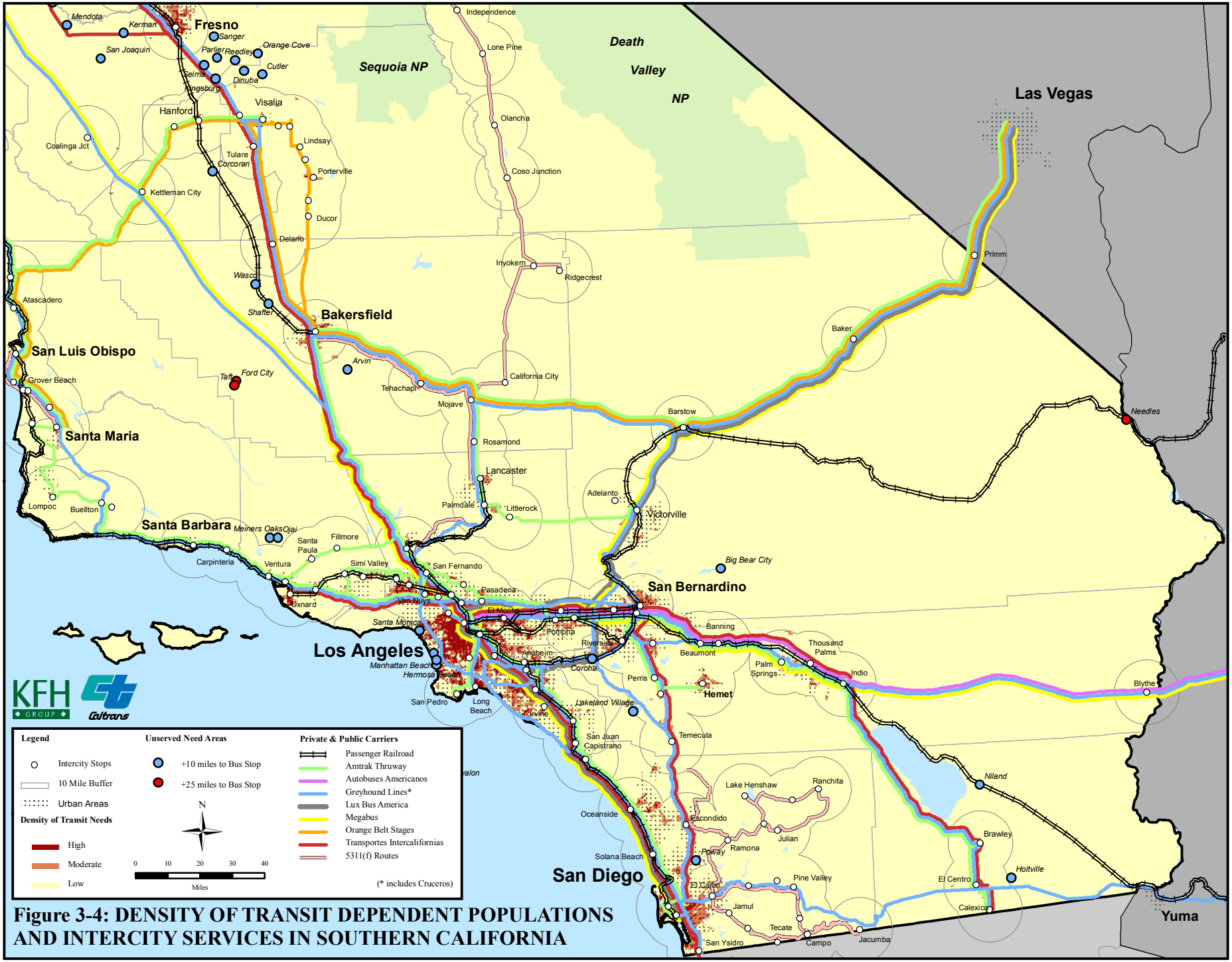

Figure 3-4: DENSITY OF TRANSIT DEPENDENT POPULATIONS AND INTERCITY SERVICES IN SOUTHERN CALIFORNIA

Figure 3-5: DENSITY OF TRANSIT DEPENDENT POPULATIONS AND INTERCITY SERVICES IN CENTRAL CALIFORNIA

Figure 3-6: DENSITY OF TRANSIT DEPENDENT POPULATIONS AND INTERCITY SERVICES IN NORTHERN CALIFORNIA

to intercity service does not necessarily correlate to a readily available transportation option for the public.

Towns with concentrations of transit dependent people between more than 10 miles and less than 25 miles from the nearest intercity bus stop are indicated in blue. Towns with concentrations of transit dependent people more than 25 miles away from the nearest intercity bus stop are indicated in red. It should be noted that most of these towns are indirectly connected to the intercity network via local public transit services. Also, many of these towns were served by Greyhound or Orange Belt Stages at some point, but have since witnessed service cuts in the last few years. A full listing of these towns is provided in Table 3-2. If these towns are not linked to the nearest intercity service point by local public transit, they could be defined as having an unmet need for intercity service.

POTENTIAL INTERCITY TRIP GENERATORS

The analysis of the existing intercity network and needs factors addresses the potential origin areas for intercity trips, but another consideration in terms both of potential market and of policy is whether or not the current routes serve the places that are likely to be attractors of intercity bus ridership, or that could potentially have a need for such service. These destinations include colleges and universities, major military bases, hospitals and major medical facilities, correctional facilities and airports. Each of these was addressed by identifying facilities of each type in the State of California, and then geocoding them on a map and analyzing whether they are potentially served by the existing intercity network.

Colleges/Universities

A large component of the intercity bus market is the youth population, persons 18-24 years old. As a result, we have identified and mapped the locations of most two-year colleges and technical schools; four-year colleges and universities; and independent schools in California and compared this to the locations of the points served by the intercity bus network. Table 3-3 lists all the colleges and universities, their locations, their enrollment figures (for most), and proximity to an intercity bus stop. Based on limited enrollment data, there are more than one million students that were enrolled at these institutions statewide. The primary concentrations of institutions fall within the San Francisco Bay Area, Los Angeles metro area, San Diego metro area, and the Sacramento area. To some extent then the ability of college students to use intercity bus services to make trips to and from home is a function of the location of their homes and the proximity of bus service to their home.

Of the 210 colleges and universities identified, all but 17 are contained within a radius of ten miles from the nearest intercity stop. Sixteen of these institutions fall within the next established buffer of greater than 10 miles and less than 25 miles radius surrounding all intercity stops, leaving one institution located more than 25 miles from the nearest intercity stop. The sixteen outlying colleges or universities each have a total enrollment above 1,000 students, while the remaining institution has an enrollment of less than 1,000 students (Menlo College). Figures 3-7, 3-8, and 3-9 demonstrate the location of schools in relationship to the communities served by the current intercity bus network using the 10-mile and 25-mile market area buffers.

Table 3-2: PLACES WITH HIGH AND MODERATE TRANSIT NEEDS

CITY	Number of Block Groups		Population	Age 18-24	Elderly 60+	Below Poverty	Disabled (age 16+)	Zero Car Households	Between 10-25 mile Buffers of Bus	Outside 25 mile Buffer of Bus Station
	High Need	Moderate Need								
Anderson	0	3	3,650	373	660	1,146	326	213	x	
Arvin	2	1	7,497	1,040	524	2,573	1,052	312	x	
Avalon	0	3	2,420	195	333	301	110	326		x
Baywood-Los Osos	0	5	7,755	624	1,388	804	528	162		x
Big Bear City	0	1	974	91	170	104	49	49	x	
Calistoga	0	1	1,118	95	432	121	163	80	x	
Cameron Park	0	1	1,409	141	114	267	127	10	x	
Chowchilla	0	5	5,057	448	933	760	370	236	x	
Colusa	0	3	2,516	253	399	456	210	148	x	
Corcoran	0	9	14,475	1,850	1,110	2,850	1,048	299	x	
Corona	13	31	85,415	8,762	7,672	9,479	6,805	1,880	x	
Cutler	2	2	7,697	1,165	617	2,630	1,026	242	x	
Dinuba	1	7	15,006	1,932	1,760	3,699	1,503	511	x	
Dos Palos	0	1	1,577	143	236	634	196	77	x	
El Segundo	2	13	19,408	1,141	2,598	788	926	406	x	
Eldridge	0	1	1,165	80	78	227	308	22	x	
Firebaugh	0	3	4,555	531	312	1,435	347	144	x	
Ford City	0	1	1,563	191	189	489	199	68		x
Gridley	0	5	5,080	524	978	1,130	408	158	x	
Gustine	0	4	4,469	360	885	755	504	187	x	
Hermosa Beach	3	14	18,868	1,098	1,963	842	572	280	x	
Holtville	1	3	4,538	409	689	847	438	133	x	
Kerman	1	1	2,491	282	281	623	331	73	x	
Kings Beach	0	3	3,407	477	161	668	167	170	x	
Kingsburg	0	3	2,532	247	399	417	197	97	x	
Lakeland Village	0	1	1,934	192	206	212	160	10	x	
Livingston	1	3	6,636	879	535	1,819	785	219	x	
Los Altos	0	8	7,815	283	2,362	317	419	152	x	
Manhattan Beach	0	26	23,443	940	3,448	832	1,000	312	x	
Meiners Oaks	0	1	1,663	148	194	230	137	32	x	
Mendota	2	2	6,084	1,013	458	2,305	741	418	x	
Menlo Park	2	14	23,938	1,621	4,255	1,838	1,551	667	x	
Morro Bay	1	3	5,008	474	1,140	752	297	148	x	
Mountain View	12	28	48,560	4,462	6,044	3,701	3,263	1,349	x	
Needles	0	2	1,816	137	325	506	230	114		x
Newman	0	1	1,953	205	266	373	238	62	x	
Niland	0	1	1,139	92	227	258	143	45	x	
Oakdale	1	6	7,609	727	1,152	1,062	747	243	x	
Ojai	0	1	2,781	217	492	427	272	125	x	
Orange Cove	0	4	5,776	785	502	2,539	758	233	x	
Palo Alto	6	33	64,842	9,782	10,206	3,544	3,235	1,971	x	
Paradise	0	8	7,581	520	2,224	1,365	999	484	x	
Parlier	2	3	8,338	1,200	621	3,060	909	267	x	
Patterson	0	3	5,841	705	691	1,152	563	157	x	
Pollock Pines	0	1	705	71	188	170	39	47	x	
Poway	1	6	11,710	1,131	1,096	845	689	256	x	

Table 3-2: PLACES WITH HIGH AND MODERATE TRANSIT NEEDS

CITY	Number of Block Groups		Population	Age 18-24	Elderly 60+	Below Poverty	Disabled (age 16+)	Zero Car Households	Between 10-25 mile Buffers of Bus	Outside 25 mile Buffer of Bus Station
	High Need	Moderate Need								
San Joaquin	0	1	2,709	377	158	880	158	56	x	
Sanger	5	8	16,727	1,944	2,244	4,219	1,803	642	x	
Santa Monica	44	27	79,861	4,980	14,114	8,399	5,284	4,633	x	
Selma	1	9	16,955	2,058	2,099	3,763	1,481	479	x	
Shafter	1	4	9,507	1,091	1,160	2,524	1,218	417	x	
Sonora	0	2	1,829	193	379	487	199	184		x
St. Helena	0	1	1,299	100	309	137	155	76	x	
Stanford	1	2	4,288	1,422	15	1,306	34	200	x	
Taft	0	2	4,489	609	693	1,267	493	309		x
Wasco	1	5	14,005	1,646	1,443	3,816	1,539	499	x	
Waterford	0	2	4,274	471	415	591	364	60	x	
West Menlo Park	0	1	1,673	79	274	56	37	22	x	
Willows	0	2	1,955	218	394	412	89	40	x	

Table 3-3: CALIFORNIA COLLEGES AND UNIVERSITIES

School	Address	City	Zip Code	Enrollment	Inside 10 Miles	Between 10-25 Miles	Outside 25 Miles
Academy of Art University, San Francisco	79 New Montgomery St	San Francisco	94105	7,298	x		
Alliant International University	10455 Pomerado Rd	San Diego	92131	3,300		x	
American Musical and Dramatic Academy	6305 Yucca St	Los Angeles	90028	900	x		
Art Center College of Design	1700 Lida St	Pasadena	91103	1,519	x		
Art Institute of California, San Francisco	1170 Market St	San Francisco	94102	1,500	x		
Art Institute of California - Orange County	3601 West Sunflower Ave	Santa Ana	92704	1,724	x		
Art Institute of Southern California	2222 Laguna Canyon Rd	Laguna Beach	92651	288	x		
Azusa Pacific University	901 East Alosta Ave	Azusa	91702	8,218	x		
Bethany College of the Assemblies of God	800 Bethany Dr	Scotts Valley	95066	548	x		
Biola University	13800 Biola Ave	La Mirada	90639	5,492	x		
California College of the Arts	1111 8Th St	San Francisco	94107	1,291	x		
California Institute of Technology	1200 E California Blvd	Pasadena	91125	1,968	x		
California Institute of the Arts	24700 W McBean Pkwy	Valencia	91355	1,077	x		
California Lutheran University	60 W Olsen Rd	Thousand Oaks	91360	2,940	x		
California Maritime Academy, CSU	200 Maritime Academy Dr	Vallejo	94590	448	x		
California State Polytechnic University	3801 W Temple Ave	Ponoma	91768	19,804	x		
California State University-San Marcos	333 S. Twin Oaks Valley Rd	San Marcos	92096	7,641	x		
California State University-Bakersfield	9001 Stockdale Hwy	Bakersfield	93311	7,924	x		
California State University-Dominguez Hills	1000 E. Victoria Street	Carson	90747	12,357	x		
California State University-Long Beach	1250 Bellflower Blvd	Long Beach	90840	33,479	x		
California State University-Los Angeles	5151 State University Dr	Los Angeles	90032	20,307	x		
California State University-Stanislaus	801 W Monte Vista Ave	Turlock	95382	8,137	x		
California State University-Hayward	25800 Carlos Bee Blvd	Hayward	94542	12,811	x		
California State University-Fresno	5150 N Maple Ave	Fresno	93740	20,371	x		
California State University- Sacramento	6000 J St	Sacramento	95819	28,000	x		
University of California-Berkeley	110 Sproul Hall #5800	Berkeley	94720	32,810	x		
University of California-Davis	One Shields Ave	Davis	95616	27,393	x		
University of California-Irvine	Campus Dr	Irvine	92697	24,484	x		
University of California-Los Angeles	405 Hilgard Ave	Los Angeles	90095	35,660	x		
University of California-Merced	5200 North Lake Rd	Merced	95343	1,200	x		
University of California-Riverside	900 University Ave	Riverside	92521	16,622	x		
University of California-San Diego	9500 Gilman Dr	La Jolla	92093	23,888	x		
University of California-Santa Barbara	1210 Cheadle Hall	Santa Barbara	93106	21,026	x		
University of California-Santa Cruz	1156 High St	Santa Cruz	95064	13,291	x		
University of California-San Francisco	500 Parnassus St	San Francisco	94143	2,868	x		
Chapman University	One University Dr	Orange	92886	4,586	x		
Concordia University	1530 Concordia West	Irvine	92612	1,314	x		
Dominican University of California	50 Acacia Ave	San Rafael	94901	1,389	x		
Fresno Pacific University	1717 S Chestnut Ave	Fresno	93702	1,990	x		
Golden Gate University-San Francisco	536 Mission St	San Francisco	94105	5,852	x		
Harvey Mudd College	301 E 12th St	Claremont	91711	701	x		
Holy Names University	3500 Mountain Blvd	Oakland	94619	1,093	x		
Hope International University	2500 E Nutwood Ave	Fullerton	92613	900	x		
Humboldt State University	1 Hurpst St	Arcarta	95521	7,473	x		
John F Kennedy University	100 Ellinwood Way	Pleasant Hill	94523	1,695	x		
La Sierra University	4700 Pierce St	Riverside	92515	1,801	x		
Loma Linda University	Loma Linda University	Loma Linda	92350	3,256	x		
Loyola Law School	919 S. Albany St.	Los Angeles	90015	1,331	x		
Marymount College	30800 Palos Verdes Dr E	Rancho Palos Verdes	90275	739	x		
Menlo College	1000 El Camino Real	Atherton	94027	521		x	
Mills College	5000 Mac Arthur Blvd	Oakland	94613	1,031	x		
Monterey Institute of International Studies	460 Pierce St	Monterey	93940	840	x		
Mount St. Mary's College	12001 Chalon Rd	Los Angeles	90049	1,696	x		
Notre Dame de Namur University	1540 Ralston Ave	Belmont	94002	1,711	x		
Occidental College	1600 Campus Rd	Los Angeles	90041	1,730	x		
Otis College of Art and Design	9045 Lincoln Blvd	Los Angeles	90045	959		x	
Pacific Oaks College	5 Westmoreland Pl	Pasadena	91103	926	x		
Pacific Union College	1 Angwin Ave	Angwin	94508	1,556		x	
University of the Pacific	3601 Pacific Ave	Stockton	95211	6,121	x		
Pepperdine University	24255 Pacific Coast Hwy	Malibu	90263	7,850		x	
Pitzer College	1050 N Mills Ave	Claremont	91711	869	x		
Point Loma Nazarene University	3900 Lomaland Dr	San Diego	92106	2,800	x		
University of Redlands	1200 E Colton Ave	Redlands	92373	1,500	x		
Saint Marys College of California	1928 Saint Mary's Rd	Moraga	94575	3,563	x		
San Diego State University	5500 Campanile Dr	San Diego	92182	32,043	x		
San Francisco State University	1600 Holloway Ave	San Francisco	94132	29,696	x		
University of San Francisco	2130 Fulton St	San Francisco	94117	8,274	x		
San Jose State University	1 Washington Square	San Jose	95112	28,932	x		
Santa Clara University	500 El Camino Real	Santa Clara	95053	7,953	x		
Scripps College	1030 N Columbia Ave	Claremont	91711	787	x		
Simpson University	2211 College View Dr	Redding	96003	1,131	x		
Sonoma State University	1801 E Cotati Ave	Rohnert Park	94928	8,350	x		
University of Southern California	University Park	Los Angeles	90089	29,194	x		
Stanford University	655 Serra St	Stanford	94305	17,822		x	
The Master's College	21726 W. Placerita Cyn Rd	Santa Clarita	91321	1,188	x		
Westmont College	955 La Paz Rd	Santa Barbara	93108	1,358	x		
Whittier College	13406 E Philadelphia St	Whittier	90608	1,468	x		
William Jessup University	333 Sunset Blvd	Rocklin	95765	521	x		

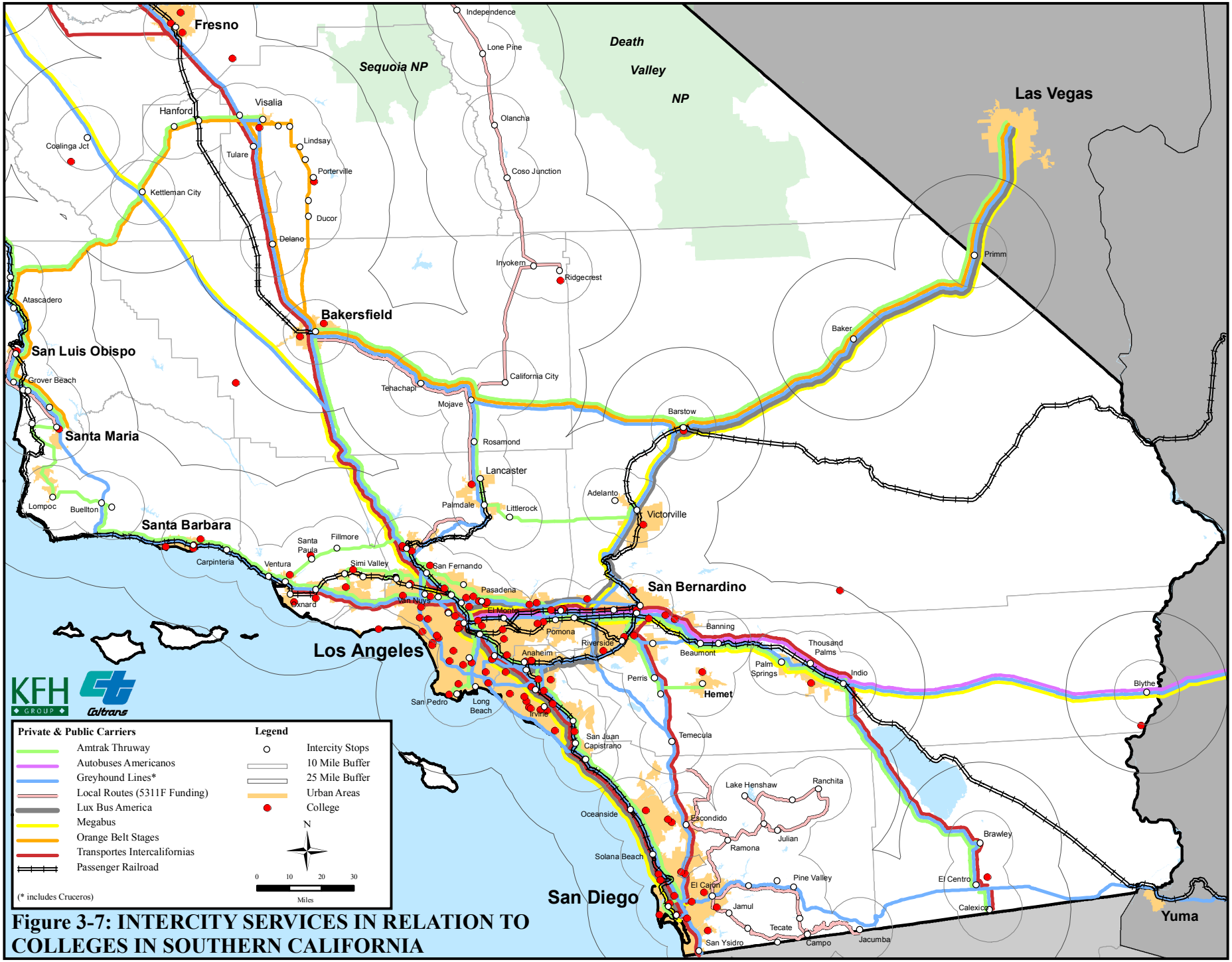

Figure 3-7: INTERCITY SERVICES IN RELATION TO COLLEGES IN SOUTHERN CALIFORNIA

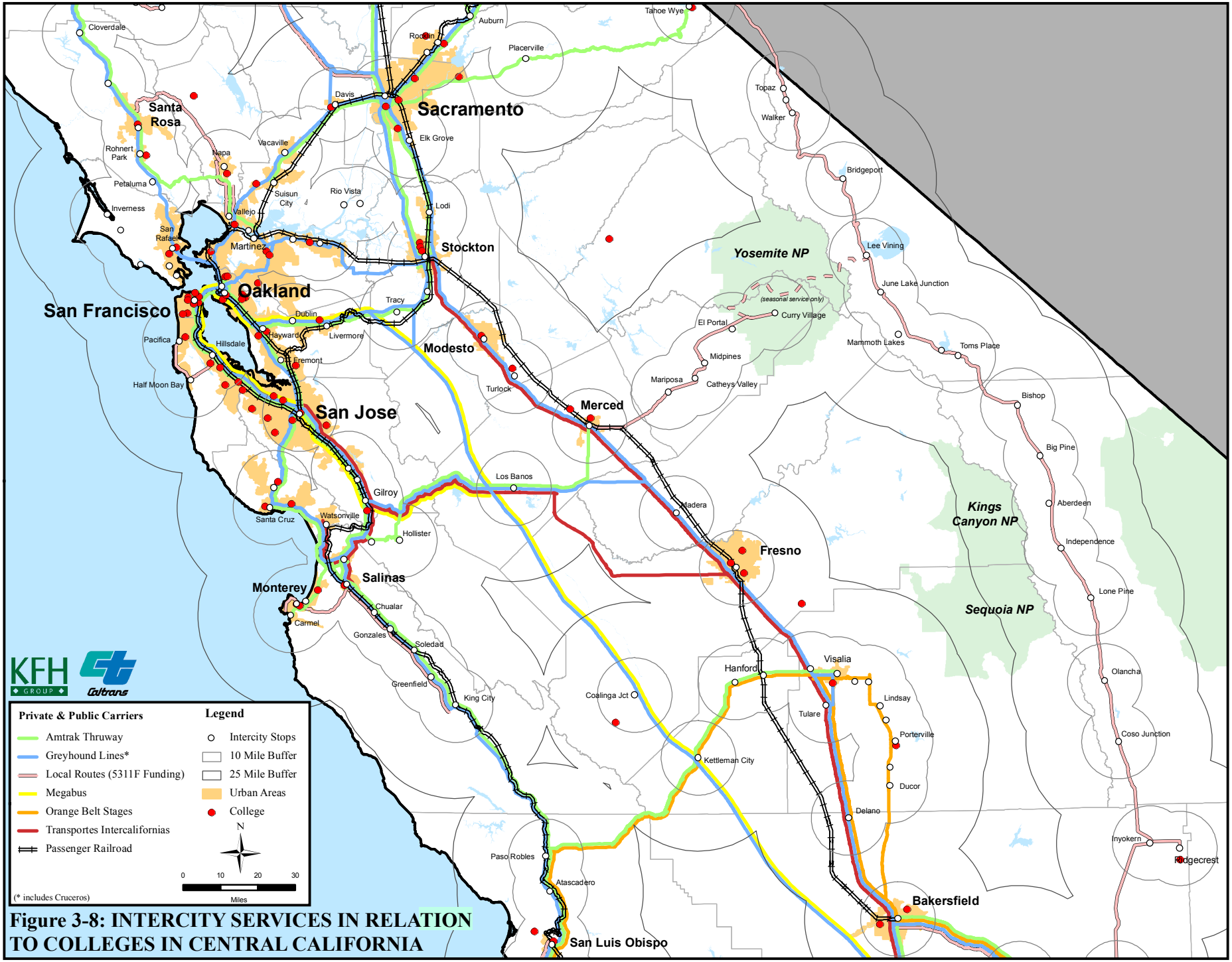

Figure 3-8: INTERCITY SERVICES IN RELATION TO COLLEGES IN CENTRAL CALIFORNIA

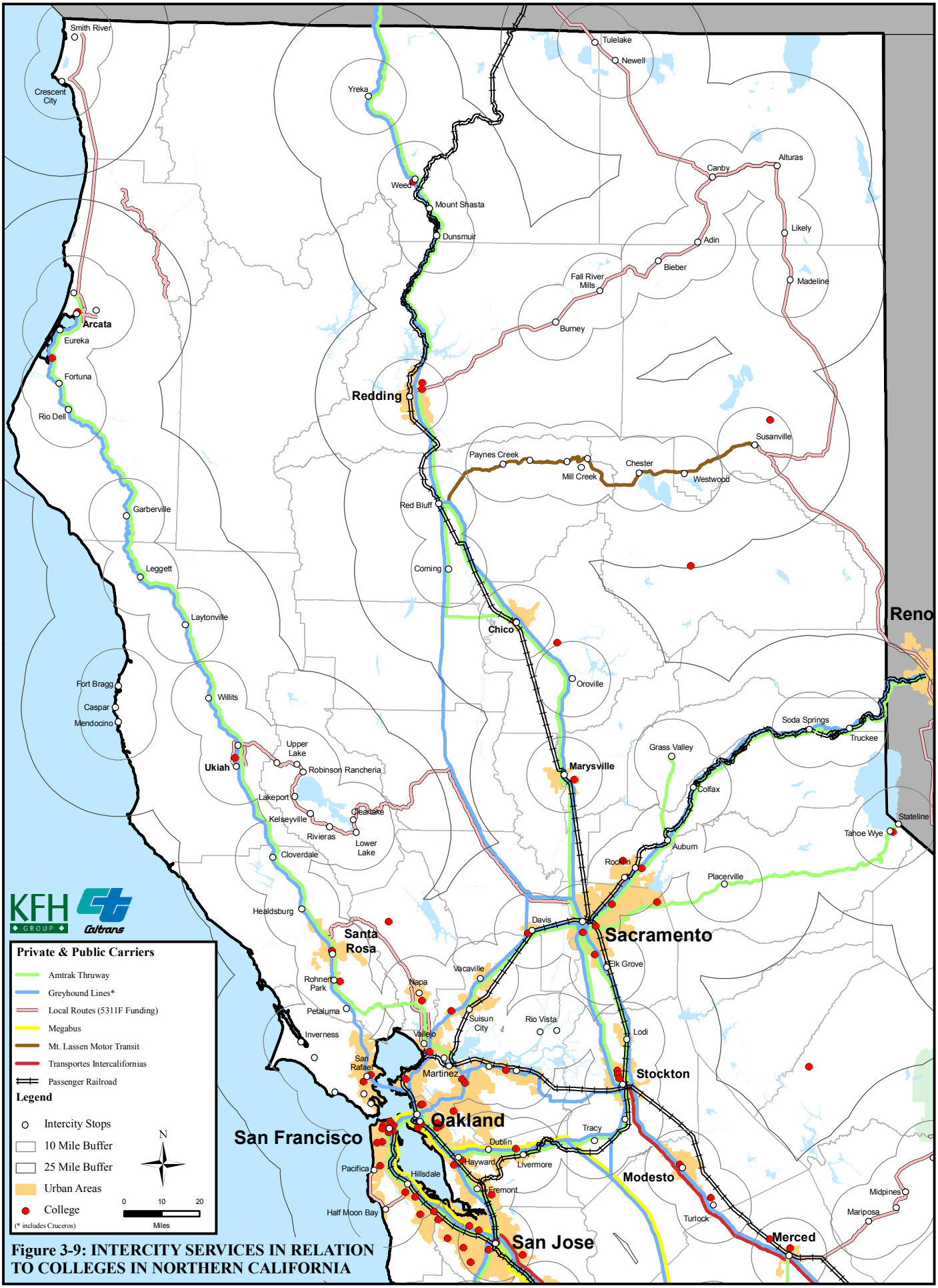

Figure 3-9: INTERCITY SERVICES IN RELATION TO COLLEGES IN NORTHERN CALIFORNIA

The figures represent the location of the institutions for each section of the state: Southern, Central, and Northern. The Southern section, Figure 3-7, represents that most institutions are clustered in the Los Angeles urbanized area and most of them are located within the 10-mile market area. The San Diego region also contains a small cluster of colleges and universities. The Central section, Figure 3-8, represents that a significant cluster of institutions is located in the San Francisco Bay Area and some sprinkled along the SR 99 corridor from Fresno to Sacramento. In this region all of the institutions are located within the 10-mile market area for each intercity stop. The Northern section (Figure 3-9), is a cluster of colleges/universities located in the San Francisco Bay Area. The remainder of the institutions are scattered throughout the entire state.

Based on this analysis, approximately all students attend school at campuses that are located in communities served by intercity bus services, when considering a 25-mile market area radius for each bus stop. The majority of students attend school at campuses that are located in communities served by intercity bus services, when considering a 10-mile market area radius for each bus stop. Although all of these institutions may have intercity bus service relatively close by, some stops may be a significant distance from the institution. For these other schools, students must still find transportation between the campus and the bus station, and from the destination bus station on the other end of the trip. In this circumstance, the ability to use intercity bus service still requires taxis, local transit, or someone with a vehicle to provide the connection—but the intercity link is available.

Military Bases

Military bases are located throughout California with most situated in the southern section of the state. Of the 73 military bases within the State of California, there are 11 posts that are outside of the ten mile market area from the nearest intercity stop. Four (Channel Island Air Guard Station, Fort Irwin, Sierra Army Depot, and Twenty-nine Palms Marine Corp Air Ground Combat Center (MCAGCC)) of these 11 outlying military bases are outside of the 25 mile market area surrounding the nearest intercity stop. Furthermore, three of these four outliers are located in the southern portion of the state, with the exception being the Sierra Army Depot located to the east of Susanville, in north eastern California. Concerning the bases in the intermediate zone of ten to 25 miles from an intercity stop, there are seven military bases in this zone with a pair of bases along the coastline between King City and Paso Robles. Table 3-4 lists the military base location information and its proximity to the nearest intercity stop. The following set of figures, Figures 3-10, 3-11, and 3-12 represents the location of the military bases with respect to the 10- and 25- mile market around each stop for Southern, Central, and Northern California, respectively.

Hospitals

Although medical trips make up a small percentage of intercity bus trips, the ability to make trips from rural areas and small towns to major medical facilities is often a policy consideration for maintaining bus services. It may be less of a consideration for patient transportation than for family and friends to visit, simply because most intercity services are not frequent enough to permit same-day outpatient visits. In addition, use of intercity bus services to provide regional medical trips requires a ride to and from the bus station at either end of the bus

Table 3-4: CALIFORNIA MILITARY BASES

Military	Inside 10 Miles	Between 10-25 Miles	Outside 25 Miles
Beale Air Force Base		x	
United States Navy Reservation	x		
East Fort Miley	x		
West Fort Miley	x		
Alameda/US Naval Air Station	x		
Oakland Army Base	x		
Oakland/US Naval Supply Center	x		
Treasure Island Naval Station	x		
National Guard Armory	x		
Armory	x		
Mare Island Naval Reserve	x		
Military Reservation	x		
Naval Shipyard	x		
Armory	x		
Travis Air Force Base	x		
Army Reserve	x		
National Guard Armory	x		
US Naval Station Port Chicago	x		
US Naval Weapons Sta Concord	x		
Mcclellan Air Force Base	x		
National Guard Armory	x		
Army National Guard		x	
US Army Reserve Center	x		
Ames Research Center	x		
Air National Guard Base	x		
US Government Reserve	x		
Coast Guard Facilities	x		
Naval Reserve Center	x		
Presidio Of Monterey	x		
Channel Island Air Guard Station			x
Vandenberg Airforce Base	x		
California Air Natl Guard	x		
Point Mugu Naval Air Station	x		
US Coast Guard Station	x		
USN Construction Batln Ctr	x		
Los Angeles Air Force Base	x		
Fort Macarthur	x		
National Guard Armory	x		
Naval Reservation	x		
Los Alamitos Army Airfield	x		
US Naval Weapons Station	x		
Camp Roberts Military Reser		x	
Cp San Luis Obispo Military Re	x		
Fort Hunter Liggett		x	
Lemoore Naval Air Sta	x		
Fresno Air Guard Station	x		
Sharpe Army Depot	x		
Tracy Defense Depot	x		
Stockton Naval Commun Sta	x		
Army National Guard	x		
China Lake Naval Weapons Ctr		x	
Fort Irwin			x

Table 3-4: CALIFORNIA MILITARY BASES

Military	Inside 10 Miles	Between 10-25 Miles	Outside 25 Miles
Barstow Mc Logistics Base	x		
El Centro Naval Aux Air Sta	x		
Twentynine Palms Mcag			x
Fort Rosecrans Military Rsv	x		
North Island Naval Air Sta	x		
San Diego Naval Air Station	x		
San Diego Naval Commun Sta	x		
US Naval Amphibious Base	x		
Camp Pendleton Marine Co Base		x	
Pacific Fleet Training Ctr	x		
US Marine Corp Recruit Depot	x		
San Diego Mc Recruit Depot	x		
San Diego Naval Medical Ctr	x		
USMC Air Station Miramar	x		
National Guard Armory Site	x		
Tustin Marine Corps Air Sta	x		
US Naval Weapons Center	x		
El Toro Marine Corps Air Sta	x		
March Air Reserve Base	x		
Edwards Air Force Base		x	
Sierra Army Depot			x

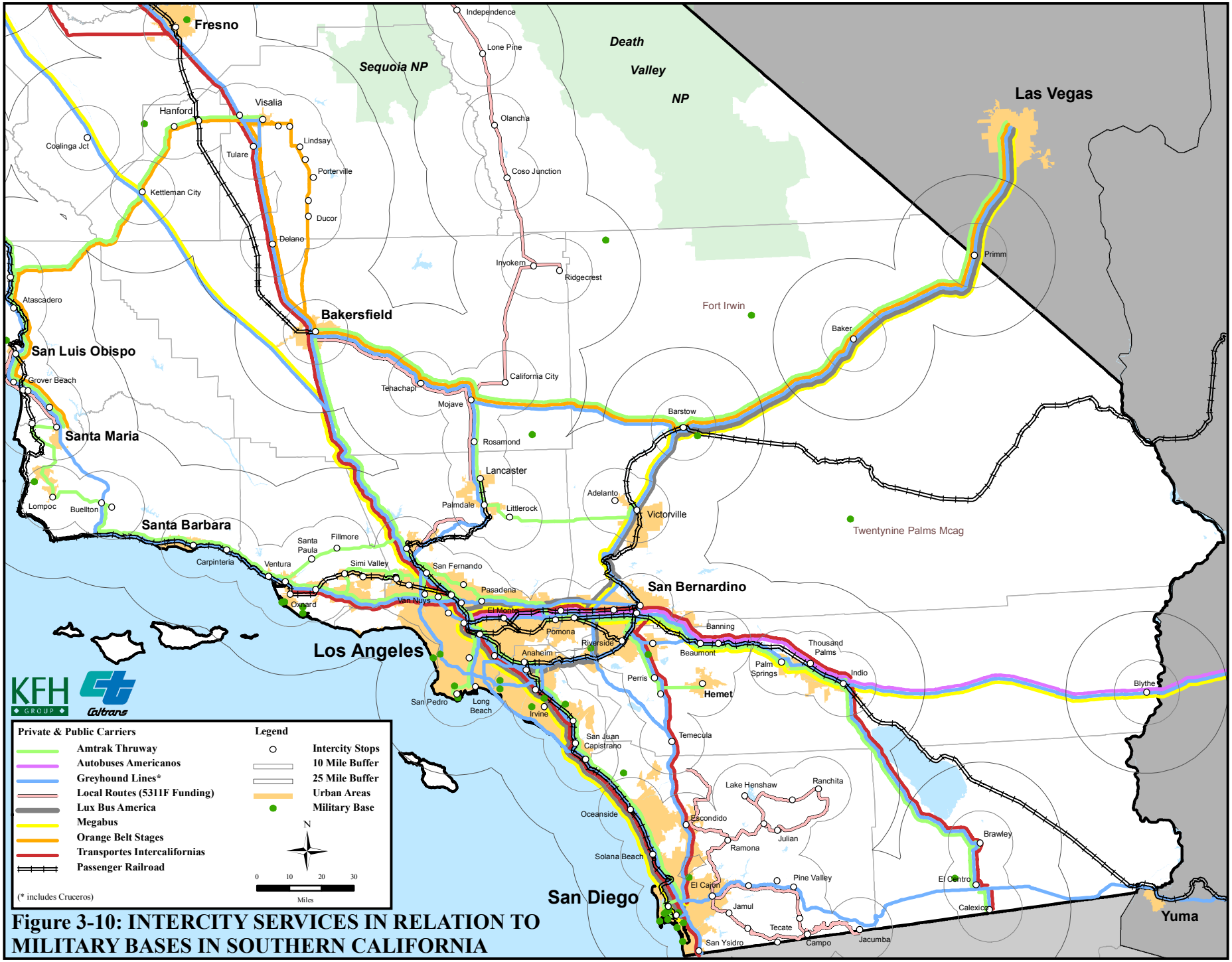

Figure 3-10: INTERCITY SERVICES IN RELATION TO MILITARY BASES IN SOUTHERN CALIFORNIA

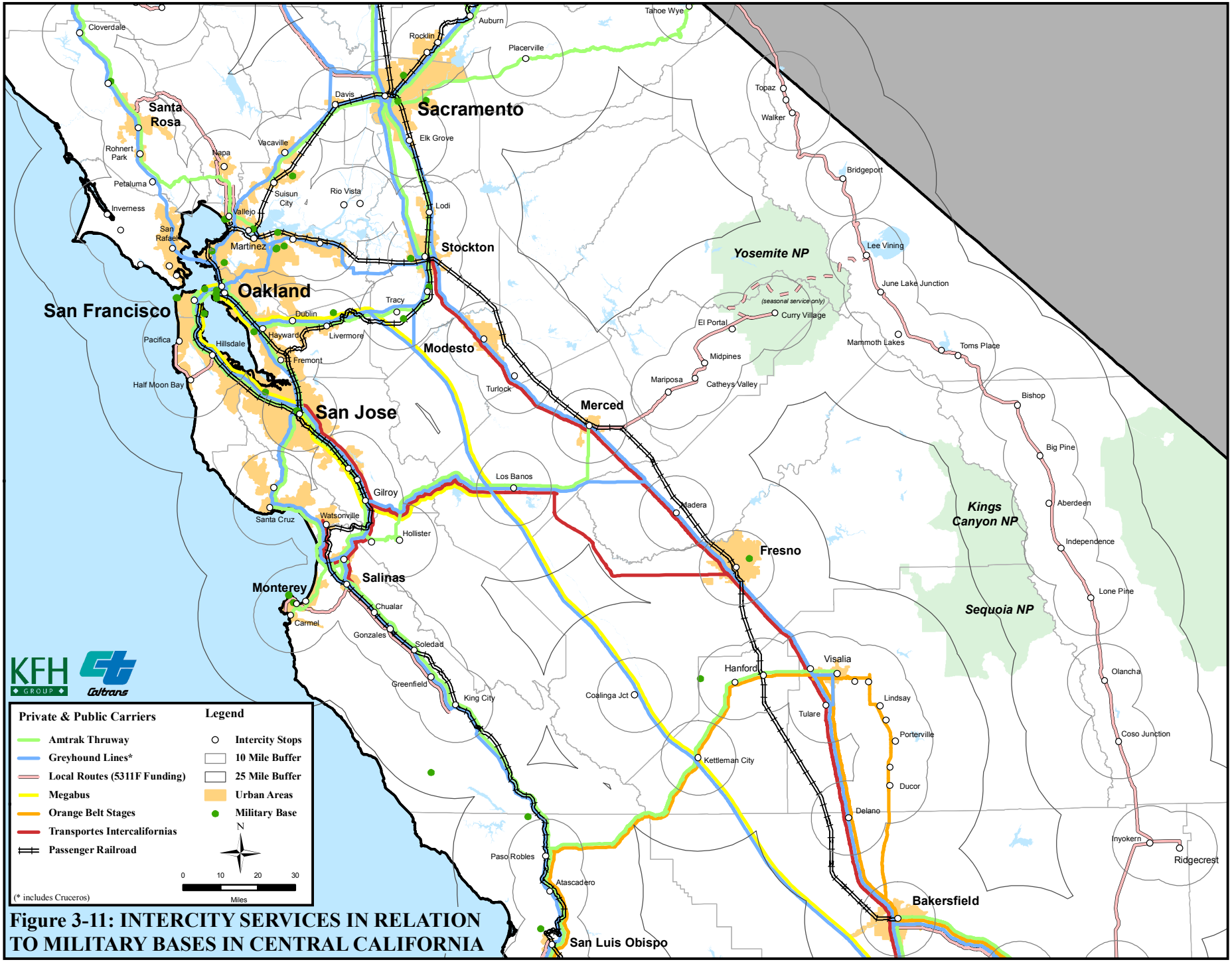

Figure 3-11: INTERCITY SERVICES IN RELATION TO MILITARY BASES IN CENTRAL CALIFORNIA

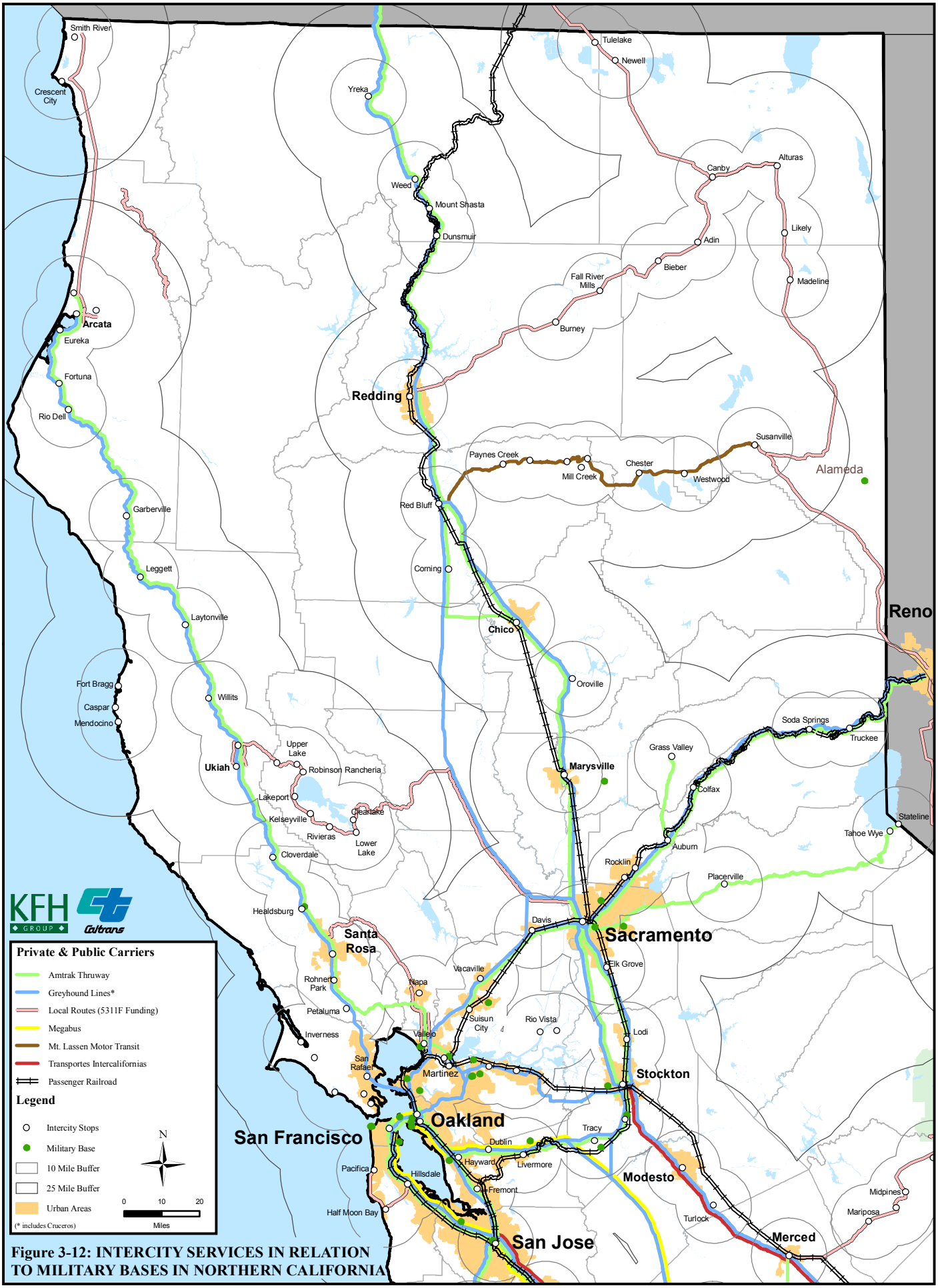

Figure 3-12: INTERCITY SERVICES IN RELATION TO MILITARY BASES IN NORTHERN CALIFORNIA

trip, adding to the cost, time, and physical effort required. However, in many states, long-distance medical trips under Medicaid do utilize intercity bus services.

Table 3-5 presents a list of hospitals and medical centers located throughout the state along with the number of beds available at each facility and their proximity to intercity bus service. The total number of beds available is 82,058. Of the 449 hospitals within the State of California, there are 33 facilities that are not within a ten mile radius surrounding the nearest intercity stop. Of these 33 outlying locations, 11 hospitals are found to be outside of the larger 25-mile radius surrounding the nearest intercity stop. There is a concentration of these furthest outliers in the central and northern portions of the state, including a cluster of four to the southeast of Sacramento (Mark Twain St. Joseph's Hospital, Sonora Community Hospital, Sutter Amador Hospital, and Tuolumne General Hospital). There is also a pair of hospitals to the east of Chico (Eastern Plumas District Hospital and Plumas District Hospital). The majority of these outlying hospitals possess less than one hundred beds, with the two exceptions being Corona Regional Medical Center and St. Helena Hospital in Deer Park. Concerning those hospitals in the intermediate zone of 10 to 25 miles from an intercity stop, there is a cluster of five to the southeast of Fresno (Alta District Hospital, Kingsburg Medical Center, Sanger General Hospital, Selma Community Hospital, and Sierra-Kings District Hospital). The following figures, Figures 3-13, 3-14, and 3-15 represent the facilities with respect to the 10- and 25- mile market area of each stop for Southern, Central, and Northern California, respectively.

It is evident from the list and maps that the hospitals are located throughout the state, thus negating the need of transporting large numbers of patients to one or two major destinations. However, there are certain metro areas and corridors that contain most of these facilities. Though there may be a need to transport people to particular hospitals that will provide care for them that may not be available locally, this form of transportation service is often provided directly by the rural public transportation operator.

Correctional Facilities

As in the case of hospitals, while demand for correctional facility trips results in a small percentage of intercity bus trips, the ability to make trips from rural areas and small towns to correctional facilities may be crucial to families, released inmates, and employees. Table 3-6 is a list of state correctional facilities throughout the state along with the number of beds available at each facility and their proximity to intercity bus service. Figures 3-16, 3-17, 3-18 represent the correctional facilities served by intercity bus service when considering the 10-mile and 25-mile market area around each intercity bus stop. The total capacity of these state correctional facilities is 79,477 inmates. Of the 32 state correctional facilities, 12 are found outside of the ten mile buffer surrounding the nearest intercity stop. The lone correctional facility found outside of the largest buffer of 25 miles is the Sierra Conservation Center located in Jamestown, which possesses the largest capacity of any correctional facility. In general, correctional facilities are dispersed throughout the state, but in certain regions they are clustered near major roadway corridors so there may be no need to transport large numbers of riders to any one facility, but there may be a possibility to consider services for facilities near each other.

Table 3-5: CALIFORNIA HOSPITALS

Hospital	Address	City	Zip Code	# of Beds	Between 10-25 Miles	Outside 25 Miles
Colusa Regional Medical Center	199 East Webster Street	COLUSA	95932-2954	34	x	
St Helena Hospital	650 Sanitarium Road	DEER PARK	94576-9710	160	x	
Biggs-Gridley Mem Hospital	240 Spruce Street	GRIDLEY	95948-2216	20	x	
Sutter Amador Hospital	200 Mission Boulevard	JACKSON	95642-2132	42		x
Chowchilla Dist Mem Hospital	1104 Ventura Avenue	CHOWCHILLA	93610-2298	1	x	
Oak Valley District Hospital	350 South Oak Street	OAKDALE	95361-3519	35	x	
Sierra-Kings District Hospital	372 West Cypress Avenue	REEDLEY	93654-2199	44	x	
Mark Twain St Joseph's Hospital	768 Mountain Ranch Road	SAN ANDREAS	95249-9707	36		x
Sanger General Hospital	2558 Jensen Avenue	SANGER	93657-2296	39	x	
Selma Community Hospital	1141 Rose Avenue	SELMA	93662-3241	43	x	
Sonora Community Hospital	One South Forest Road	SONORA	95370-4819	50		x
Tuolumne General Hospital	101 Hospital Road	SONORA	95370-5297	44		x
Mercy Westside Hospital	110 East North Street	TAFT	93268-3606	21		x
Corcoran District Hospital	1310 Hanna Avenue	CORCORAN	93212-2395	24	x	
Alta District Hospital	500 Adelaide Way	DINUBA	93618-1698	50	x	
Kingsburg Medical Center	1200 Smith Street	KINGSBURG	93631-2216	15	x	
Kern Valley Healthcare Dist	6412 Laurel Avenue	LAKE ISABELLA	93240-1628	27		x
Ojai Valley Community Hospital	1306 Maricopa Highway	OJAI	93023-3163	30	x	
Indian Valley Health District	184 Hot Springs Road	GREENVILLE	95947-9747	9	x	
Feather River Hospital	5974 Pentz Road	PARADISE	95969-5509	46	x	
Plumas District Hospital	1065 Bucks Lake Road	QUINCY	95971-9599	16		x
Trinity Hospital	410 North Taylor Street	WEAVERVILLE	96093	39		x
Glenn Medical Center	1133 West Sycamore Street	WILLOWS	95988-2745	15	x	
Surprise Valley Healthcare	Main and Washington Streets	CEDARVILLE	96104	4	x	
Sierra Valley Dist Hospital	700 Third Street	LOYALTON	96118-0178	0	x	
Eastern Plumas Dist Hospital	500 First Avenue	PORTOLA	96122-9406	9		x
Corona Regional Medical Center	800 South Main Street	CORONA	92882-3420	228	x	
Weed Army Community Hospital		FORT IRWIN	92310-5065	27	x	
Bear Valley Community Hospital	41870 Garstin Road	BIG BEAR LAKE	92315	9	x	
Mountains Community Hospital	29101 Hospital Road	LAKE ARROWHEAD	92352	17	x	
Naval Hospital		TWENTYNINE PALMS	92278	29		x
Hi-Desert Medical Center	6601 White Feather Road	JOSHUA TREE	92252-6601	29	x	
Public Hlth Serv Indian Hosp		WINTERHAVEN	92283-1368	34		x

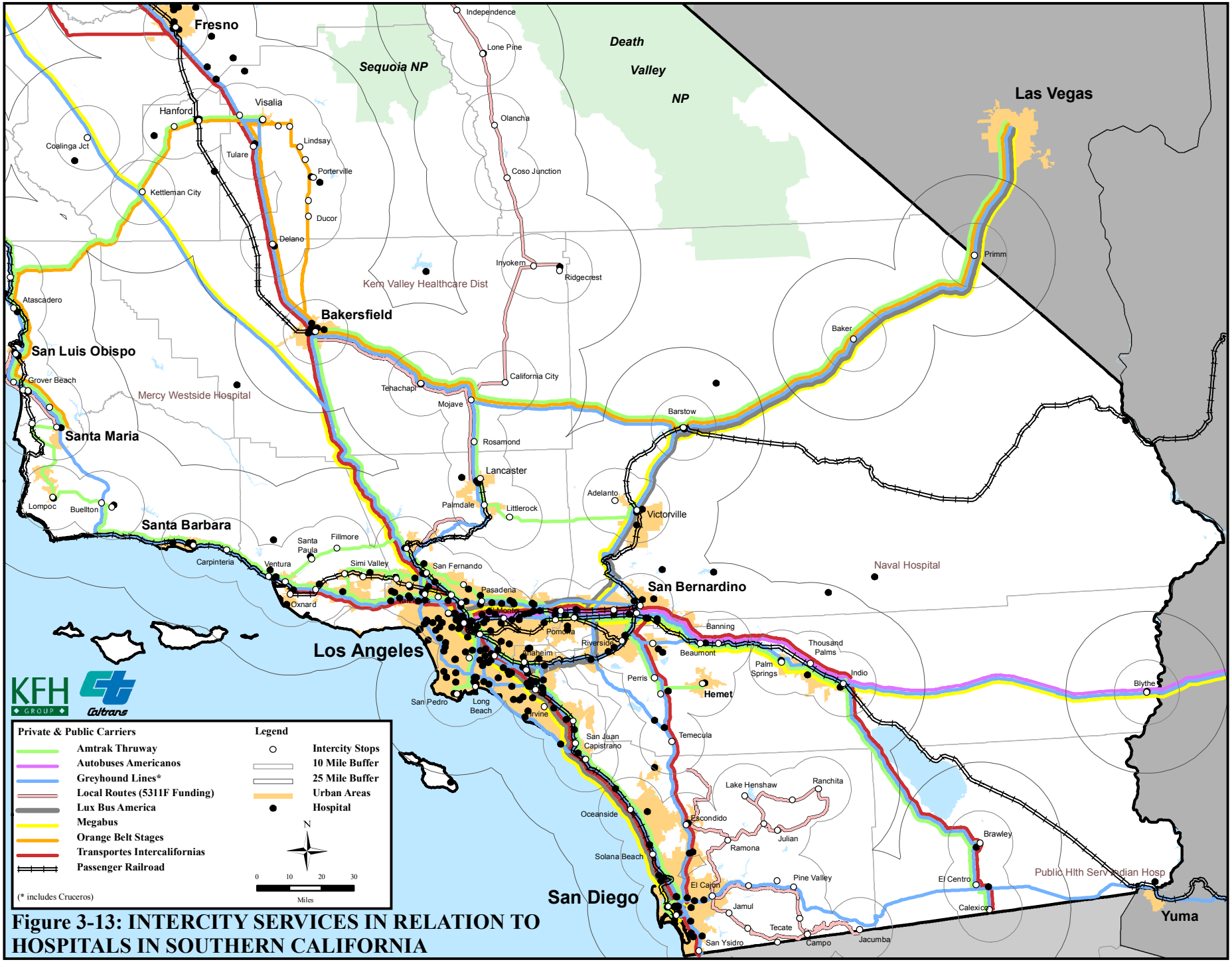

Figure 3-13: INTERCITY SERVICES IN RELATION TO HOSPITALS IN SOUTHERN CALIFORNIA

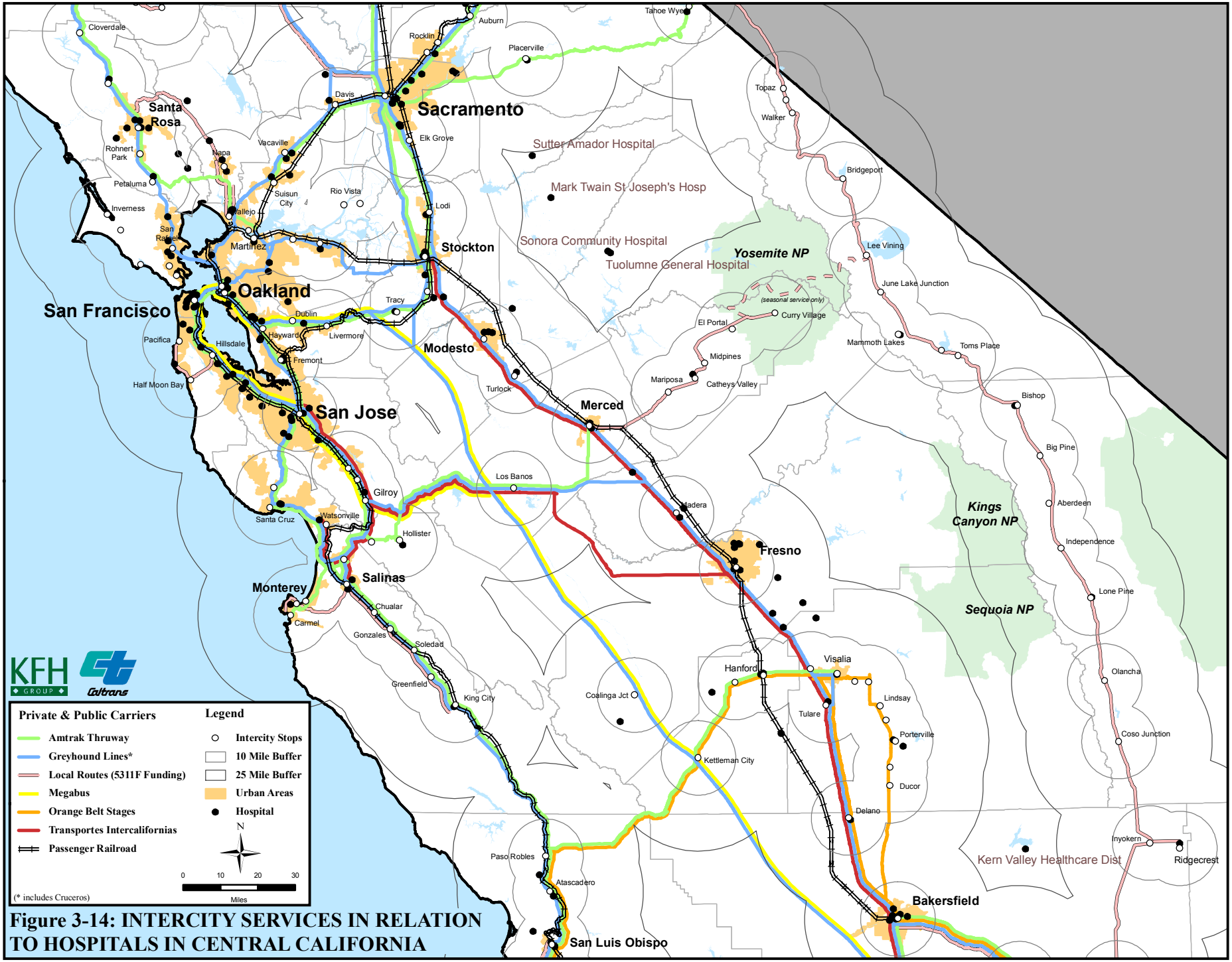

Figure 3-14: INTERCITY SERVICES IN RELATION TO HOSPITALS IN CENTRAL CALIFORNIA

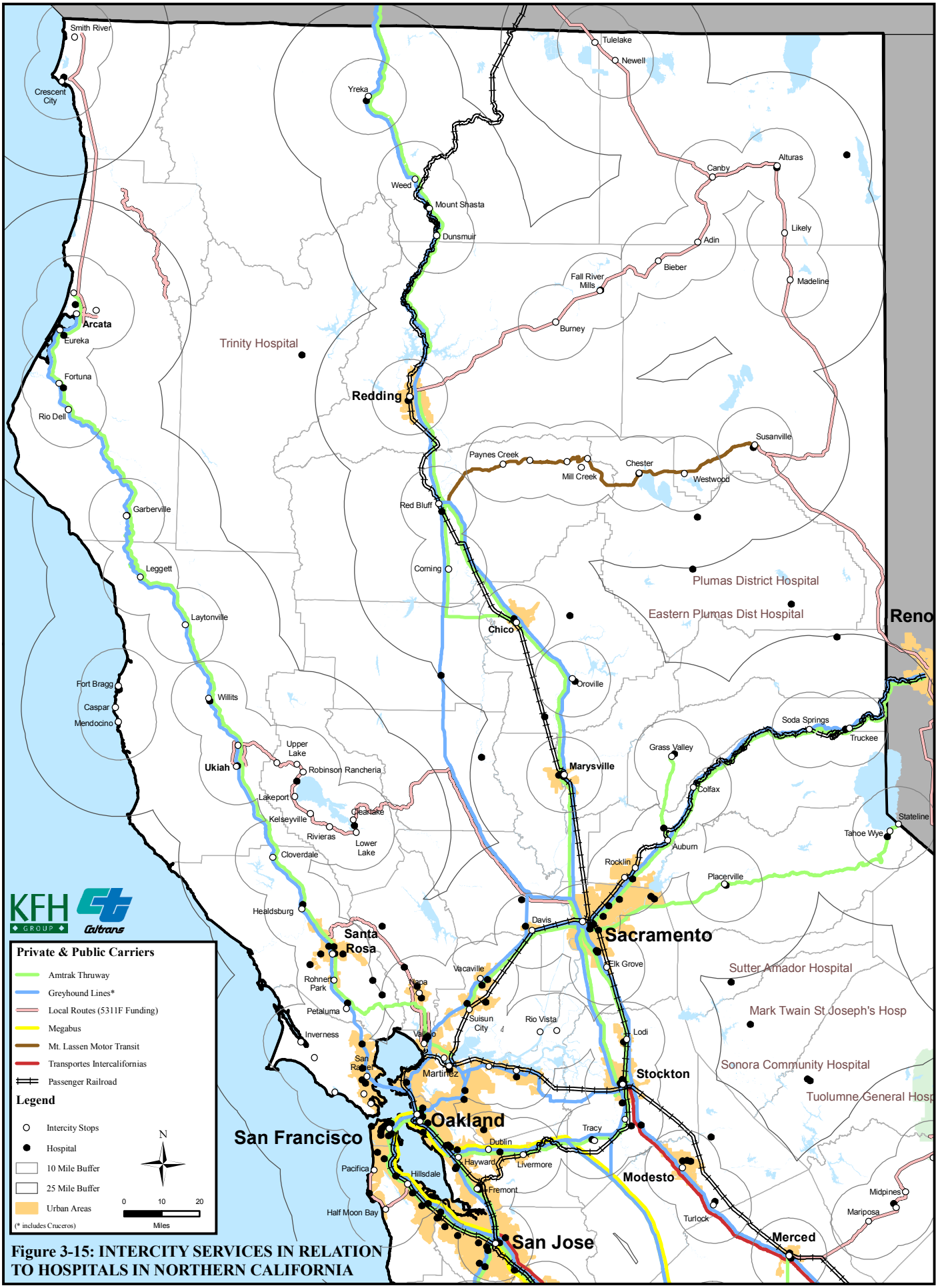

Figure 3-15: INTERCITY SERVICES IN RELATION TO HOSPITALS IN NORTHERN CALIFORNIA

Table 3-6: CALIFORNIA CORRECTIONAL FACILITIES

Correctional Facility	City	Capacity	Inside 10 Miles	Between 10-25 Miles	Outside 25 Miles
San Quentin State Prison	San Quentin	3,283	x		
Folsom State Prison	Represa	2,072	x		
California Correctional Institution	Tehachapi	2,781	x		
California Institution for Men	Chino	3,078	x		
Correctional Training Facility	Soledad	3,281	x		
California Institution for Women	Corona	1,026	x		
Deuel Vocational Institution	Tracy	1,787	x		
California Men's Colony	San Luis Obispo	3,884	x		
California Medical Facility	Vacaville	2,315	x		
California Rehabilitation Center	Norco	2,314		x	
California Correctional Center	Susanville	3,682	x		
Sierra Conservation Center	Jamestown	3,926			x
California State Prison, Solano	Vacaville	2,610	x		
California State Prison, Sacramento	Represa	1,728	x		
Avenal State Prison	Avenal	2,320	x		
Mule Creek State Prison	Ione	1,700		x	
R.J. Donovan Correctiuonal Facility	San Diego	2,200	x		
California State Prison, Corcoran	Corcoran	3,016		x	
Chuckawalla Valley State Prison	Blythe	1,738		x	
Pelican Bay State Prison	Crescent City	2,280	x		
Central California Women's Facility	Chowchilla	2,004		x	
Wasco State Prison	Wasco	2,984		x	
Calipatria State Prison	Calipatria	2,208		x	
California State Prison, Los Angeles County	Lancaster	2,200	x		
North Kern State Prison	Delano	2,692	x		
Centinela State Prison	Imperial	2,208		x	
Ironwood State Prison	Blythe	2,200		x	
Pleasant Valley State Prison	Coalinga	2,208	x		
Valley State Prison for Women	Cowchilla	1,980		x	
High Desert State Prison	Susanville	2,224	x		
Salinas Valley State Prison	Soledad	2,224	x		
California Substance Abuse Treatment Facility	Corcoran	3,324		x	

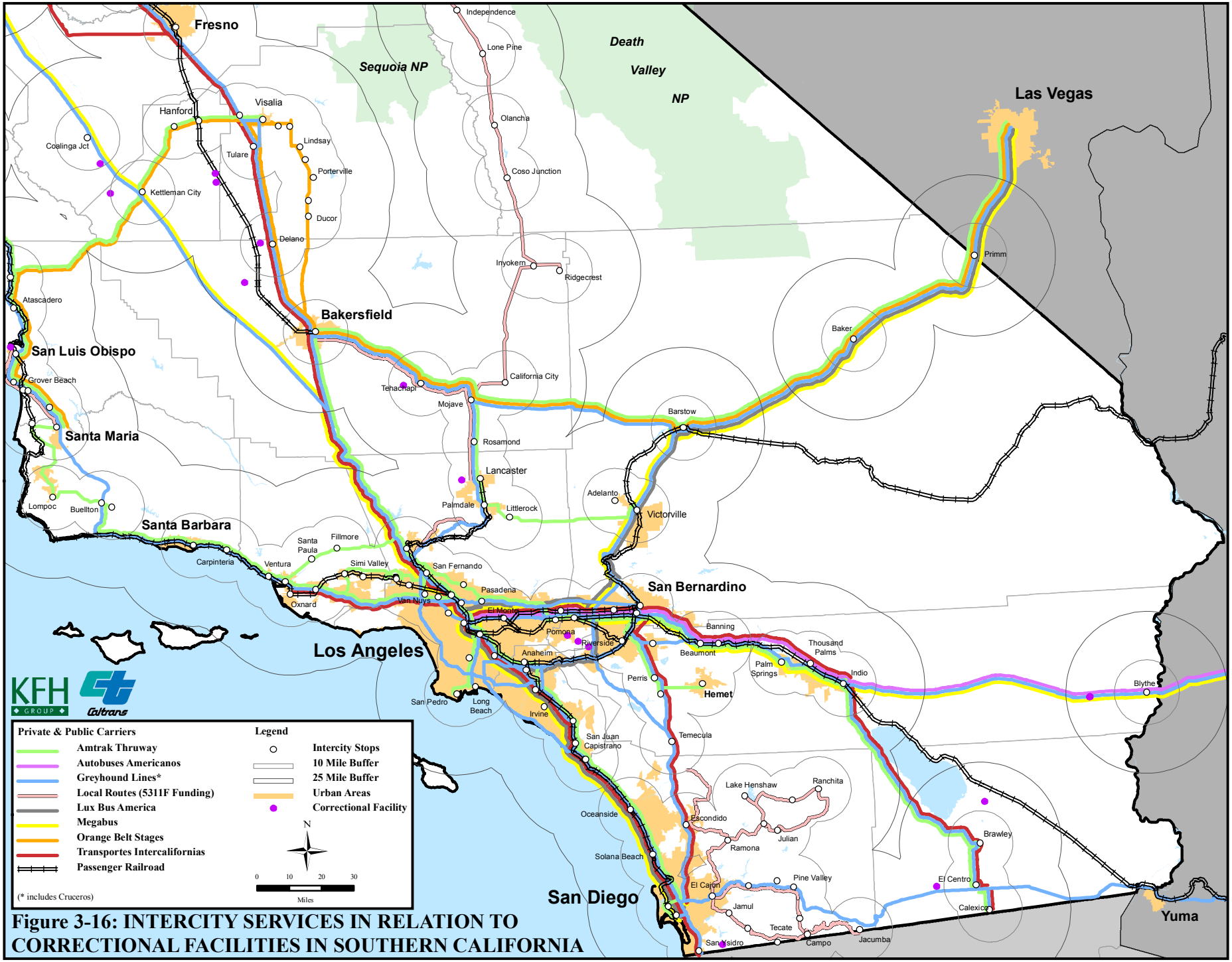

Figure 3-16: INTERCITY SERVICES IN RELATION TO CORRECTIONAL FACILITIES IN SOUTHERN CALIFORNIA

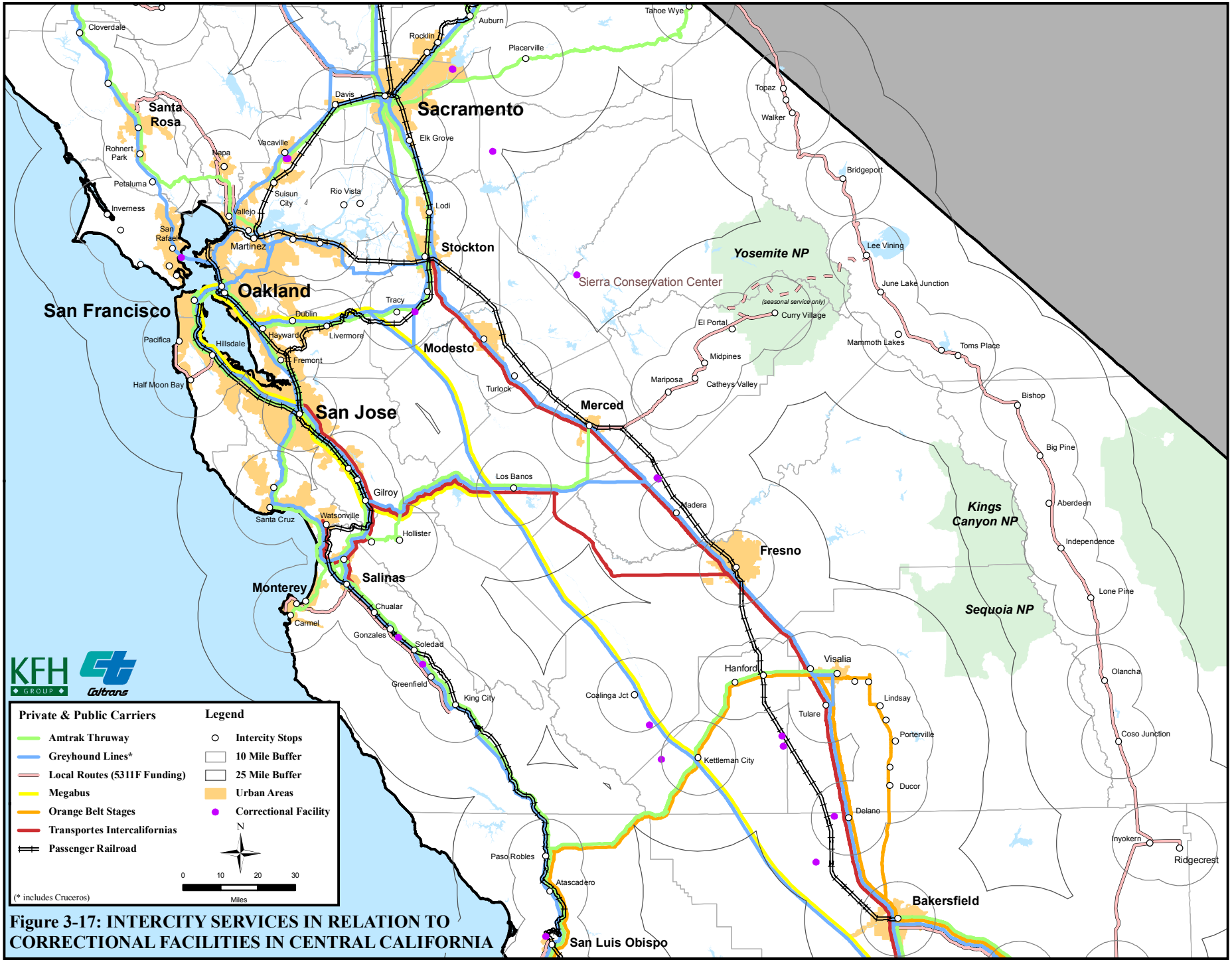

Figure 3-17: INTERCITY SERVICES IN RELATION TO CORRECTIONAL FACILITIES IN CENTRAL CALIFORNIA

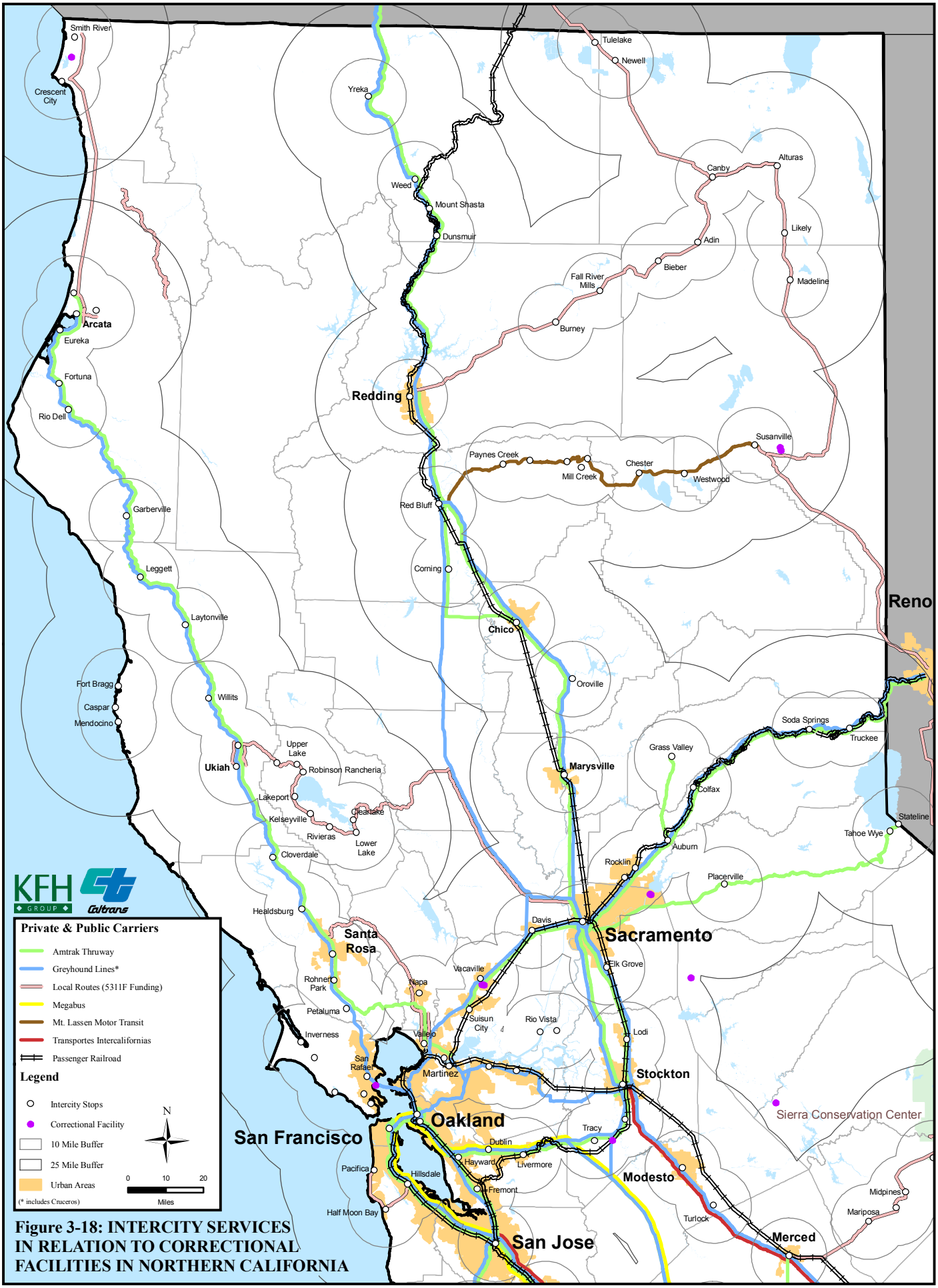

Figure 3-18: INTERCITY SERVICES IN RELATION TO CORRECTIONAL FACILITIES IN NORTHERN CALIFORNIA

Airports

Major airport facilities are located south in San Diego and as far north as Redding and McKinleyville. Table 3-7 is list of all the airports in the state and their proximity to intercity bus service. Figures 3-19, 3-20, and 3-21 represent the airport facility and existing intercity bus service when considering the 10- and 25- mile market area around each intercity stop. Although, little is known about the demand for intercity bus services to airports, the ability to make trips from rural areas and small towns to airports may be crucial to families, employees, and visitors. In the entire state, airports are within or very close to the 10-mile buffer around the nearest intercity bus stop.

In southern California most airports are clustered in or near the Los Angeles metro area. There are a few airports located east in Palm Springs and El Centro. In central California, most of the airports are aligned along the SR 99 corridor, extending from Bakersfield to Sacramento. In northern California, the concentrations of airport facilities are located in the San Francisco-Oakland-San Jose and Sacramento region.

Summary

A review of population characteristics presents that there are definitely areas of "high" need scattered throughout the state. Granted, the urban areas reveal agglomerations of "high" need areas; however, rural areas with such "high" needs have also been identified and represented. The review of trip generators has also provided information on potential destinations that could be considered as unserved because of the distance to existing intercity bus service. Their locations are scattered throughout the state, but most such facilities are located near urbanized areas.

NETWORK CONNECTIVITY

This section discusses the ability of the rural service providers that receive S.5311(f) funds to connect with national intercity bus services. A detailed review of each service was conducted and includes service hours, location, and its ability to connect to other services. This detailed information is included in Appendix A. A summary of existing services and their ability to connect is included in Table 3-8.

Service Areas

When considering the extent of intercity services provided throughout the state, it would seem that most of the state is blanketed by the service. However, the extent of the service area does not necessarily result in the establishment of a robust network of intercity services. Scheduling of services and, specifically, the ability of the user to make a reliable and convenient connection, play a vital role in the establishment and maintenance of a network. The opportunity for these components to function cooperatively will create an attractive intercity bus service and increase mobility.

Table 3-7: CALIFORNIA AIRPORTS

Airport	Inside 10 Miles	Between 10-25 Miles	Outside 25 Miles
Modesto City - County	x		
San Diego International	x		
San Luis Obispo County	x		
John Wayne Airport - Orange County	x		
Mc Clellan - Palomar	x		
Burbank - Glendale - Pasadena	x		
Arcata	x		
Meadows Field	x		
Bishop	x		
Jack Mc Namara Field	x		
Chico Municipal	x		
Fresno Air Terminal	x		
Hawthorne Muni	x		
Imperial County	x		
Inyokern	x		
Los Angeles International	x		
Long Beach	x		
Merced Municipal	x		
Sacramento Mather		x	
Monterey Peninsula	x		
Montgomery Field	x		
Yuba County	x		
Naf El Centro	x		
Metropolitan Oakland International	x		
Ontario International	x		
Oxnard	x		
Paso Robles Municipal	x		
Palm Springs Regional	x		
Redding Municipal	x		
Sacramento Executive	x		
Santa Barbara Muni	x		
Stockton Metropolitan	x		
San Francisco International	x		
San Jose International	x		
Sacramento Metropolitan	x		
Santa Monica Municipal	x		
Santa Maria	x		
Southern California International	x		
Visalia Municipal	x		
Van Nuys	x		

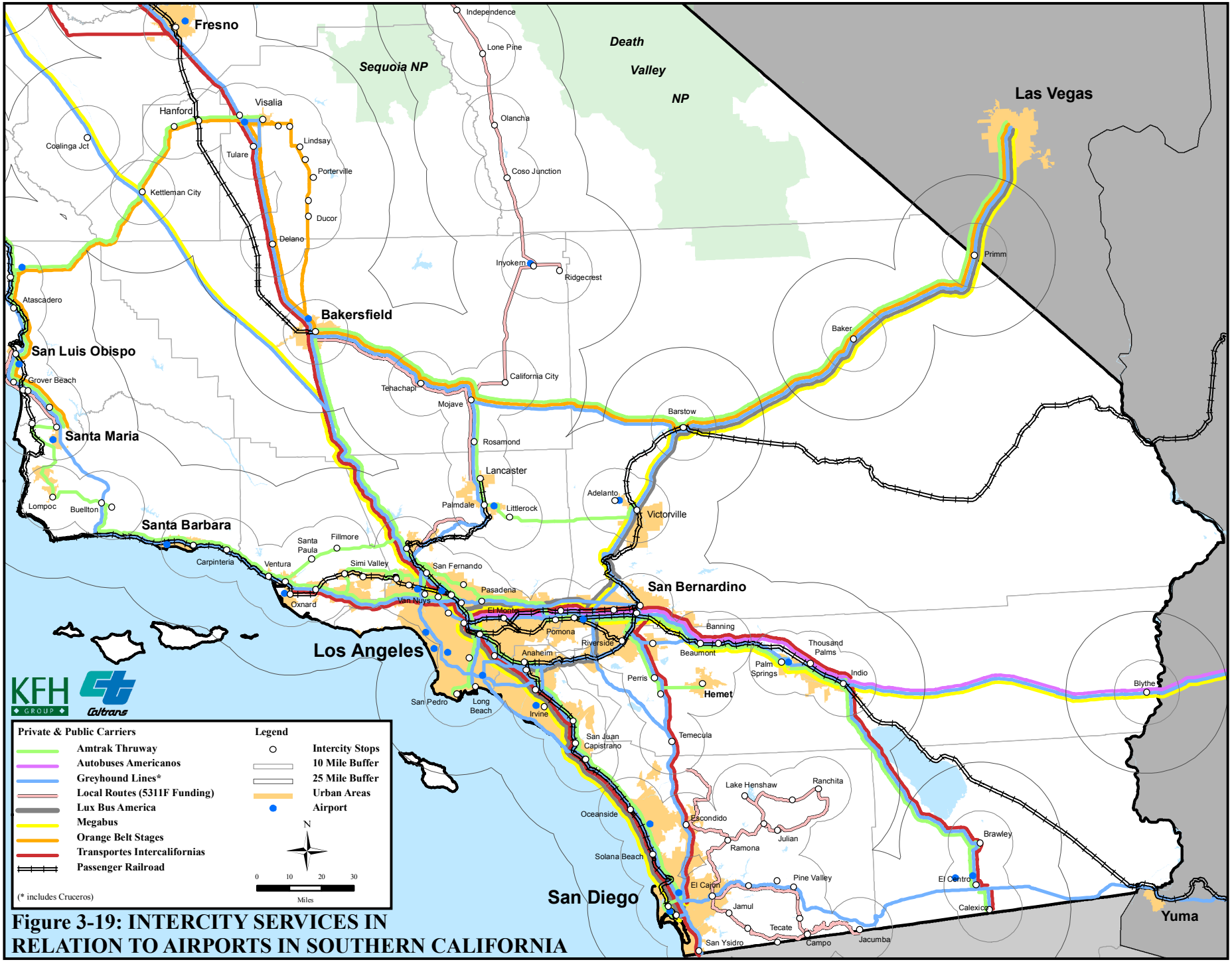

Figure 3-19: INTERCITY SERVICES IN RELATION TO AIRPORTS IN SOUTHERN CALIFORNIA

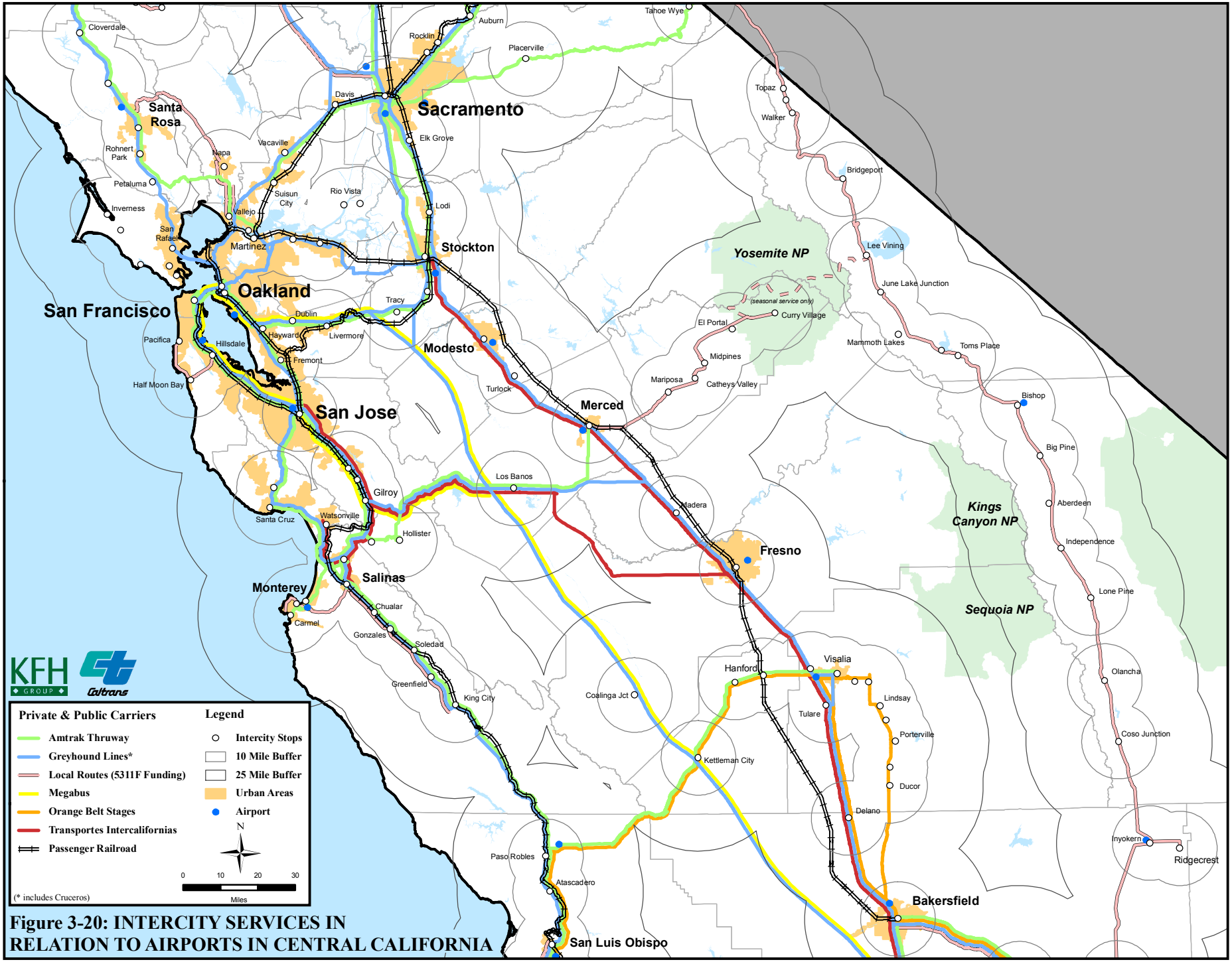

Figure 3-20: INTERCITY SERVICES IN RELATION TO AIRPORTS IN CENTRAL CALIFORNIA

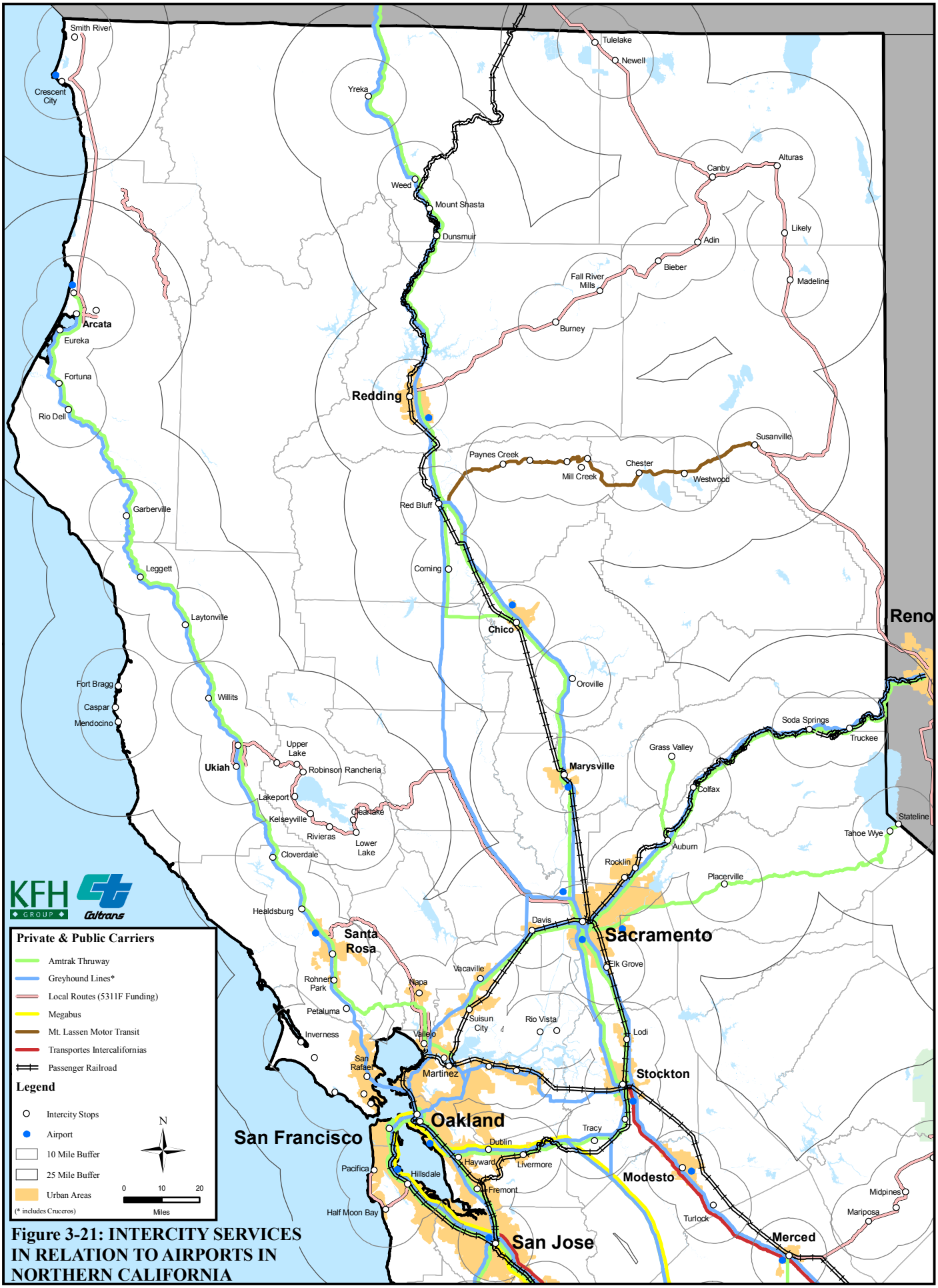

Figure 3-21: INTERCITY SERVICES IN RELATION TO AIRPORTS IN NORTHERN CALIFORNIA

Table 3-8
SUMMARY OF EXISTING SERVICES

CalTrans District	County	Transit Operator	Route	Summary of S.5311F Connectivity
1	Del Norte, Humboldt	Redwood Coast Transit Authority	Smith River to Arcata	RCTA's Smith River to Arcata System provides a workable daily connection from Del Norte County to both Greyhound and Amtrak services headed southbound toward San Francisco. These services are accessible at Arcata Transit Center. On the other hand, connecting to RCTA coming from the south poses more problems. Even coming from Amtrak Thruway Bus No. 6311, it is quite possible that one would have to stay overnight in Arcata in order to catch the RCTA bus.
1	Lake, Mendocino	Lake Transit	Routes 4 & 7	Lake Transit's Route 4 and 7 service provides residents of Lake County with a viable 6-day-a-week option to connect to both Greyhound and Amtrak service in Ukiah. Each service is a separate stop on the route. It should be noted that layover times between Lake Transit and Greyhound services are quite short, and may not always be sufficient to guarantee a connection. However, Lake Transit does provide a phone number to call if a customer's incoming Amtrak or Greyhound bus is running late.
2	Modoc, Lassen, Plumas, Washoe (NV)	Sage Stage	Alturas to Susanville to Reno, NV	This route is primarily meant to connect residents of Modoc and Lassen Counties with services in Reno, NV. There are good connections from Sage Stage inbound to Greyhound and Amtrak services leading from Reno to major populated areas in California. The Greyhound service is a scheduled stop on the route. On the outbound side, layover times from Greyhound and Amtrak to Sage Stage are fairly short. Connections might be more reliable if Sage Stage outbound service were to run 30 minutes to an hour later. In addition, it should be noted that although both this Sage Stage route and Mt. Lassen Motor Transit stop in Susanville, they are not designed to connect to one another.
2	Modoc, Lassen, Shasta	Sage Stage	Alturas to Redding	Sage Stage appears to provide very good service to Redding. This route provides connections from Modoc, Shasta, and part of Lassen County to Greyhound and Amtrak service headed north (Oregon/Washington) and south to Sacramento, the Bay Area, and Los Angeles. Greyhound and Amtrak stations are separate stops on the route made by request and for extra fare. From Redding to Alturas, there is a workable connection between Greyhound service coming from LA and Sacramento to the outbound Sage Stage. However, the connections from (1) Amtrak Thruway service arriving from the south and (2) Greyhound service coming from Oregon and Washington to the outbound Sage Stage are more marginal.

CalTrans District	County	Transit Operator	Route	Summary of S.5311F Connectivity
2	Modoc, Siskiyou, Klamath (OR)	Sage Stage	Alturas to Klamath Falls, OR	Sage Stage's service to Klamath Falls does not connect with much national intercity service. There is a good connection from the inbound Sage Stage to The Shuttle going to Medford, OR. The Shuttle connects to Greyhound in Medford with a 40-minute layover going north and a 1 hour 20 minute layover going south. Due to the scheduling of intercity services arriving in Klamath Falls, there are no good connections from these services to the Sage Stage outbound. Amtrak and Greyhound facilities are less than ¼ of a mile apart in Klamath Falls, but there is no scheduled stop at these facilities.
1	Del Norte	Yurok Tribal Government	Pecwan to Willow Creek	Proposed service would be provided along SR-96 and SR-169 and provide 2 daily roundtrips. (Caltrans DMT suggests a reduction in service). The stop in Willow Creek will connect with the Humboldt Transit Authority service into Arcata and access to intercity services.
4	San Mateo	SamTrans	Route 294	Provides 10 daily round trips between Pacifica and the Hillsdale Transit Station, with direct access to Caltrain service. This service does not provide any connections to the national intercity network. It provides residents of western San Mateo County with weekday connections to CalTrain.
4	Napa	Napa County Transportation Planning Agency	Route 11	This service provides two daily trips from Santa Rosa (downtown) to Saint Helena (Pearl Street Transit Ctr.) and two daily trips from Saint Helena to Santa Rosa. In downtown Santa Rosa, access, but no direct service, is provided to Greyhound (separate facility) and Amtrak Thruway (separate facility) services. The route traverses the Mark West Springs Rd and SR-29/SR128 corridor.
4	Napa	Napa County Transportation Planning Agency	Route 10	This service is operated hourly between St. Helena/Calistoga to Vallejo, Monday through Friday with limited weekend service. The route has a stop in the City of Napa and connects with Amtrak Thruway service. The route operates on SR-29. The stops in Vallejo directly connect with the local transit services, but no stop at the national intercity bus service. This service provides two daily trips from Santa Rosa (downtown) to Saint Helena (Pearl Street Transit Ctr.) and two daily trips from Saint Helena to Santa Rosa. In downtown Santa Rosa, access, but no direct service, is provided to Greyhound (separate facility) and Amtrak Thruway (separate facility) services. The route traverses the Mark West Springs Rd and SR-29/SR128 corridor.

5	Monterey	Monterey-Salinas Transit (MST)	Line 23: Salinas King City Express (adding 2 daily express trips) and continuing Sunday Service (Greyhound)	MST Route 23 connects communities in south Monterey County with Salinas. The main attractions it serves in Salinas are the local college and mall. As a side benefit, it also allows for a certain amount of connectivity with national intercity services that serve Salinas. Although there are also regional and national intercity services that stop in King City. MST Route 23 is not designed to connect with them. Overall, this S.5311(f) service provides ample weekend connections from Hollister to intercity services leading to and from the Bay Area, Sacramento, Fresno, and Los Angeles. However, it is notable that the scheduling of the buses makes for a large number of layovers too short to guarantee a connection, especially in the inbound direction.
6	Kern	Kern Regional Transit	East Kern Express	The route serves: Bakersfield, Tehachapi, Mojave, Rosamond, Lancaster. All except Rosamond are served by at least two intercity carriers, and Bakersfield and Mojave are served by three. However, there is no stop at a national intercity bus service, but there are direct connections with regional operators – MetroLink and Antelop Valley and a stop at the Bakersfield Amtrak Station (rail and Thruway).
6	Kern	Kern Regional Transit	Mojave Ridgecrest Express	The Mojave Ridgecrest Express connects seamlessly to the CREST Route, which travels through the Sierras in Ridgecrest on Mondays, Wednesdays and Fridays. Unfortunately, there are no direct connections to Greyhound and Orange Belt service. There is also a problem for passengers coming from national intercity services attempting to use the route. No intercity services reach Mojave before 1:00 PM, at which time it is too late to take the Mojave Ridgecrest Express run that connects with the CREST route. Therefore, passengers are compelled to spend the night in either Mojave or Ridgecrest, and take the CREST route on the next day. Although it should be noted that passengers could take the East Kern Express from Bakersfield to arrive in Mojave at 9:28 AM or 11:18 AM, this would involve a three-transfer trip from LA to the CREST route.
9, 6	Inyo, Mono, Kern	Inyo Mono Transit	CREST Route	The CREST route actually consists of two routes that run on more-or-less alternate days. The South Route runs between Ridgecrest and Mammoth Lakes, going through Bishop. The North Route runs between Bishop and Reno, going through Mammoth Lakes. The CREST Route provides a "lifeline" through the Sierras: there is no other intercity service in the region. However, there are three issues: First, CREST service requires long-distance passengers to spend the night in Bishop or Mammoth Lakes. This may work for some tourists, but not for the transit dependent population. Second, the south leg of the CREST route ends in Ridgecrest. Passengers still need to make two more transfers before they can reach a major transportation center in Bakersfield or Lancaster. Finally, the north leg of the route ends at Reno airport, where passengers need to take a taxi or local transit to reach the Greyhound or Amtrak stations. Once again, the service appears well-designed for visitors, but not for the local population.

10	Merced, Mariposa	YARTS	Highway 140 Route	There are multiple guaranteed daily connections between Amtrak and Greyhound services in Merced and YARTS Highway 120 service leading to Mariposa county and Yosemite National Park.
10	Mariposa, Mono	YARTS	Highway 120 Route	The YARTS Highway 120 service runs seasonally from Yosemite National Park to Mammoth Lakes when the Tioga Pass through the Sierras is open. Its primary purpose is to bring Mono County tourists and visitors into Yosemite National Park. There are no realistic connections to be made to and from YARTS Highway 120 service in terms of long-distance intercity bus travel. The two connections that are theoretically possible are both highly impractical. Connecting to YARTS Highway 140 service to Merced requires waiting all day at Yosemite, and connecting to CREST in Lee Vining requires spending the night at a motel.
7	Los Angeles	Los Angeles County Department of Public Works	Acton/Agua Dulce Route - Sierra Hwy	Shuttle services connecting Acton-Agua Dulce-Santa Clarita on Mondays and Wednesdays with two round trips per day, and proposed additional Saturday service. Endpoints of the route are at Acton MetroLink and Newhall MetroLink stations.
11	San Diego	North County Transit District	Route 386	Hourly service provided between Ramona (Station) – Escondido (Transit Center) along SR-78, Monday – Friday. Limited Saturday service. The Transit Center provides direct access to local transit services and Greyhound. Rail service is anticipated to begin operations in December (2007).
11	San Diego	North County Transit District	Route 388	Six inbound and six outbound trips provided between Escondido (Transit Center) and Pala along SR-76, Monday – Sunday. The Transit Center provides direct access to local transit services and Greyhound. Rail service is anticipated to begin operations in December (2007)
11	San Diego	San Diego Metropolitan Transit System (MTS)	Route 888	San Diego MTS Route 888 provides a twice-a-week connection between southeast San Diego County and the San Diego urban area. It also provides connections to Greyhound and Crucero service at the El Cajon Transit Center. The connection to Greyhound service to Phoenix and the connection from Crucero service from Calexico do involve long layovers in El Cajon, though. Nevertheless, customers can take light rail to downtown San Diego and connect to further intercity services from there.
11	San Diego	MTS	Route 894	San Diego MTS Route 894 provides three connections per day between east San Diego County and the San Diego urban area. It also provides connections to Greyhound and Crucero service at the El Cajon Transit Center. Issues are similar to those detailed for Route 888 in previous row.

11	San Diego	MTS	Routes 891 & 892	MTS Routes 891 and 892 provide a weekly connection to the San Diego urban area from northeast San Diego County. They also provide a connection to Crucero services to Calexico and El Centro at the El Cajon Transit Center. The connection to Greyhound service in El Cajon is somewhat less feasible, requiring an extremely long wait in one direction and too little time to ensure that a transfer can be made in the other. However, passengers can use light rail to connect to more services downtown.

Methodology

The parameters used in evaluating connecting services include: arrival time, departure time of connecting service, and location – whether these services share a facility or the distance between them. The measures used in determining the feasibility of the connecting service include the layover time, the amount of time between the drop-off and the departure time of the connecting service, and the distance between the connecting services. The layover time was categorized in the following manner: longer than five hours, longer than three hours, and depending on the arrival/departure time this can require an overnight stay. The distance between the services was also reviewed in order to evaluate the accessibility between services and they were categorized in the following manner: greater than .5 mile, greater than .1 mile, and less than .1 mile. The feasibility of the connection was determined taking these measures into account for each combination of arrival and departing services.

Summary

Based on this analysis of S.5311(f) connectivity with national intercity bus service, several observations were identified:

- A lack of schedule coordination between local and national operators creates long layover times.
- The limited number of trips offered by operators – low frequency – can cause extremely long layover times, particularly in the absence of schedule coordination.
- Distances between stations or stops in cities that are potential connecting points render connection very difficult to accomplish.

These findings disclose that there is potential for a much greater degree of connectivity between the S.5311f services, intercity bus service, and Amtrak (rail and Thruway Bus). In some cases, there is a complete lack of connecting services, and services would need to be rescheduled or expanded to provide meaningful connections at common stops.

In other instances there is no way for the user to obtain schedules or stop location information for connecting services. Interline ticketing through the NBTA has not existed for

any S.5311f provider, though Sage Stage (Modoc County RTPA) is in the process of joining NBTA (as a sponsored member) and developing a full Greyhound interline agreement. This will mean that Sage Stage services will be included in Greyhound's national telephone and internet information system. YARTS services are included in both Amtrak and Greyhound Schedule Information Systems, though YARTS is not an NBTA member and has a separate (non-interline fare). Other than these two providers, the S.5311f services are essentially unknown to the intercity carriers and their customers. In addition, it should be noted that there is no common source of route, schedule, or fare information for the other intercity networks – Amtrak, Greyhound, Intercalifornias, Megabus, Lux Bus, Orange Belt, etc. Thus, what appears to be a comprehensive intercity network providing a high level of statewide coverage may not be providing as much mobility as possible due to a lack of connectivity in schedules and stops, and a lack of information. Overall, this summary proves useful in identifying areas for improvements in connectivity, whether through schedule changes, serving common stations, improving information, or interline ticketing.

PERFORMANCE MEASURES AND RURAL INTERCITY SERVICE

In reviewing the Caltrans S. 5311f program one issue has been the need to develop a means of assessing projects to ensure that the limited available funds go to the more productive projects, and that projects not providing service do not continue to receive ongoing funding. This has been a principal reason for the requirement of an annual application, and previous limitations on the amount of time (the number of years) that a project could continue to win operating funding under this program. Currently, there is effectively no limitation on the number of years an operating project can receive funding, though it must compete every year in the annual grant application process.

One way that many agencies address these issues is to use performance measures to assess ongoing projects and determine whether particular projects no longer merit funding. Across the nation, under the S.5311(f) program, this has been an issue raised by a number of states that administer the program, but the actual application of performance measures to intercity routes has been limited.

The Pennsylvania Intercity Bus program has used a farebox recovery measure to eliminate the least productive projects, freeing up funding for new projects with potentially higher levels of funding. Currently, intercity bus projects with a farebox recovery below 40% are dropped to the bottom of the funding list, and they are funded only if there is available funding after all projects above that level are funded. The farebox recovery level threshold has varied through the years in the Pennsylvania program, but is related more to the fact that most of the projects are provided by private for-profit intercity firms who are seeking funding to maintain services that have fallen below profitability thresholds. They charge standard intercity bus fares, which are distance related and tend to be higher than those charged by public transit operators. In the past North Carolina and Minnesota have both looked at the net cost per passenger trip on a service as a measure used in deciding whether to continue funding, though the thresholds used varied with particular budget concerns at the time. In North Carolina one benchmark discussed was the use of the net cost per passenger on state-funded intercity passenger rail services.

In California the discussion about using performance measures to rank projects has focused on the issue of whether or not the use of performance measures would effectively eliminate rural intercity service to frontier areas, as such services tend to have low ridership (related to low populations and small towns in the most rural areas), and the high expenses associated with long trips to regional centers and connecting intercity bus services. However, it may be possible to develop some measures that account for these differences.

First, the study team gathered some basic operating data about the current services. Table 3-9 presents basic operating data for most of the California Section 5311(f) projects that are currently in operation. The intention of the data collection is that these are route or service level figures, not applications of system-wide data. The only performance measure collected by the study team was the farebox recovery ratio, which is watched carefully by California operators because of the 10 percent recovery for rural services mandated by the TDA. One thing immediately apparent is that farebox recovery in some of the most rural settings, with long routes, may still be well above TDA thresholds. The CREST route, which does have tourism ridership as well as serving local needs, has a year round recovery of 28 percent, and Alturas-Reno on Sage Stage does 20.5 percent.

The policy question regarding the impact of the use of performance data on rural frontier services may not be as much of an issue as thought, because it appears that the lower costs, appropriate service levels, and appropriate fare policy of many of these routes can result in farebox recovery rates comparable to higher frequency, higher cost, and lower fare services operated by transit providers in more urban areas.

However, one suggestion for a new measure could also provide a means of comparing these different services. This would involve a measure similar in concept to farebox recovery, but one typically used in the private sector intercity bus industry (actually all intercity modes—including the airlines). The measure is Load Factor, defined as passenger-miles divided by seat-miles. This would reflect utilization of the capacity provided, rather than fare policy, but it would require additional data collection by some operators, and some additional analysis. Passenger-mile data is already collected by route under NTD requirements for S. 5307, but rural operators would have to collect data (potentially sample data) on the rural intercity routes. Also operators would have to calculate the seat-miles provided on the route. This is simply the seating capacity of the vehicle times the annual miles operated.

As an example, consider a potential rural intercity route from Needles, CA to San Bernardino, a distance of 213 miles, according to MapQuest. If the project utilized a 15-passenger van, and operated three days per week, it would produce 66,456 vehicle-miles per year, and 996,840 seat-miles (15 seats times the vehicle-miles). If, on average, it carried eight passengers each way, this would be reflected in annual ridership of 2,496 passenger trips. For simplicity sake, we will assume that all passengers rode the entire distance, so the passenger-miles produced by each passenger-trip came to 213 (one-way). The passenger-miles of the project would be 531,648 (213 passenger-miles/passenger times 2,496 passenger trips). The Load Factor would be .53 (531,648 passenger-miles divided by 996,840 seat-miles).

Table 3-9: PERFORMANCE OF CURRENT S.5311(F) PROJECTS

Agency	5311(f) Route	Total Passengers	Revenue Miles	Revenue Hours	Total Operating Costs	Farebox Recovery Ratio	
Redwood Coast Transit Authority	Arcata-Smith River	12,847	138,576	4605	$ 193,673.00	54.90%	
Inyo-Mono Transit	Crest Route	4,467	106,812	2660	$ 313,451.00	28.06%	
Kern Regional Transit	East Kern Express	63,974	403,989	10640	$ 643,720.00	18.56%	
	Mojave Ridgecrest	7,907	75,654	1850	$ 111,940.13	12.69%	
San Benito County Local Transportation Authority - County Express	Intercounty - Greyhound	3,075	28,286	982	$ 49,683.45	9.42%	
Marin Transit	South Route 61	14,022	65,956	3,701	$178,565	9.3%	
	Coastal Route 62 (new route implemented 4/1/07)	542	7,256	332	$16,472	4.5%	
	North Route 68	16,491	66,539	3,756	$185,306	10.4%	
San Diego Metropolitan Transit System	888	6,453	74,505	2,348	207,669	8.0%	(1)
	891	1,000	19,697	675	54,902	4.7%	(1)
	892	939	17,206	594	47,959	5.0%	(1)
	894	25,527	132,169	4,523	368,398	17.8%	(1)
	867	5,572	69,803	2,647	194,563	7.3%	(2)
	889	2,052	34,581	1,564	96,388	5.5%	(3)
	891A	108	2,686	87	7,487	3.7%	(3)
	892A	125	3,917	118	10,918	2.9%	(3)
	893	133	4,164	132	11,606	2.9%	(3)
Monterey Salinas Transit	Line 23 Salinas-King City	79,868	213,771	7496:37:00	$705,688		(4)
	Line 53 South County-Monterey Peninsula Express	3,320	44,397	1417:14:00	$130,861		
San Luis Obispo RTA	RTA Route 10	104,547	230,067	8,482.32	$746,967	14.90%	
Lake Transit	Route 7 - Lakeport-Ukiah	8,406	114,038	3,873	$182,108	7.4%	
	Route 4 - Clearlake Extension	4,193	17,023	559	$26,284	13.0%	
Napa County Transportation Planning Agency	Vine Route 11 - St. Helena, Calistoga, Santa Rosa FY 06/07	2751		2097	158,025	5%	
	Vine Route 11 - St. Helena, Calistoga, Santa Rosa FY 05/06	2610			165,858	4%	
	Vine Route 11 - St. Helena, Calistoga, Santa Rosa April - June, 2005	445		423.53	77325	1%	
YARTS	Hwy 140	59,469	238,570	7282	819,111	26.35	(5)
	Hwy120E/395	1954	49930	669	75,568		
Sam Trans	Route 294	106,535.00	156,268.00	5,156.73	$ 565,183	21.30%	
Modoc Transportation Agency / Sage Stage	Alturas - Susanville - Reno	1,696	63,083.2	1,812.0	$ 123,378.11	20.5%	
	Alturas - Burney - Redding	761	30,007.0	909.8	58,689.70	15.9%	
	Alturas - Tulelake - Klamath Falls	1,077	21,475.0	662.0	26,791.91	29.8%	
Blue Lake Rancheria of California	Blue Lake Rancheria to Blue Lake to Arcata						

(1) Service adjusted in January 2006.
(2) Discounted in January 2006. Alignment folded into extended 891 and 892
(3) Discontinued in January 2006.
(4) Please note that ridership, vmiles and vhours data for September of 2005 were missing due to a technical problem with the Siemens TransitMaster system, on which these metrics are tracked
(5) Farebox ratio is a combination of both routes

For comparison, one might imagine a hypothetical route in a denser part of the state. Suppose the route is 50 miles one-way, and the service operates six round-trips per day, all year, using a 35 seat bus. The service would produce 219,000 vehicle miles, and 7,665,000 seat-miles. Suppose that the bus makes intermediate stops at a number of points, and that the NTD data reveals that the average passenger trip length is 30 miles. If annual passenger boardings are 100,000, the annual passenger-mile total is 3,000,000, and the Load Factor would be 3,000,000 divided by 7,665,000, or .39.

In this case the service from Needles might well be ranked higher on this measure, given that it has a Load Factor of .54 as compared to the .39 on the other service, despite the much high number of riders on the service in the higher density area.

This measure could possibly be combined with farebox recovery and net cost per trip to evaluate rural intercity services with regard to potential continuation. Estimated ridership and project parameters (number of trips, route length, and vehicle size) could be used to project these measures for new projects. Projects that are scaled well to the actual or potential demand, that have appropriate fare structures, and that reflect utilization of the capacity provided would do well, while services that carry few riders in relation to the costs incurred would not—projects