



NECCC and UCCC

Concept Design Plan for the

# Northern California Regional Middle-Mile Infrastructure (NCRMMI)

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Infrastructure Design  
Implementation Plan

September 10, 2012

Version 2.0

# Concept Design Plan: Northern California Regional Middle-Mile Infrastructure

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## I. INTRODUCTION

### A. Why is the Northern California Regional Middle-Mile Infrastructure (NCRMMI) Needed?

The 16 rural counties in Northern California (Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Siskiyou, Sonoma Tehama, Trinity, and Yolo) encompass nearly 27 percent of the state's geography, and over 1.634 million Californians live in this region. There are 54 Incorporated Communities and 262 Census Designated Places. See **Appendix A, Table 1.0** for more demographics.

These 16 counties still lack a comprehensive, integrated, open-access, middle-mile broadband infrastructure to meet their current needs let alone their future needs. Furthermore, none of the counties has a comprehensive countywide backbone system infrastructure in place that can effectively link the last-mile community providers who serve end users to the worldwide information resources so vital in the 21st century. In If the foregoing were not already cause for concern, the currently insufficient service provided to many communities across Northern California utilizes aged copper cable, discontinued equipment, and old linear non-diverse microwave radio routes.

Consequently, these counties comprise a very large and significant pocket of unserved and underserved communities, enterprises, and citizens – and significant barriers exist to serving them. **Figure 1.0** depicts the unserved and underserved areas across the 16 counties.

For example, the telecommunications industry faces many challenges including regulatory uncertainty and migration from traditional voice services, as well as a need to expand and increase broadband to unserved and underserved areas. Nielsen's Law of Internet bandwidth, originally tested in 1998, is still outpacing predictions nearly 14 years later. At this current pace, user broadband speeds will surpass 100 Mbps by 2015.

Finally, the telecommunications companies that currently serve various communities within Northern California face even have more risk than their more urban counterparts because they serve a distributed population over a wide geography with vast areas of rugged terrain. Thus, these companies must work harder to serve fewer people, in most instances they do not enjoy the same return on investment that large urban-based companies do. Thus, reliance on simple market forces to serve such communities in California will result in a very large number of un- and underserved citizens.

### B. What are the Goals for the NCRMMI?








The Northern California Regional Middle-Mile Infrastructure Project (NCRMMI) is designed to provide a robust network infrastructure across these 16 counties that will meet current broadband needs as well as provide growth capacity for the next 20 to 30 years. This infrastructure will bring next-generation services that will promote: 1) economic growth of businesses and industry; 2) enhanced educational services; 3) access to increased library services and resources; 4) improved access to quality healthcare; 5) interoperability of public safety services; 6) online access to all levels of government services; and 7) provide each citizen the opportunity to avail themselves of the wide range of information resources and services they deem appropriate to improve their quality of life.



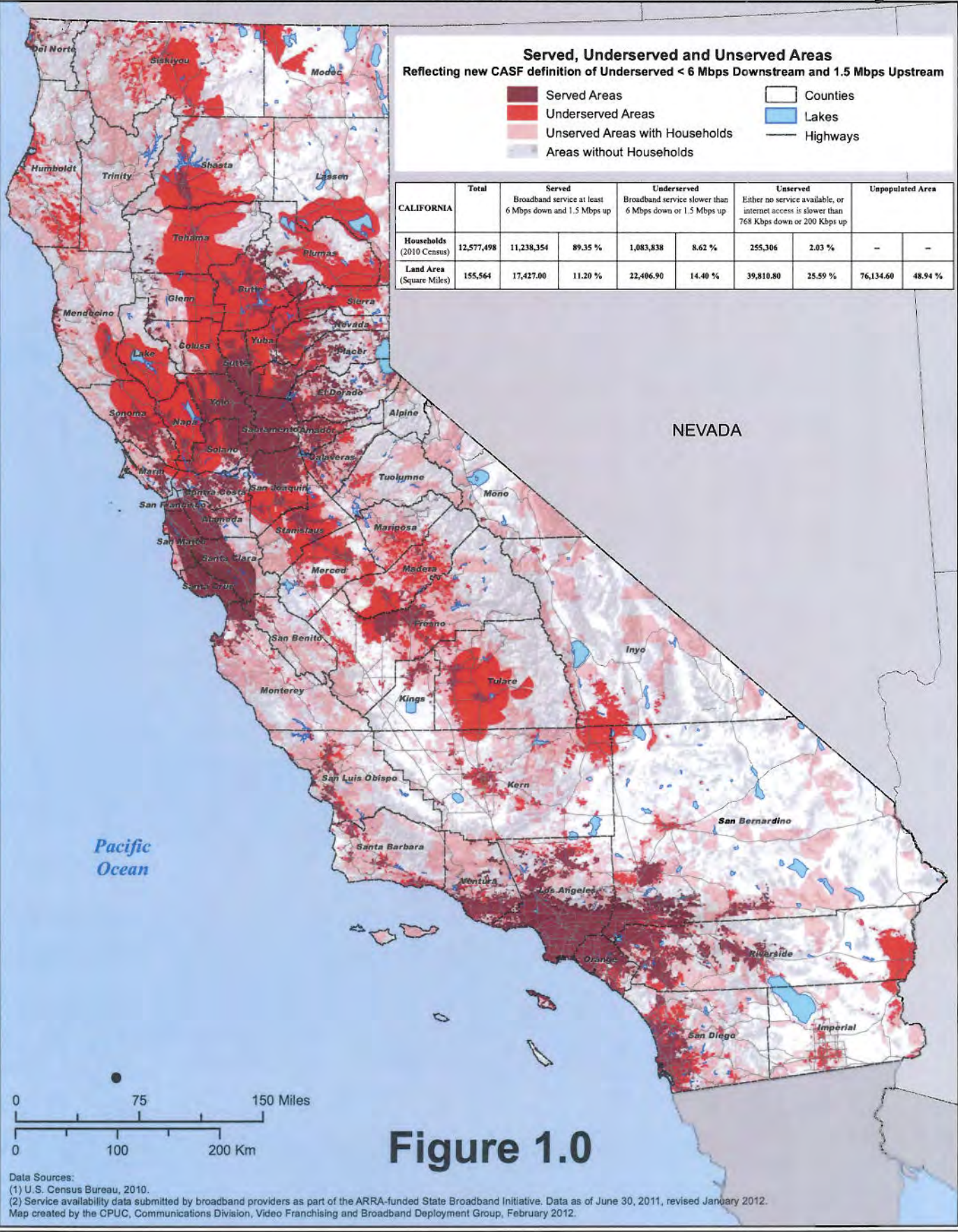
# STATE OF CALIFORNIA

## Wireline and Fixed Wireless Broadband Availability

**Served, Underserved and Unserved Areas**  
 Reflecting new CASF definition of Underserved < 6 Mbps Downstream and 1.5 Mbps Upstream

 Served Areas	 Counties
 Underserved Areas	 Lakes
 Underserved Areas with Households	 Highways
 Areas without Households	

CALIFORNIA	Total	Served Broadband service at least 6 Mbps down and 1.5 Mbps up		Underserved Broadband service slower than 6 Mbps down or 1.5 Mbps up		Unserved Either no service available, or internet access is slower than 768 Kbps down or 200 Kbps up		Unpopulated Area	
		Households (2010 Census)	Land Area (Square Miles)	Households (%)	Land Area (%)	Households (%)	Land Area (%)	Households	Land Area
	12,577,498	11,238,354	89.35 %	1,083,838	8.62 %	255,306	2.03 %	-	-
	155,564	17,427.00	11.20 %	22,406.90	14.40 %	39,810.80	25.59 %	76,134.60	48.94 %



**Figure 1.0**

Data Sources:  
 (1) U.S. Census Bureau, 2010.  
 (2) Service availability data submitted by broadband providers as part of the ARRA-funded State Broadband Initiative. Data as of June 30, 2011, revised January 2012.  
 Map created by the CPUC, Communications Division, Video Franchising and Broadband Deployment Group, February 2012.

### C. What is the Strategic Planning Framework?

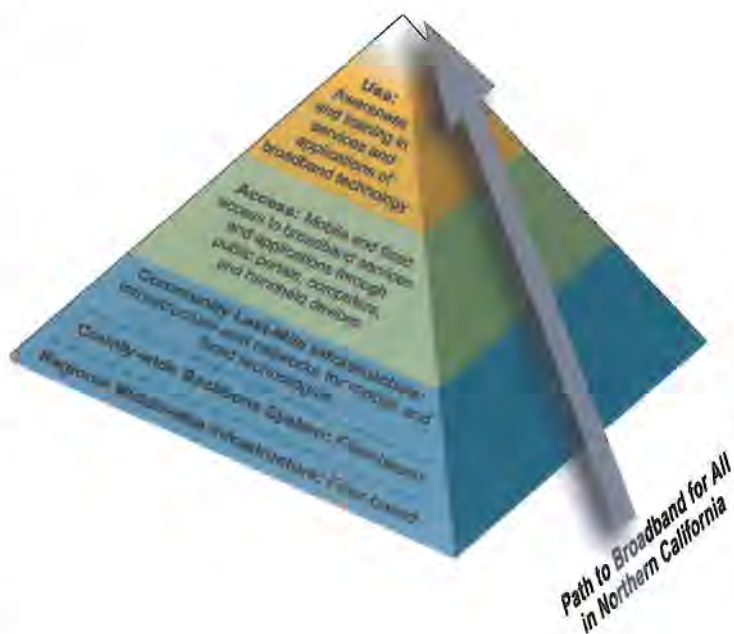
**Figure 2.0** below depicts the building blocks and path to achieving access to broadband for all in Northern California. As shown, at the foundation there must be a comprehensive integrated Northern California Regional Middle-Mile Fiber-Based Infrastructure across the 16 counties with the capacity needed today and the growth potential for the long-range future.

As a second tier of this foundation fiber-based infrastructure there needs to be a Countywide Fiber-Based Backbone System that reaches each of the incorporated communities and as many unincorporated communities as possible. Each County Backbone System must be linked into the NCRMMI at multiple points to provide diversity.

Once the blueprint for this two-tiered foundation infrastructure is known, meaningful deployment of this foundation can begin; planning and deployment of community last-mile infrastructures also can be launched with assurance that end users will ultimately have robust connectivity to the worldwide Internet.

Full and comprehensive access from any location within the 16 counties will only be available when the regional and county infrastructures are completed and in place. In the meantime, a wide range of temporary strategies and solutions need to be implemented to maximize access for the greatest number of individuals.

At the apex of the pyramid is the challenge of giving every individual the opportunity to acquire the knowledge and skills needed to effectively gain access to and utilize the data and information readily available over the worldwide Internet that will enable each person to enhance the quality of his/her life. Once the infrastructure and access barriers are removed the tasks of making individuals aware of and becoming trained in the use of the tools should be easier. In the meantime, training programs need to be made available where access is possible.



While the primary thrust of this document is to develop a comprehensive plan for the Northern California Regional Middle-Mile Infrastructure (NCRMMI), portions of several countywide backbone systems will be part of this plan. With the plan the complete county-wide backbone plans and last-mile community infrastructure plans can be developed setting the stage for expanding access and training resulting in increased adoption.

We have adopted this framework and approach because currently, in the 16 Northern California Counties, there is only a piece-meal scattering of fragmented and limited attempts to deploy broadband. There is no comprehensive regional middle mile infrastructure or a completed countywide backbone system, without which there will be no change in adoption.

**D. Who will be Responsible for NCRMMI?**

Recognizing that they cannot meet Northern California's broadband access needs by working alone, some current telecommunications companies and at least one community-based organization, which represents interests across the 16 counties, are forming Golden Bear Broadband LLC (GBB) to implement, own, manage, and operate the NCRMMI.

**E. What Investments are Required?**

The total initial capital project cost to implement NCRMMI is estimated at \$120 million.

Golden Bear Broadband, LLC (GBB) intends to submit a CASF infrastructure grant application for 90% funding, or up to \$108 million. The matching 10% funding, or \$12 million, will come from GBB members and potential other sources and investors. The capital investment required from each GBB member will be dependent upon the number of member companies that participate in the GBB and the amounts that can be secured from other sources and non-member investors.

## II. INFRASTRUCTURE DESIGN

**Figure 3.0** depicts the overall conceptual architecture for the NCRMMI. The NCRMMI covers 2,000 route miles across the 16 counties. It is comprised of 1000 miles of existing fiber owned by long-haul or rural local exchange carriers and 1,000 miles of new construction interconnected in a ring architecture using a fully recoverable and scalable technological platform. There are two “master-rings” equipped to interconnect and integrate five major geographic areas via five main fiber rings and five sub-rings to provide for maximum reach and edge access.

### A. Design Goals and Strategies

#### 1. Goals

- Develop a reliable, diverse, integrated and secure network architecture;
- Integrate and connect with each of the county-wide backbone systems;
- Provide anchor institutions (education, health delivery facilities, libraries public safety) fiber access to NCRMMI directly or via the county-wide backbone systems;
- Provide last-mile access by businesses, government agencies and residents via county-wide backbone systems; and
- Provide access by Commercial Last-Mile Internet Providers via direct connection or cell towers.

#### 2. Strategies

- Utilize existing fiber wherever possible;
- Utilize other existing resources when possible (conduits, poles, colocation, etc.);
- Deploy as much fiber underground as is cost-effective;
- Deploy equipment for regeneration and access is designed to balance costs while providing future expanding access location needs;
- Pass through as many communities as feasible;
- Connect Anchors; and
- Connect Cell Towers to NCRMMI via fiber.

### B. Key Characteristics of NCRMMI

The NCRMMI design includes existing and newly constructed fiber connected in a ring architecture using a fully recoverable and scalable technological platform. New construction includes use of county/city road, railroad, State highway, and utility rights-of-way. Construction methods employed are plow, bore, open trench, accessible aerial, and inaccessible aerial.

The majority of the NCRMMI will be underground along railroad routes and major highways. There are routes of the infrastructure that will use aerial connected to power poles; unfortunately, this is the only construction method available on certain routes.

# Northern California Regional Middle Mile Fiber Planning 8/29/12



## Legend

- Branch, Build
- Sub-Ring, Build
- Main Ring, Build
- Branch, Existing
- Sub-Ring, Existing
- Main Ring, Existing
- - - To Be Determined
- ▲ Cell Tower Sites
- Level3 POP
- Community College
- State Universities
- ◆ Hospital
- Library
- K12
- CA Counties

## Build Types

1. Plow
2. HDD (Bore)
3. Exception
4. Aerial (Normal)
5. Aerial (Exception)





In the case of the routes that are designed to use existing fiber acquired from the providers, GBB will acquire one pair of fibers (another pair reserved for future growth needs). Newly constructed routes will have a minimum of 72 fiber strands; there may be locations where the route may have a larger or smaller number of fiber strands.

Designing the NCRMMI with five main and five sub-rings allows a greater number of communities to be connected to a highly reliable middle-mile infrastructure, which has both minimal down time probability and full quality of service control.

Network monitoring, provisioning, and maintenance for NCRMMI will be available 24/7/365. A multi-layer network management support system (NMS) will provide real-time monitoring, technician access, and circuit provisioning. This supports operating flexibility for both the operator and the customer if desired. The NMS will also provide ongoing performance diagnoses, which will also be utilized for planning and forecasting customer and network growth.

The following provides a quick overview of several characteristics in the NCRMMI design.

#### **1. Five Main Rings**

As depicted in **Figure 3.0**, there are five main rings within the two master rings. These include:

- #1: Redding - Yreka - Tionesta - Redding
- #2: Redding - Tionesta - Alturas - Susanville - Reno - Sacramento - Redding
- #3: Sacramento - Emeryville - Manchester - Williams - Sacramento
- #4: Manchester - Eureka - Red Bluff - Williams - Manchester
- #5: Eureka - Yreka - Red Bluff - Eureka

#### **2. Five Sub-Rings**

As shown in **Figure 3.0**, there are five sub-rings and one branch within the five main rings. These include:

- #2B: Sacramento - Chico - Red Bluff - Sacramento
- #2Bb: Gridley - Oroville - Paradise - Chico - Gridley
- #3A: Petaluma - Manchester - Ukiah - Petaluma
- #4A: Manchester - Fort Bragg - Willits - Ukiah - Manchester
- #5A: Red Bluff - Yreka - Etna - Rte 36 -o Red Bluff

#### **3. Points of Presence**

The NCRMMI has the potential of 60 POP locations. Of these, 31 are on the main rings. Each will be initially provisioned for two fully redundant 10 Gbps lambdas that can ultimately grow to 100 Gbps. Each POP can be provisioned for a wide range of services. Services supported include traditional signaling legacy service formats (T1 circuits), but will also provide range of high-speed offerings ranging from 1 Gbps to 10 Gbps. All 31 POP locations are carrier class location with backup power. See **Appendix A, Table 2.0** for list of Points of Presence.

#### **4. Incorporated Communities and Census Designated Places Passed Through**

As stated earlier, there are 54 Incorporated Communities and 262 Census Designated Places in the 16 counties. Of these totals, 42 of the Incorporated Communities and 52 of the Census Designated Places are included as part of the NCRMMI Conceptual Design. The other 12

Incorporated are proposed to be part of the county-wide backbone system conceptual designs. Of the 262 Census Designated Places, 52 are included as part of the NCRMMI Conceptual Design. Of the remaining 210, 139 are proposed to be connected to the county-wide backbone systems that will be linked into NCRMMI. See **Appendix A, Table 3.0**. Note that 71 Census Designated Places are currently not included in either. 37 are associated with counties under the leadership of two other regional consortia. We have not had a chance work with them to determine how these locations will be connected. Likewise we have not yet started work on county-wide backbone designs for Shasta and Tehama counties, representing another 31 Census Designated Places

**5. Native American Lands that will have Access to NCRMMI**

As shown on a map in **Appendix A, Figure 4.0** there are 51 locations/areas designated as part of Native American Lands in Northern California. We are in the process of verifying specific locations so we can determine whether or not these locations are on the NCRMMI or county-wide designs. If not, we plan to figure out how to best reach and serve them.

**6. Potential Anchor Sites**

There are nearly 90 potential major anchor sites that could be connected via fiber directly to NCRMMI or to the county-wide backbone system. See **Appendix A, Table 4.0** for a starter list.

**7. Cell Towers**

There are 31 wireless tower locations planned. See **Appendix A, Table 6.0** for the list and proposed implementation plan.

### III. IMPLEMENTATION PLAN

The overall approach to implementation will be to initially light the routes where existing fiber has been acquired and where there is the greatest potential to generate revenue. A preliminary construction schedule is in **Appendix A, Table 5.0**. At this point, it is subject to significant changes depending on a number of factors.

The OSP environmental/engineering work will start upon grant award approval. The anchor builds and wireless backhaul builds will begin immediately following grant approval and we'll begin with connecting the anchor sites. GBB will implement connections to the cell towers. See **Appendix A, Table 6.0** for a list and schedule. This strategy allows for quick revenue generation by lighting the IRU routes, and gets members low cost Internet access.

Additional detailed planning of an implementation plan is underway and alternative scenarios will be presented to the GBB when it is officially formed.

## IV. Appendix A: Tables and Figures

**APPENDIX A  
TABLE 1.0  
NORTHERN CALIFORNIA COUNTIES: DEMOGRAPHICS**

COUNTY	NORTHERN CALIFORNIA BROADBAND PLAN																
	2000 Land Area (Acres)	2000 Land Area (Square Miles)	2000 Census Population	2000 Census Population per sq. mile	2010 Census Population	Percentage Change 2000 to 2010	2010 Prisons Superior State	No. Incorporated Places	2010 Population of Incorporated Places	No. Census Designated Places	2010 Population of Designated Places	2010 Population of Balance of County	2010 Households	2010 Median Income	% of State Median 2010	% of State Personal Income 2010	Number of First 2009
<b>REDWOOD COAST CONNECT</b>																	
DEL NORTE	644,990	1,008	27,507	27.3	28,610	4.01%	28.4	1	7,643	5	5,043	15,924	9,507	\$ 38,252	64.9%	21.1%	1,733
HUMBOLDT	2,286,400	3,573	126,518	35.4	134,623	6.41%	37.7	7	62,707	28	45,771	26,145	56,031	\$ 35,985	61.1%	19.0%	14,333
MENDOCINO	2,245,760	3,509	86,265	24.6	87,841	1.83%	25.0	4	28,685	19	15,163	43,993	34,945	\$ 41,488	70.4%	17.5%	10,673
TRINITY	2,034,300	3,179	13,022	4.1	13,786	5.87%	4.3	-	-	12	10,172	3,314	6,093	\$ 33,546	56.9%	18.2%	1,288
Sub-total	7,211,450	11,268	253,312	22.5	264,960	4.56%	23.5	12	99,035	64	76,419	89,376	106,566	\$ 37,946	64.4%	18.9%	28,027
% of State						0.71%			37.19%		38.86%	13.74%		0.85%		0.79%	0.39%
<b>NORTHEASTERN CALIFORNIA CONNECT</b>																	
BUTTE	1,049,280	1,640	203,171	124.0	220,000	8.28%	134.2	5	136,242	25	54,635	29,123	87,618	\$ 41,196	69.9%	18.5%	17,474
LASSSEN	2,916,670	4,557	33,828	7.4	34,895	3.15%	7.7	1	17,947	12	6,828	10,120	10,038	\$ 46,377	78.7%	18.2%	1,656
MODOC	3,524,220	5,449	9,449	1.7	9,686	2.51%	2.5	1	2,827	12	2,792	4,067	4,064	\$ 34,290	58.2%	17.4%	732
PLUMAS	1,634,370	2,554	20,824	8.1	20,007	-3.92%	7.8	1	2,104	46	14,803	3,098	8,977	\$ 42,684	72.4%	12.3%	2,431
SHASTA	2,422,510	3,785	161,236	42.6	177,223	8.56%	46.8	3	109,957	19	19,400	47,866	70,346	\$ 42,552	72.2%	15.5%	15,798
SISKIYOU	4,023,550	6,287	44,301	7.1	44,900	1.35%	7.1	9	20,744	11	3,620	20,536	19,505	\$ 39,218	66.6%	16.1%	4,558
TEHAMA	1,888,690	2,951	95,039	32.2	63,463	-33.25%	21.5	3	22,157	14	9,992	31,314	23,767	\$ 38,179	64.8%	18.9%	4,313
Sub-total	16,459,260	25,718	530,868	20.6	570,174	7.40%	22.2	23	311,978	139	112,072	146,134	224,335	\$ 41,225	70.1%	17.2%	46,962
% of State						1.53%			54.72%		19.66%	25.63%		1.28%		1.23%	1.39%
<b>UPSTATE CALIFORNIA CONNECT</b>																	
COLUSA	736,450	1,151	18,801	16.3	21,419	13.91%	18.6	2	11,094	7	5,461	4,564	7,056	\$ 47,472	80.0%	13.4%	1,332
GLENN	841,470	1,315	26,453	20.1	28,122	6.31%	21.4	2	13,457	3	2,817	12,448	9,800	\$ 41,964	71.1%	15.8%	1,792
LAKE	805,120	1,258	59,309	47.2	64,665	10.90%	51.4	2	20,003	13	30,801	13,861	26,548	\$ 36,895	62.6%	22.1%	5,161
SONOMA	1,028,580	1,576	458,014	290.7	483,878	5.51%	307.0	9	318,092	28	54,351	90,835	185,825	\$ 61,985	105.2%	9.5%	53,446
Sub-total	3,391,620	5,299	562,160	106.2	598,084	6.39%	108.8	15	383,246	61	92,530	122,008	229,229	\$ 58,256	105.2%	9.5%	61,734
% of State						1.61%			64.08%		15.52%	20.40%		1.82%		1.75%	1.75%
<b>CONNECTED CAPITAL REGION</b>																	
YOLO	648,510	1,013	168,660	166.5	200,849	19.09%	198.2	4	176,458	9	14,472	9,919	70,872	\$ 56,120	95.2%	15.7%	14,841
Sub-total	648,510	1,013	168,660	166.5	200,849	19.09%	198.2	4	176,458	9	14,472	9,919	70,872	\$ 56,120	95.2%	15.7%	14,841
% of State						0.54%			37.80%		7.21%	4.94%		0.56%		0.43%	0.43%
<b>TOTALS</b>	<b>27,710,840</b>	<b>43,298</b>	<b>1,515,020</b>	<b>34.9</b>	<b>1,633,967</b>	<b>7.85%</b>	<b>37.7</b>	<b>54</b>	<b>970,717</b>	<b>263</b>	<b>295,823</b>	<b>367,427</b>	<b>631,402</b>	<b>\$ 48,409</b>	<b>82.2%</b>	<b>18.3%</b>	<b>151,564</b>
STATE	99,813,950	155,959	33,871,648	217.1	37,253,956	9.99%	238.9										
COUNTRY																	
Region % of State						4.47%			4.39%		4.39%			4.39%		4.39%	4.39%

Source: County Business Patterns, U.S. Census Bureau Nonemployer Data

POP Locations

APPENDIX A  
Table 2.0  
POINTS OF PRESENCE

RSA #	Location	POP/REGEN
1	Tionesta, CA	Regen
	Palo Cedro, CA	POP
	Burney, CA	POP
	Weed, CA	POP
	Dorris, CA	POP
	Mt. Hebron	Splice point
	Mt. Shasta	POP
	Klamath Falls, Ore	POP
	Redding, CA	POP
	Alburtas, CA	POP
2	Ravendale, CA	POP
	Susanville, CA	POP
	Westwood, CA	POP
	Chester, CA	POP
	Taylorville, CA	POP
	Quincy, CA	POP
	Hallelujah Junction, CA	Regen
	Reno, NV	POP
	Truckee, CA	POP
	Blue Canyon, CA	POP
	Auburn (Rivine), CA	POP
	Sacramento, CA	POP
	Robbins, CA	POP
	Biggs, CA	POP
	Chico, CA	POP
	Red Bluff, CA	POP
	Cottonwood, CA	POP
	3	Sacramento, CA
Davis, CA		POP
Emeryville, CA		POP
Petaluma, CA		POP
Santa Rosa, CA		POP
Ukiah, CA		POP
Clear Lake, CA		POP
Williams, CA		POP
Colusa, CA		POP
Manchester, CA		POP
Point Arena, CA		POP
Gualala, CA		POP
Sea Ranch, CA		POP
Jenner, CA		POP
Bodega Bay	POP	
4	Willits, CA	POP
	Leggatt, CA	POP
	Fortuna, CA	POP
	Ft. Bragg, CA	POP
	Mendocino, CA	POP
	Albion, CA	POP
5	Elk, CA	POP
	Eureka, CA	POP
	Arcata, CA	POP
	Blue Lake, CA	POP
	Willow Creek, CA	POP
	Hoopa, CA	POP
	Wichipee, CA	POP
	Orleans, CA	POP
	Somes Bar, CA	POP
	Sawyers Bar, CA	POP
Weaverville, CA	POP	

**APPENDIX A**  
**TABLE 3.0**  
**Infrastructure Plans for Incorporated Communities and Census Designated Places**

NORTHERN CALIFORNIA BROADBAND PLAN													
COUNTY	2040 Land Area (Square Miles)	2010 Census Population	2010 Persons per Square Mile	No. Incorporated Places	2010 Population of Incorporated Places	Included as part of NCRMMI Conceptual Design	Connected to NCRMMI via Proposed County-wide Backbone Conceptual Design	No. Census Designated Places	2010 Population of Census Designated Places	Included as part of NCRMMI Conceptual Design	Connected via Proposed County-wide Backbone Conceptual Design	Not in Either Design	2010 Population of the Balance of County
<b>REDWOOD COAST CONNECT</b>													
DEL NORTE	1,008	28,610	28.4	1	7,643	-	1	5	5,043	-	-	5	15,924
HUMBOLDT	3,573	134,623	37.7	7	62,707	5	2	28	45,771	12	-	16	26,145
MENDOCINO	3,509	87,841	25.0	4	28,685	4	-	19	15,163	6	13	-	43,993
TRINITY	3,179	13,786	4.3	-	-	-	-	12	10,472	2	-	10	3,314
<b>Sub-total</b>	<b>11,268</b>	<b>264,860</b>	<b>23.5</b>	<b>12</b>	<b>99,035</b>	<b>9</b>	<b>3</b>	<b>64</b>	<b>76,449</b>	<b>20</b>	<b>13</b>	<b>31</b>	<b>89,376</b>
<b>% of State</b>	<b>7.22%</b>	<b>0.71%</b>											
<b>NORTHEASTERN CALIFORNIA CONNECT</b>													
BUTTE	1,640	220,000	134.2	5	136,242	5	-	25	54,635	5	20	-	29,123
LASSEN	4,557	34,895	7.7	1	17,947	1	-	12	6,828	3	6	3	10,120
MODOC	3,944	9,686	2.5	1	2,827	1	-	12	2,792	2	10	-	4,067
PLUMAS	2,554	20,007	7.8	1	2,104	1	-	46	14,805	-	46	-	3,098
SIERRA	3,785	177,223	46.8	3	109,957	3	-	19	19,400	-	3	16	47,866
SISKIYOU	6,287	44,900	7.1	9	20,744	8	1	11	3,620	1	9	1	20,536
TEHAMA	2,951	63,463	21.5	3	22,157	3	-	14	9,992	3	-	11	31,314
<b>Sub-total</b>	<b>25,718</b>	<b>570,174</b>	<b>22.2</b>	<b>23</b>	<b>311,978</b>	<b>22</b>	<b>1</b>	<b>139</b>	<b>112,072</b>	<b>14</b>	<b>94</b>	<b>31</b>	<b>146,124</b>
<b>% of State</b>	<b>16.49%</b>	<b>1.53%</b>											
<b>UPSTATE CALIFORNIA CONNECT</b>													
COLUSA	1,151	21,419	18.6	2	11,094	2	-	7	5,461	2	3	2	4,864
GLENN	1,315	28,122	21.4	2	13,457	2	-	3	2,217	1	1	1	12,448
LAKE	1,258	64,665	51.4	2	20,003	2	-	13	30,801	13	13	-	13,861
SONOMA	1,576	483,878	307.0	9	338,692	5	4	28	54,351	13	15	-	90,835
<b>Sub-total</b>	<b>5,299</b>	<b>598,084</b>	<b>398</b>	<b>15</b>	<b>383,246</b>	<b>9</b>	<b>6</b>	<b>51</b>	<b>92,830</b>	<b>16</b>	<b>32</b>	<b>3</b>	<b>122,008</b>
<b>% of State</b>	<b>3.40%</b>	<b>1.61%</b>			<b>64.08%</b>				<b>15.52%</b>				<b>20.40%</b>
<b>CONNECTED CAPITAL REGION</b>													
YOLO	1,013	200,849	198.2	4	176,458	2	2	8	14,472	2	-	6	9,919
<b>Sub-total</b>	<b>1,013</b>	<b>200,849</b>	<b>198.2</b>	<b>4</b>	<b>176,458</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>14,472</b>	<b>2</b>	<b>-</b>	<b>6</b>	<b>9,919</b>
<b>% of State</b>	<b>0.65%</b>	<b>0.54%</b>											
<b>TOTALS</b>	<b>43,298</b>	<b>1,633,967</b>	<b>37.7</b>	<b>54</b>	<b>970,717</b>	<b>42</b>	<b>12</b>	<b>262</b>	<b>295,823</b>	<b>52</b>	<b>139</b>	<b>71</b>	<b>367,427</b>
<b>STATE</b>	<b>155,959</b>	<b>37,253,956</b>	<b>238.9</b>										
<b>COUNTRY</b>													
<b>Region % of State</b>	<b>27.76%</b>	<b>4.39%</b>											

Sources: CPUC and County Business Patterns; U.S. Census Bureau Nonemployer Data  
 We have not worked with Redwood Coast and Connected Capital on County-wide Backbone Designs  
 Plumas-Sierra Rural Electric Cooperative is addressing these communities as part of the AORCA project  
 We have not developed County-wide Backbone Conceptual Designs for Inyo counties

# Native American Lands in California

Appendix A  
Figure 3.0





**APPENDIX A**

**TABLE 4.0**

**NORTHERN CALIFORNIA: POTENTIAL ANCHOR INSTITUTIONS**

<b>SITE NAME</b>	<b>ADDRESS</b>	<b>CITY/ZIP</b>	<b>COUNTY</b>
<b>CSU-3</b>			
CSU Chico	First & Normal St.	Chico 95929	Butte
CSU Humboldt	1 Harpst Street	Arcata 95521	Humboldt
Sonoma State University	1801 East Cotati Ave.	Rohnert Park 94928	Sonoma
<b>COMMUNITY COLLEGES-14</b>			
Butte College	3565 Butte Campus Drive	Oroville 95965-8399	Butte
College of the Redwoods	7351 Tompkins Hill Road	Eureka 95501-9301	Humboldt
Lassen College	Highway 139	Susanville 96130-3000	Lassen
Mendocino College	1000 Hensley Creek Rd.	Ukiah 95482-0300	Mendocino
Willits Center	11 Marin Streets	Willits 95490	Mendocino
Lake Center	1005 Parallel Drive	Lakeport 95453	Mendocino
Shasta College	11555 Old Oregon Trail	Redding 96049-6006	Shasta
College of Siskiyous	800 College Avenue	Weed 96094-2899	Siskiyou
Yuba CC District			
Woodland College	2300 E. Gibson Road	Woodland 95776	Yolo
Clear Lake Campus	15880 Dam Road Ext.	Clearlake 95422	Lake
Williams Campus (new)	99 Ella Street	Williams 95987	Colusa
Santa Rosa CC District			
Santa Rosa Junior College	1501 Mendocino Ave.	Santa Rosa 95401	Sonoma
Petaluma Center	680 Sonoma Mtn. Parkway	Petaluma 94954	Sonoma
Public Safety Training Center	5743 Skylane Blvd	Windsor 95492	Sonoma
<b>K12-20</b>			
Butte COE	1859 Bird Str.	Oroville 95965	Butte
Del Norte COE	301 W. Washington Blvd.	Crescent City 95531	Del Norte
Glenn COE	924-A 2nd Str.	Orland 95963	Glenn
Humboldt COE	901 Myrtle Ave.	Eureka 95501	Humboldt
Mendocino COE	2240 Old River Road	Ukiah 95482	Mendocino
Ft. Bragg USD	312 s. Lincoln Street	Fr Bragg 95437	Mendocino
NHUHS District Office	2755 McKinleyville Ave.	McKinleyville 95519	Humboldt
Lake COE	1152 S. Main Str.	Lakeport 95453	Lake
Lassen COE	472-013 Johnstonville Rd. N	Susanville 96130	Lassen
Modoc COE	139 Henderson Str.	Alturas 96101	Modoc
Plumas COE			
Tulelake Basin Joint USD	400 G Street	Tulelake 96134	Modoc
Shasta COE	1644 Magnolia Dr.	Redding 96001	Shasta
Siskiyou COE	609 S. Gold Str.	Yreka 96097	Siskiyou
Sonoma COE	5430 Skylane Blvd.	Santa Rosa 95403	Sonoma
Tehama COE	1135 Lincoln Street	Red Bluff 96080	Tehama
Red Bluff High School	1260 Union	Red Bluff 96080	Tehama
Trinity COE	201 Memorial Drive	Weaverville 96093	Trinity
Yolo COE	1240 Harter Avenue	Woodland 95776	Yolo
Colusa COE (new)	99 Ella Street (next to CC)	Williams 95987	Colusa
<b>MAIN LIBRARIES-16</b>			
Butte County Library	1820 Mitchell Avenue	Oroville 95966	Butte
Del Norte County Library	190 Price Mall	Crescent City 95531	Del Norte
Willows Public Library	201 N. Lassen Street	Willows 95986	Glenn
Humboldt County Library	1313 Third Street	Eureka 95501	Humboldt
Lake County Library	1425 N. High Street	Lakeport 95453	Lake
Lassen Library District	1618 Main Street	Susanville 96130	Lassen
Mendocino County Library	105 N. Main Street	Ukiah 95482	Mendocino
Modoc County Library	212 W. Third Street	Alturas 96101	Modoc
Plumas County Library	445 Jackson Street	Quincy 95971	Plumas
Shasta Public Libraries	1100 Parkview Avenue	Redding 96001	Shasta
Siskiyou County Free Library	719 Fourth Street	Yreka 96067	Siskiyou
Sonoma County Library	211 E Street	Santa Rosa 95404	Sonoma
Tehama County Library	645 Madison Street	Red Bluff 96080	Tehama
Trinity County Free Library	352 Main Street	Weaverville 96093	Trinity
Woodland Public Library	259 First Street	Woodland 95695	Yolo
Yolo County Library	226 Buckeye	Woodland 95696	Yolo

**APPENDIX A**

**TABLE 4.0**

**NORTHERN CALIFORNIA: POTENTIAL ANCHOR INSTITUTIONS**

<b>SITE NAME</b>	<b>ADDRESS</b>	<b>CITY/ZIP</b>	<b>COUNTY</b>
<b>HOSPITALS-40</b>			
Colusa County(2)			
Colusa Regional Med. Ctr.	199 E. Webster Street	Colusa 95932	Colusa
Colusa Regional Med. Ctr.	501 "E" Street	Williams 95932	Colusa
Butte County(4)			
Biggs-Gridley Mem. Hosp.	240 Spruce Street	Gridley 95948	Butte
Enloe Medical Center	1531 Esplanade	Chico 95926	Butte
Feather River Hospital	5974 Pentz Road	Paradise 95969	Butte
Oroville Hospital	2767 Olive Highway	Oroville 95966	Butte
Del Norte County(1)			
Sutter Coast Hospital	800 East Washington	Crescent City 95531	Del Norte
Glenn County(1)			
Glenn Medical Center	1133 West Sycamore St.	Willows 95988	Glenn
Humboldt County(4)			
Jerold Phelps Comm. Hosp.	733 Cedar Street	Garberville 95440	Humboldt
Mad River Comm. Hosp.	3800 Janes Road	Arcata 95521	Humboldt
Redwood Mem. Hosp.	3300 Renner Drive	Fortuna 95540	Humboldt
St. Joseph Hospital	2700 Dolbeer Street	Eureka 95501	Humboldt
Lake County(2)			
St. Helena Hosp. Clearlake	15630 18th Avenue	Clearlake 95422	Lake
Sutter Lakeside Hospital	5176 Hill Road East	Lakeport 95453	Lake
Lassen County(2)			
Banner Lassen Med. Center	1800 Spring Ridge Drive	Susanville 96130	Lassen
Lassen Comm. Hosp.	560 Hospital Lane	Susanville 96130	Lassen
Mendocino County(3)			
Frank R. Howard Mem. Hosp.	One Madrone Street	Willits 95490	Mendocino
Mendocino Coast Dist. Hosp.	700 River Drive	Fort Bragg 95437	Mendocino
Ukiah Valley Med. Center	275 Hospital Drive	Ukiah 95482	Mendocino
Modoc County(2)			
Modoc Medical Center	228 West McDowell Avenue	Alturas 96101	Modoc
Surprise Valley Comm. Hosp.	741 North Main Street	Cedarville 96104	Modoc
Plumas County(2)			
Plumas District Hospital	1065 Bucks Lake Road	Quincy 95971	Plumas
E. Plumas Health Care Hospital	500 First Avenue	Portola 96122	Plumas
Shasta County(2)			
Mercy Med. Ctr. Mt. Shasta	914 Pine Street	Mt. Shasta 96067	Shasta
Shasta Regional Med. Center	1100 Butte Street	Redding 96001	Shasta
Siskiyou County(1)			
Fairchild Medical Center	444 Bruce Stret	Yreka 96097	Siskiyou
Sonoma County (11)			
Southwest Comm. Health Ctr.	3320 Chanate Rd.	Santa Rosa 95404	Sonoma
Alliance Medical Ctr. Windsor	8465 Old Redwood Hwy.	Windsor 95492	Sonoma
Alliance Medical Ctr. Healdsburg	1381 University Ave.	Healdsburg 95448	Sonoma
Southwest Comm. Health Ctr.	599 Bellevue	Santa Rosa 95407	Sonoma
Southwest Comm. Health Ctr.	751 Lombardi Court	Santa Rosa 95407	Sonoma
Petaluma Health Center	1301 Southpoint Blvd.	Petaluma 94954	Sonoma
West County Health Centers Inc.	6800 Palm Avenue	Sebastopol 95472	Sonoma
West County Health Centers Inc.	16319 Third Street	Guerneville 95446	Sonoma
West County Health Centers Inc.	3802 Main Street	Occidental 95465	Sonoma
Sonoma Valley Health Care Dist.	347 Andrieux Street	Sonoma 95476	Sonoma
Sonoma Valley Community Health Ctr	430 West Napa Street	Sonoma 95476	Sonoma
Tehama County(1)			
St. Elizabeth Comm. Hosp.	2550 Sister Mary Columba D	Red Bluff 96080	Tehama
Trinity County(1)			
Mountain Comm. Med. Ctr.	60 Easter	Weaverville 96093	Trinity
Yolo County(1)			
Sutter Davis Hospital	2000 Sutter Place	Davis 95616	Yolo



**APPENDIX A**

**Table 6.0**

**NCRMMI**

**Cell Tower Implementation Schedule**

Tentative

7-24-12

RSA	Sites	Sites	EA Comp	Eng Start	SHPO Complete	Sites Construction & Installation					Const Start	Const Comp
						Eng Comp	Pre Bid	Material Order	Contract Award			
1	Palo Cedro, CA	1	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	6/1/14	
1	Burney, CA	2	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	6/1/14	
1	Weed, CA	3	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	6/1/14	
1	Mt. Shasta	4	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	6/1/14	
2	Truckee, CA	1	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
2	Blue Canyon, CA	2	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
2	Sacramento, CA	3	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
2	Robbins, CA	4	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
2	Biggs, CA	5	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
2	Chico, CA	6	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
2	Red Bluff, CA	7	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
2	Cottonwood, CA	8	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
2	Alturas, CA	9	1/31/14	2/1/14	3/1/14	3/15/14	4/1/14	3/15/14	4/30/14	5/1/14	7/1/14	
3	Manchester, CA	1	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
3	Point Arena, CA	2	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
3	Gualala, CA	3	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
3	Sea Ranch, CA	4	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
3	Jenner, CA	5	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
4	Fl. Bragg, CA	1	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
4	Mendocino, CA	2	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
4	Albion, CA	3	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
5	Bluc Lake, CA	1	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
5	Willow Creek, CA	2	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
5	Hoopla, CA	3	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
5	Orleans, CA	4	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	
5	Somes Bar, CA	5	1/31/14	6/1/14	8/1/14	9/1/14	5/1/14	7/1/15	9/1/14	9/15/14	12/1/14	