Broadband Analysis and Planning

Broadband Consortium of the Pacific Coast

Update

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1. Commercial/industrial infrastructure ratings

1.1. Revisions

Using additional information provided by the Cities of Buellton, Goleta, Santa Barbara and Solvang, a second run was made of the commercial/industrial infrastructure ratings contained in the 11 April Broadband Analysis and Planning Final Report, prepared for the Broadband Consortium of the Pacific Coast. This second run also incorporated some minor updates and corrections to the underlying broadband infrastructure database and a refinement of the algorithm used to calculate the first set of ratings.

The aggregate Star ratings for the previously analysed cities did not change, although there were minor shifts in the ratings for 80 census blocks (out of 3,785 total) scattered throughout the region. These changes are due in part to the updates and corrections to the underlying database, and in part to an updated and simplified algorithm used to calculate the ratings for individual blocks. After reviewing the initial algorithm, the revisions were made to ensure that all the data was properly processed. A comparison of the relative handful of discrepancies showed that the simplified method accurately captured all of the relevant data. The revisions made also resulted in the inclusion of additional census blocks that were left out of the first analysis.

Table 1.1 - Top commercial/industrial broadband infrastructure cities

		Star Rating	
#1	San Luis Obispo	★★	2.0
#2	Camarillo	★⯪	1.5
#3	Thousand Oaks	★⯪	1.5

The rating criteria, described below, was reviewed but was not changed, except that references to "advanced copper technologies" were removed. As with the first run, there was no usable data indicating where such technologies are deployed.

Information was provided regarding various other technologies and methods that are being used to deliver high speed service in the region, including the use of multiple, standard copper lines leased from AT&T. This type of service fills very important needs for the business community, but it is a way of coping with the limitations of conventional, telephone company-provided copper lines rather than being advanced infrastructure itself.

One commenter on the first report stated that service based on the G.Fast standard was available in some locations, but did not provide specific locations or service levels. G.Fast is a new standard that could be considered as an advanced copper technology, but without knowing the characteristics of the equipment and underlying infrastructure employed is not possible to determine if a particular deployment performs as such or if it is simply another workaround for boosting the performance of conventional infrastructure.

Another commenter stated that there were plans to deploy DOCSIS 3.1 based technology next year. DOCSIS 3.1 is another standard for copper-based systems that might be considered as an advanced

technology. Since it has not yet been deployed, it cannot be included in the current ratings. Future updates might include such systems if adequate information is available regarding service locations and the underlying copper and fiber infrastructure.

Two of the four cities added to the ratings – Buellton and Solvang – received a rating of No Stars. This result is consistent with nearby cities and unincorporated communities. Goleta and the City of Santa Barbara received a rating of 0.5 Stars, which were the highest ratings of any in Santa Barbara County. An examination of long distance and/or metropolitan fiber routes in those two cities indicates that these ratings could be significantly improved if better information about the availability of service on those networks was provided by the companies involved, particularly Crown Castle.

The first set of ratings was described as a "Beta" version. With the refinements in the methodology and the consistency of results, this version is at the "GA" or general availability level. Future changes in ratings should only reflect changes in either the underlying infrastructure or better information regarding it.

1.2. Community ratings

San Luis Obispo County	Stars
Arroyo Grande city	0.0
Atascadero city	0.0
Avilla Beach CDP	0.0
Callender CDP	0.0
Cambria CDP	0.0
Cayucos CDP	0.0
Creston CDP	0.0
El Paso de Robles (Paso Robles) city	0.0
Lake Nacimiento CDP	0.0
Los Osos CDP	0.0
Nipomo CDP	0.0
Oceano CDP	0.0
San Luis Obispo city	2.0
San Miguel CDP	0.0
San Simeon CDP	0.0
Santa Margarita CDP	0.0
Shandon CDP	0.0
Templeton CDP	0.0
Woodlands CDP	0.0
Rest of San Luis Obispo County	0.5

Santa Barbara County	Stars
Buellton city	0.0
Carpinteria city	0.0
Casmalia CDP	0.0
Cuyama CDP	0.0
Goleta city	0.5
Isla Vista CDP	0.0
Lompoc city	0.0
Los Alamos CDP	0.0
Los Olivos CDP	0.0
Mission Hills CDP	0.0
Montecito CDP	0.0
New Cuyama CDP	0.0
Orcutt CDP	0.0
Santa Barbara city	0.5
Santa Maria city	0.0
Santa Ynez CDP	0.0
Solvang city	0.0
Summerland CDP	0.0
Toro Canyon CDP	0.0
Vandenberg Village CDP	0.0
Rest of Santa Barbara County	0.0

Ventura County	Stars
Camarillo city	1.5
Channel Islands Beach CDP	0.0
El Rio CDP	2.0
Fillmore city	0.0
Mira Monte CDP	0.5
Moorpark city	0.5
Oak View CDP	0.0
Ojai city	0.5
Oxnard city	1.0
Piru CDP	0.0
Port Hueneme city	1.0
San Buenaventura (Ventura) city	0.0
Santa Paula city	0.0
Santa Susana CDP	0.5
Saticoy CDP	0.0
Simi Valley city	0.5
Thousand Oaks city	1.5
Rest of Ventura County	0.0

Ratings cross tab by community

San Luis Obispo County	No Stars	1 Star	2 Stars	3 Stars	4 Stars	5 Stars
Arroyo Grande city	62					
Atascadero city	71	1				
Avilla Beach CDP	5					
Callender CDP	5					
Cambria CDP	16					
Cayucos CDP	7					
Creston CDP	3					
El Paso de Robles (Paso Robles) city	55	1				
Lake Nacimiento CDP	5					
Los Osos CDP	11		1			
Nipomo CDP	16					
Oceano CDP	29					
San Luis Obispo city	64			138		
San Miguel CDP	9					
San Simeon CDP	3					
Santa Margarita CDP	6					
Shandon CDP	13					
Templeton CDP	18					
Woodlands CDP	2					
Rest of San Luis Obispo County	22			4		
San Luis Obispo County	**423**	**2**	**1**	**142**		

Santa Barbara County	No Stars	1 Star	2 Stars	3 Stars	4 Stars	5 Stars
Buellton city	40					
Carpinteria city	26		2			
Casmalia CDP	1					
Cuyama CDP	3					
Garey CDP	1					
Goleta city	78		15			
Isla Vista CDP	3					
Lompoc city	111		1			
Los Alamos CDP	13					
Los Olivos CDP	11					
Mission Hills CDP	1					
Montecito CDP	3					
New Cuyama CDP	2					
Orcutt CDP	29		3			
Santa Barbara city	167		26	1		
Santa Maria city	179	8	16			
Santa Ynez CDP	9					
Solvang city	37					
Summerland CDP	10					
Toro Canyon CDP	1					
Vandenberg Village CDP	1					
Rest of Santa Barbara County	64					
Santa Barbara County	**790**	**8**	**63**	**1**		

Ventura County	No Stars	1 Star	2 Stars	3 Stars	4 Stars	5 Stars
Bell Canyon CDP		1				
Camarillo city	15	12	77	1	4	
Channel Islands Beach CDP	9					
El Rio CDP	1		13			
Fillmore city	63					
Meiners Oaks CDP	6	11				
Mira Monte CDP	4	7				
Moorpark city	18	30		2		
Oak Park CDP		3				
Oak View CDP	10					
Ojai city	22	32				
Oxnard city	157	21	226	1		
Piru CDP	14					
Port Hueneme city	8		12			
San Buenaventura (Ventura) city	342	62	5			
Santa Paula city	91					
Santa Susana CDP	3	2				
Saticoy CDP	16					
Simi Valley city	56	91	4	4		
Thousand Oaks city	27	1	117		2	
Rest of Ventura County	74	3	5			
Ventura County	**936**	**276**	**459**	**8**	**6**	

1.3. Methodology

The purpose of the commercial/industrial broadband infrastructure rating system is to assess the availability of business-focused facilities and service within commercially and industrially zoned areas of cities and counties. The infrastructure grading system (see above) assesses primary broadband infrastructure, which is owned by incumbent telephone and cable companies, and supports retail voice, television and/or broadband service for both residential and business customers. However, when deciding whether to locate or remain in an area, businesses often assess the availability of commercial and industrial grade broadband facilities, in addition to the consumer grade services provided by primary carriers.

Commercial and industrial grade service may be provided both by primary carriers and by independent telecommunications companies. This type of service is broken down into four categories:

Commercial grade commodity Internet service delivered via primary infrastructure (i.e., telephone or cable systems) offered on standard terms and resembling, to one degree or another, the retail service offered to residences. Sometimes referred to as "business class" packages, these services are typically more expensive than residential service and may meet higher quality of service standards, but generally deliver similar upload and download speeds.

Enhanced commercial grade broadband service delivered via fiber to the premise. This service might be offered on a commodity basis, with fixed terms and rates, or on an individually negotiated and provisioned basis. For the purposes of this analysis, this type of service is referred to as "megabit-class fiber" service and defined as any fiber-based (or advanced copper-based) service that supports a minimum *upload* speed of 10 Mbps. This service may included standard Internet access at the minimum speed or better, or simply be a "lit" service (i.e.,i.e., Layer 2) that provides a high bandwidth connection between two points without necessarily connecting to the Internet.

Industrial grade broadband service delivered via fiber to the premise technology. Referred to as "gigabit class" service for the purpose of this analysis, this category of service is similar to megabit class fiber service, but provides symmetrical connections at a minimum speed of 1 Gbps.

Dark fiber. This type of service involves only the rental of fiber optic strands between two points. The customer takes responsibility for providing the electronics (i.e., "lighting" it) and any other connectivity or provisioning that might be required, for example Internet bandwidth. The primary difference between dark fiber service and the three types of "lit" services is that customers pay a flat rate for the lease of the fiber and then determine how much bandwidth is used, based on equipment and related services that they purchase separately. A pair of dark fiber strands can typically support bi-directional speeds well above the 10 Terabit per second range, if desired.

The system for rating the infrastructure available in a given location is as follows:

Zero stars: no fiber-to-the-premise infrastructure is present and the primary infrastructure grade is "F" or "D", indicating that there is either no business class service available at all or there is only one primary carrier offering service of any kind.

1 Star: either business class service is available from a primary carrier and a second primary carrier offers service that meets CPUC minimum standards (i.e., a primary infrastructure grade of at least "C"), or megabit class service is available and the primary infrastructure grade is "D".

2 Stars: either the primary infrastructure grade is at least a "C" and megabit class service is available, or the primary infrastructure grade is at least a "D" and gigabit class service is available.

3 Stars: either the primary infrastructure grade is at least a "C" and gigabit class service is available, or the primary infrastructure grade is at least a "D" and both megabit and gigabit class service is available.

4 Stars: the primary infrastructure grade is at least a "C" and both megabit and gigabit class service is available.

5 Stars: meets the criteria for 4 Stars and open access dark fiber is available on standardised and published terms.

This rating system is based on the principle that the greater the range and variety of competitive services that are available in a given location, the greater its attractiveness to a greater range of businesses, and therefore the greater its value as commercial real estate.

For the purposes of this analysis, a location is defined as a census block or partial census block that is contained within an area zoned for commercial or industrial use. Census blocks are used to define boundaries because broadband availability data is reported on a census block level. Although not all parcels within a census block necessarily have access to all of the services as reported, the basic infrastructure to provide such service is present.

A Star rating is given to each location (i.e., full or partial census block in a commercial or industrial zone) and represented on a map. Aggregate community ratings are calculated by averaging the Star Ratings for census blocks that have a centroid within a commercial and/or industrial zone in cities and census designated places, and rounding to the nearest half Star.

Because census block and zone boundaries do not coincide, many census blocks are incidentally touched by a commercial and/or industrial zone. Using only those census blocks with a centroid inside of commercial and/or industrial zone reduces the noise level of the data and provides a clearer analysis of the available broadband infrastructure within those zones. For visual representation purposes, any portion of a census block that falls outside of a commercial and/or industrial zone is "clipped" out of the picture, producing a complete picture.