

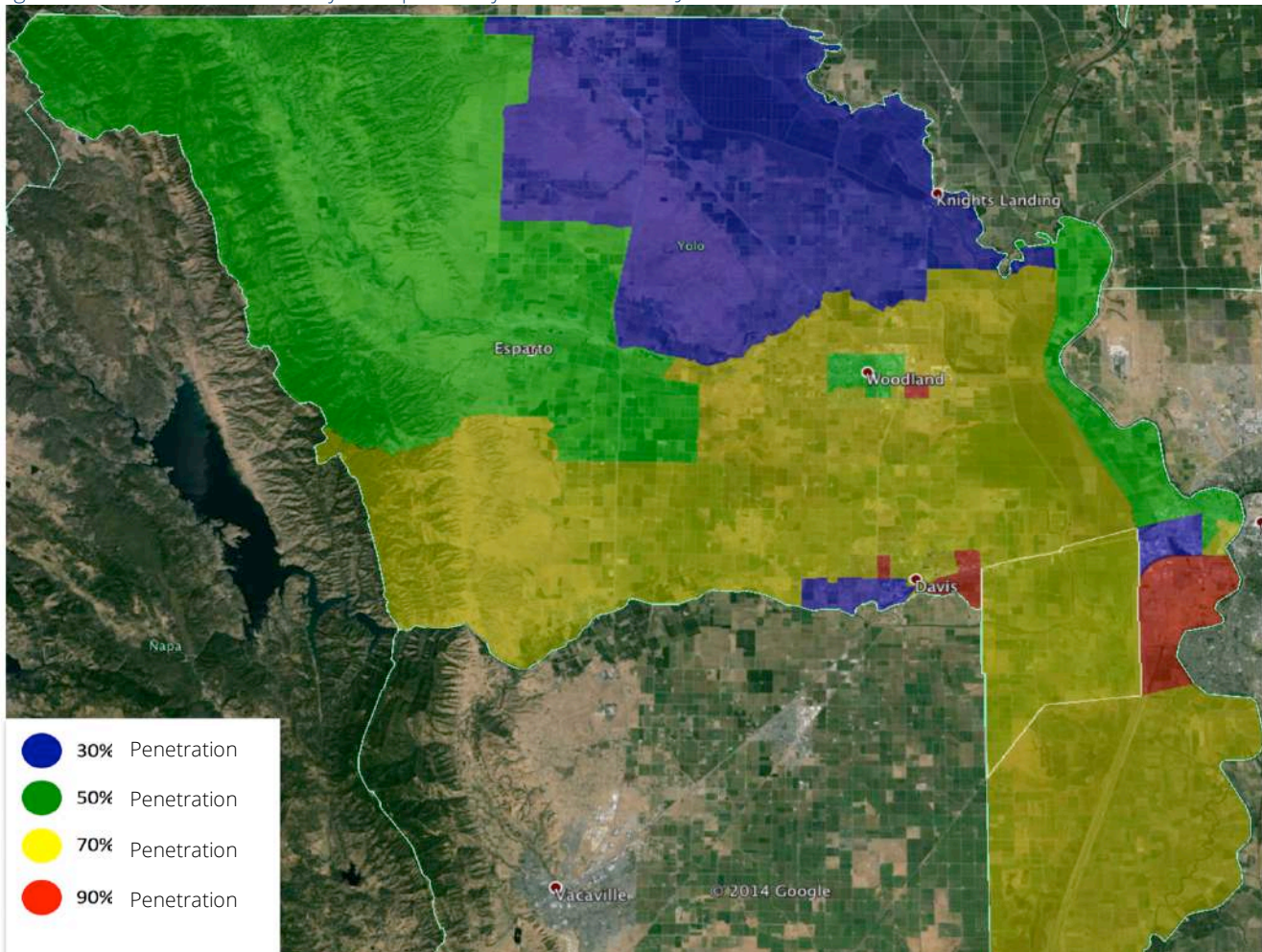
### 3. Current Broadband Conditions in Yolo

#### A. Broadband Penetration & Availability in Yolo

##### Broadband Penetration in Yolo Per FCC Data

Figure 3.1 illustrates the most recent residential broadband penetration data, as reported in FCC Form 477 by providers that serve Yolo County. Data is reported per census tract for every census tract in the County. Census tracts are shaded below to illustrate the average broadband penetration. Penetration means that amount of residential households that have subscribed to a wireline broadband service such as cable or DSL Internet service. Tracts shaded in blue exhibit 30% average penetration, tracts shaded in green exhibit 50% average penetration, census tracts in yellow exhibit 70% average penetration and census tracts in red exhibit 90% average penetration. Cities exhibit significantly higher broadband penetration whereas rural areas exhibit lower rates. The predominant reason why broadband penetration is lower in rural census tracts is due to a lack of broadband availability in these areas. The FCC data reports actual broadband lines connected, not availability of broadband services.

Figure 3.1: Broadband Availability As Reported by FCC Form 477 – June 2013 Data Set



High (90% average) broadband penetration is found in portions of the urbanized areas of Woodland, West Sacramento and Davis, which exhibit the greatest population centers and the most density in the County. Census tracts that cover rural portions of the County maintain significantly lower penetration, particularly those in the Northern portion of the County covering the Capay Valley, Esparto, Dunnigan, Knight’s Landing and Yolo. In cases where few or no households exist within a census tract, these tracts will exhibit low penetration. For example, pockets of low penetration occur in urbanized census tracts within Davis and West Sacramento (shown in Blue and centrally located in these Cities), due to the fact that these tracts contain mainly commercial parcels and few households.

Magellan calculates the actual users subscribing to broadband in these communities by multiplying the average availability in each census tract by the occupied households data provided by the 2010 census via American FactFinder. This data provides an indication of the total number of residential households served by wireline broadband such as cable or DSL in each census tract and in unincorporated Yolo. Based on this data, 66.8% of Yolo households subscribe to a wireline broadband service. Figure 3.2 illustrates these results broken down by City and unincorporated Yolo.

Figure 3.2: Households Subscribing to Wireline Broadband in Yolo Communities

Community	Households with Broadband	Wireline Broadband Penetration
Davis	18,375	77.3%
West Sacramento	10,233	64.2%
Winters	1,464	56.2%
Woodland	12,609	61.9%
Yolo County (Unincorporated)	4,003	55.9%
Countywide	46,684	66.8%

### Broadband Availability in Yolo Per CPUC Data

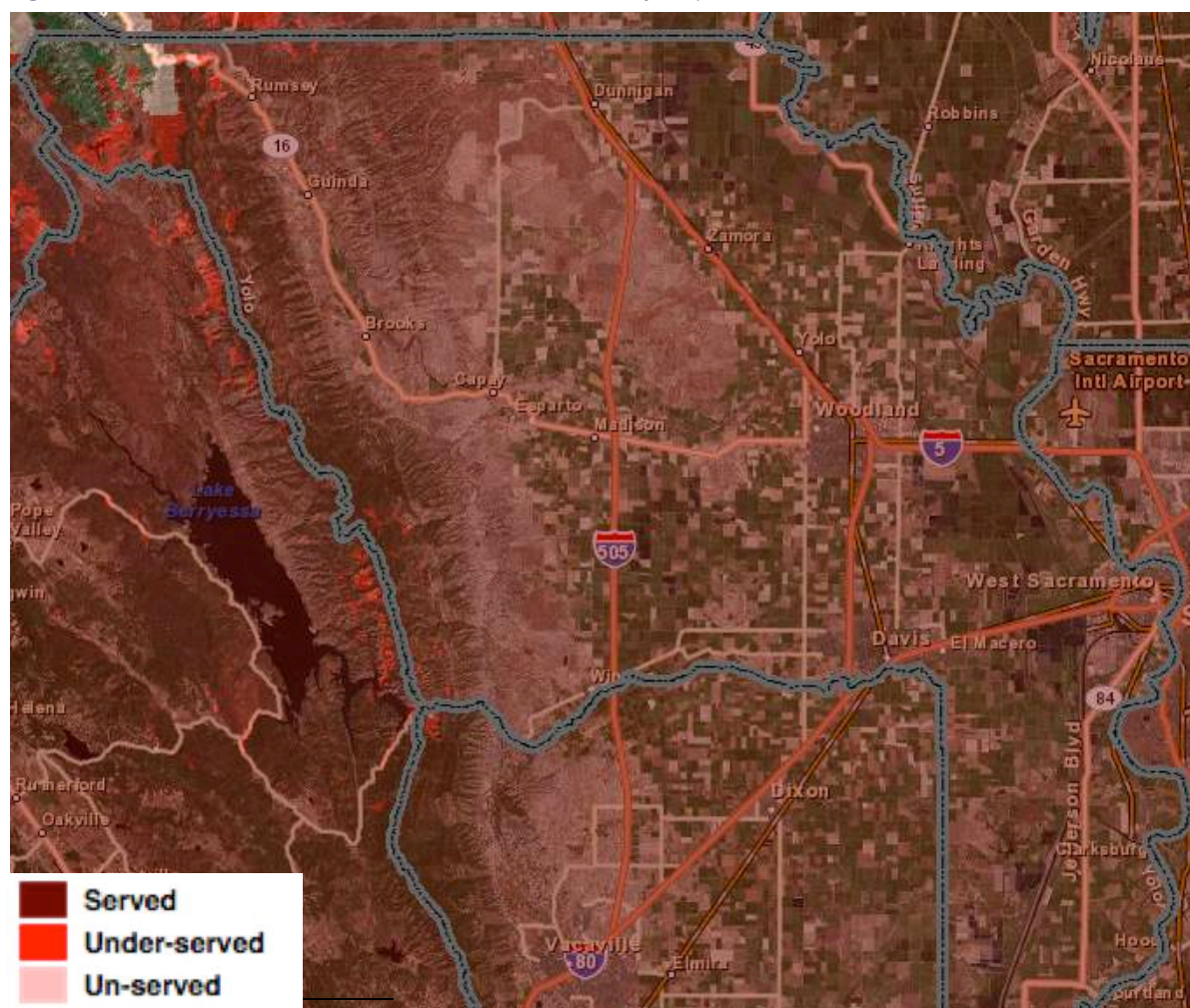
Current CPUC maps provide availability, services and provider information across Yolo County. The most current report released by the CPUC entitled “State of California Fixed Broadband Availability”<sup>8</sup> dated June 16, 2014 states that 100% of Yolo County’s households have access to broadband services of at least 6 Meg download and 1.5 Meg upload. The report lists a total of 70,699 of 70,716 households for which this speed of broadband is available.

On closer inspection of the data, it is important to analyze the actual services that exist in Yolo to which households have access and a “real-world” sense of the availability of broadband in Yolo. The 100% availability reported by the CPUC includes both wireline and fixed wireless broadband services. An area (census block) is considered served if at least 1 provider with either of these technologies serves the area. Wireline broadband services include such technologies as DSL, cable and fiber-optic services. In

<sup>8</sup> <ftp://ftp.cpuc.ca.gov/telco/BB%20Mapping/Round%209/R9%20Dec%202013%20Availability%20by%20County-Alphabetical.pdf>

Yolo, DSL and cable technologies were found to be available to households in the majority of the county. No Fiber To The Home (“FTTH”) services were found in Yolo County. Although many of the service providers’ networks employ fiber-optic services to interconnect their service areas to one another, no fiber-optic services extend directly to individual homes. Fixed-wireless broadband services include both licensed<sup>9</sup> and unlicensed<sup>10</sup> wireless broadband that can be delivered to households. When comparing the CPUC’s availability maps for wireline and wireless services, a significant discrepancy was found between the two. The wireline broadband maps illustrated coverage for a significantly lower percentage of total households whereas the fixed wireless broadband maps illustrated wireless coverage for 100% of Yolo. In reviewing broadband availability map for Yolo, as shown in Figure 3.3, 100% availability is shown in by red shaded area across nearly the entire county, except for the northeast corner, east of Rumsey, there is a lack of coverage. This would indicate that every household in Yolo is served by either a wireline broadband technology or a fixed wireless broadband technology, capable of providing 6 Meg download and 1.5 Meg upload.

Figure 3.3: Yolo Wireline and Wireless Broadband Availability Map

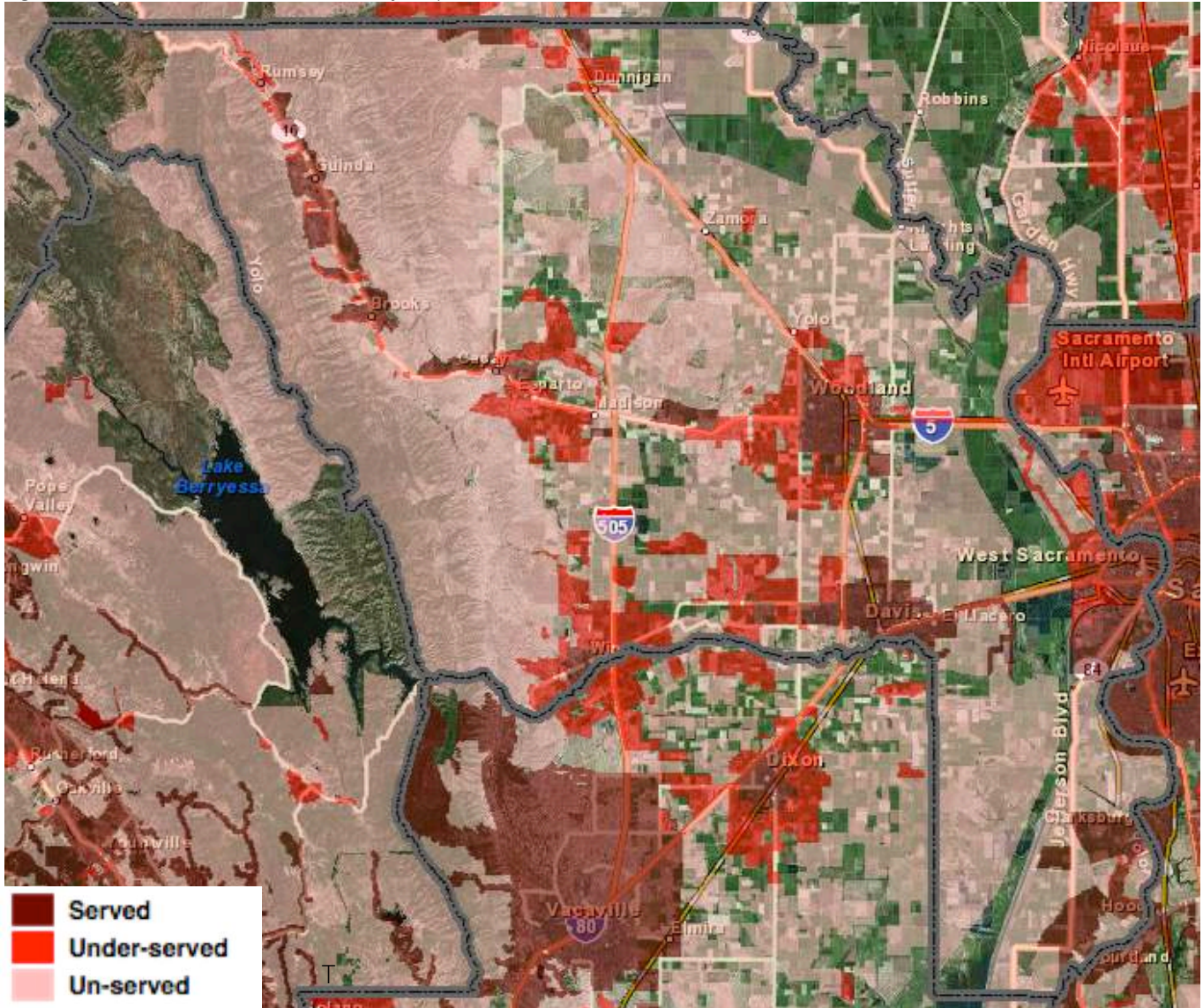


<sup>9</sup> In the US, licensed fixed wireless connections use a private [spectrum](#) the user has secured rights to from the [Federal Communications Commission](#) (FCC).

<sup>10</sup> In the US, unlicensed fixed wireless connections utilized shared public spectrum for communications which may result in interference within the wireless signal when multiple unlicensed wireless connections exist in an area.

However, when reviewing only the wireline broadband availability map for Yolo, the availability is significantly less, as shown in Figure 3.4 below. Areas in pink and bright red illustrate unserved and underserved regions of the county while areas in dark red illustrate served areas of the county.

Figure 3.4: Wireline Broadband Availability Map



The source of the discrepancy results from two fixed wireless providers reporting significant coverage in the county. Internet Free Planet claims to covers 99% of all households in Yolo County. RuralNet Wireless, LLC claimed that they did not provide services in Yolo County. Internet Free Planet was contacted but did not provide a response. Digital Path, Inc. also claims to provide wireless services in certain areas of Yolo County, namely Dunnigan, Knight’s Landing, and Yolo. Based on the information gained on these providers, Yolo County should not be considered to have 100% broadband availability and RuralNet Wireless, LLC and Internet Free Planet should be removed from the list of available

providers that cover Yolo County until it can be determined that they adequately provide service in the area.

Yolo must also ensure that the broadband speeds reported by providers to the CPUC are in fact what residents receive in Yolo's communities. Accurately estimating and tracking broadband speeds is a significant challenge because of the various factors that affect the speed of the broadband service. Providers reporting the download and upload speeds associated with their broadband services often utilize the "Maximum Advertised Speed," which is the top speed that a subscriber in a pre-defined service area can expect to receive. In most broadband networks, including DSL and Cable, these speeds are rarely achieved for a variety of factors, which include:

- Specific type and condition of the network
- Distance from the telecom central office or cable headend
- Number of concurrent users utilizing the service simultaneously
- Amount of traffic being transmitted over the network

Subscribers routinely experience significantly lower speeds from those advertised; this is especially true with DSL and cable Internet services. However, actual speeds should somewhat correspond to those reported by broadband providers to the CPUC. This Plan has utilized broadband speed testing to gain understanding of the actual broadband speeds that residents and businesses in Yolo experience. The speed testing provides insight into the types of services that residents and businesses subscribe to in Yolo compared with the actual speeds that they receive.