Inland Empire Regional Broadband Consortium

Riverside and San Bernardino Counties

INLAND EMPIRE BROADBAND INFRASTRUCTURE AND ACCESS PLAN

Adopted

November 6, 2014
INLAND EMPIRE REGIONAL BROADBAND CONSORTIUM

Riverside and San Bernardino Counties

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Grant-supported by

CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC)
CALIFORNIA ADVANCED SERVICES FUND
# Inland Empire Regional Broadband Consortium

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Introduction

Broadband infrastructure and access to it is a prime concern for residents, business and government in both Riverside and San Bernardino Counties, an area known in Southern California as the “Inland Empire.” Reliable, affordable, and available high-speed internet access is extremely important for this diverse and vast geographic region.

The Inland Empire Regional Broadband Consortium (IERB) was formed in 2012 to address broadband access, infrastructure, planning, service reliability, and affordability to promote the Inland Empire as a “Smart Region” and help close the Digital Divide within both Riverside and San Bernardino Counties.

SmartRiverside, a non-profit innovation and digital inclusion program established to support the City of Riverside, spearheaded IERB for both counties in the Inland Empire.

IERB is a group of 34 stakeholders representing a variety of urban, suburban, rural, mountain and desert interests with strong concern about and commitment to improving broadband access and closing the Digital Divide in the Inland Empire.

The Consortium includes both Riverside and San Bernardino Counties, local and regional governments, technology providers, engineers, non-profits, health care providers, libraries, school districts, universities, and businesses.

IERB is funded through the California Public Utilities Commission (CPUC) California Advanced Services Fund (CASF) Rural and Urban Regional Broadband Consortia Grant Account in order to provide collaborative broadband planning for the region.

SmartRiverside is the Consortium's Fiscal Agent managing day-to-day operations. SmartRiverside also chairs the IERB Executive Committee.

In addition, the California Emerging Technology Fund (CETF) has fostered collaboration between IERB and the Inland Empire Economic Partnership to integrate broadband adoption into key strategies and priority initiatives within the region.
IERB Consortium Goal

IERB's goal is to meet short-term and long-term broadband planning needs by leading a strategic regional effort to improve broadband access. IERB’s mission is to identify, recommend and support programs, policies, projects and advocacy to improve broadband access in the Inland Empire.

IERB addresses the critical need for a regional collaborative broadband strategy to not just close the Digital Divide within the Riverside and San Bernardino Counties, but to also address broadband services required for business start-ups, business retention and economic growth, and to promote the Inland Empire as a “Smart Region” — which all together will ensure regional competitiveness and prosperity associated with the reality of technological advancements.

Inland Empire Broadband Infrastructure and Access Plan

The Inland Empire Broadband Infrastructure and Access Plan highlights resources and successful programs in the Inland Empire, and other places in the state and nation, that are helping to close the Digital Divide, promote Smart Region policies, and support affordable, and accessible broadband, including:

- Loma Linda’s Connected Community Program offering City-operated, fast, affordable broadband—in addition to requiring new development to be built with fiber. Loma Linda considers their Fiber to the Home (FTTH) program to be “fiber to anywhere”—not just to the home.

- Ontario’s investment in developing its own municipal fiber network to stimulate economic growth and provide improved service in the City.

- Beaumont’s FTTH in new housing tracts, where residents have “always on” broadband included as part of Home Owner Association services.

- The County of Riverside “Ring of Fiber” to connect county services.

- SmartRiverside’s successful Digital Inclusion program that is helping hundreds of disadvantaged families in Riverside get and stay connected.

- Riverside and San Bernardino School District Technology Plans.
The IERB Broadband Infrastructure and Access Plan focuses on the following:

- Closing the Digital Divide
- The Inland Empire can be a “Smart Region”
- Broadband and Economic Development
- Rural and Remote Areas
- Local Government Broadband Solutions
- Programs for Underserved and Disadvantaged Residents
- Education
- Healthcare and Telemedicine
- Priority List of Actions

IERB's vision is that this plan, including its Priority List of Actions, will help set regional priorities and be a strategic planning resource for leaders in the Inland Empire. The plan can help develop and implement Smart Region policies, help close the Digital Divide, and work towards achieving reliable, accessible and affordable broadband internet service within San Bernardino and Riverside Counties.
IERB CONSORTIUM MEMBERS

- Bayne & Associates
- California State University, San Bernardino
- City of Barstow
- City of Cathedral City
- City of Corona
- City of Loma Linda
- City of Moreno Valley
- City of Redlands
- City of Riverside
- City of San Bernardino
- Coachella Valley Economic Partnership
- County of Riverside
- County of San Bernardino
- Coachella Valley Economic Partnership
- Eastern Sierra Connect Broadband Consortium
- Esri
- Greenfield Communications
- Harris & Associates
- Hemet Public Library
- Hi-Desert Memorial Health Care District
- Housing Authority of the County of San Bernardino
- Inland Empire United Way
- Inland Library System
- Morongo Basin Regional Economic Development Consortium
- MVR Consulting
- Netreva, Inc.
- PhD Computing, Inc.
- Riverside Unified School District
- San Bernardino City Unified School District
- San Bernardino Community College District
- San Bernardino Public Library
- Strategic Point LLC
- Alliance for Commercialization of Technology
- Western Riverside Council of Governments
IERB CONSORTIUM SUPPORTERS

- AT&T
- Bering Sea Eccotech
- Bourns
- California Emerging Technology Fund
- California Telehealth Network
- California Theatre of the Performing Arts
- CISCO
- City of Calimesa
- City of Fontana
- City of Highland
- City of Ontario
- City of Palm Desert "Get Connected"
- City of Riverside Public Utilities
- City of San Bernardino "Get Connected"
- City of Yucaipa
- Cogent Communications
- Copper Mountain Community College District
- County of San Bernardino Board of Supervisors
- County of Riverside Board of Supervisors
- David Evans & Associates
- Desert Mountain Resource Conservation & Development Council
- EMC2
- Inland Empire Economic Partnership
- Inland Valley Development Agency
- Innovation Economy Corporation
- Knotts Family Agency
- Loma Linda University
- Overland, Pacific & Cutler
- P3 Global Solutions
- Praxis Associates/Digital 395
- Race Communications
- Riverside Community College District
- Sturges Center for the fine Arts
- Sustainable Communities Reinvestment Partnership
- Tetra Tech
- TMD Communications
- Town of Yucca Valley
- Ultimate Internet Access
- Xerox
IERB CONSORTIUM
ORGANIZATIONAL CHART

California Public Utilities Commission (CPUC)
SmartRiverside, IERB Fiscal Agent

Executive Committee
Lea Deesing, IERB Chair
and
Chief Innovation Officer, City of Riverside
Executive Director, SmartRiverside
Jennifer Hilber, Chief Information Officer,
County of San Bernardino
Kevin Crawford, IT Consultant

Consortium Manager
Martha van Rooijen, MVR Consulting

Consortium Members
EXHIBIT 1

IERB IS PART OF STATE OF CALIFORNIA CPUC CONSORTIA

2011-2014 CASF APPROVED CONSORTIA
Resolutions T-17349, T-17355 and T-17445

Inland Empire Consortium: Riverside and San Bernardino Counties
EXHIBIT 2

INLAND EMPIRE REGIONAL BROADBAND CONSORTIUM (IERB)

Riverside and San Bernardino Counties
Inland Empire Broadband Infrastructure and Access Plan

I. Closing the Digital Divide

A significant "Digital Divide" exists in the Inland Empire where many residents do not have access to basic or high speed internet. This disenfranchises many in our community.

The divide can be attributed to demographics, poverty, cost, geographic location, terrain, lack of infrastructure, internet providers needing to upgrade their systems, internet providers unable or unwilling to address regional needs, and limited community stakeholder and regional leadership involvement in pushing for improved services.

California has set a goal of reaching 98% broadband deployment and 80% adoption by 2015--goals acknowledged by the California Broadband Council (CBC), California Public Utilities Commission (CPUC), and the California Emerging Technology Fund (CETF). CETF further supports the goal of a statewide adoption rate of 90% by 2020.

According to CETF, the Inland Empire’s broadband adoption rate decreased from 71% in 2012 to 68% in 2013, which is behind the statewide average of 75%. By comparison, the adoption rate in the Central Valley is 60%, Los Angeles is 64%, Orange County and San Diego is 77%, and the Bay Area is 80%.

| CETF: California Broadband Adoption Percentage by Region |
|-----------------|-------|-------|-------|
| Region          | 2011  | 2012  | 2013  |
| Bay Area        | 78%   | 78%   | 80%   |
| Orange – San Diego | 76%   | 78%   | 77%   |
| **Inland Empire** | **66%** | **71%** | **68%** |
| Los Angeles     | 68%   | 69%   | 64%   |
| Central Valley  | 70%   | 71%   | 60%   |
| **California Overall** | **72%** | **73%** | **75%** |

CETF reports also show that for 2013, low-income households in the Inland Empire had an adoption rate of 53%. Without regional leadership, community awareness, established public policy goals, civic engagement, funding, and the support of internet providers, the Inland Empire could indeed find itself falling far short in meeting statewide goals.
A. What is the Digital Divide?

Below are common definitions for the Digital Divide:

Digital Divide

- Refers to the gap between individuals, households, businesses and geographic areas at different socioeconomic levels with regard to both their opportunities to access information and communication technologies (ICT) and their use of the internet for a wide variety of activities.

- The socioeconomic and other disparities between those people who have opportunities and skills enabling them to benefit from digital resources, especially the internet, and those who do not have these opportunities or skills.

Digital Inclusion

- Digital inclusion is commonly defined as “the incorporation of ICT into the community to promote education and improve quality of life.”

This can mean different things to different people, for example:

- Preventing economic exclusion from electronic commercial and public services that save time and money
- Using any digital technology to tackle social exclusion
- Ensuring people have basic ICT skills to participate in the knowledge economy
- Making technology and internet services accessible and usable for people with disabilities and the elderly
- Ensuring affordable broadband internet access
Digital Literacy

- The ability to use digital technology, communication tools or networks to locate, evaluate, use and create information.
- The ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers.
- A person’s ability to perform tasks effectively in a digital environment, and apply new knowledge gained from digital environments.

The changing Digital Divide

The Digital Divide is not a clear single gap that divides a society into two groups. The Divide is experienced in many forms--the disadvantaged unable to gain access to the internet and technology; low quality internet connections; the high cost of subscribing to internet service; outdated and poor performing computer equipment; difficulty understanding computer and internet terminology, software and applications; not enough free or low cost computer resources in the community, including the limited number of hours libraries are open that offer computer access; the lack of, and difficulty in obtaining technical assistance; as well as rural and remote areas that have no service, poor service, or may only be able to have access to dial-up.

A shift in the divide has also occurred in that the gap is moving beyond access and cost to interpreting and understanding information presented once connected, which is now being called a “Knowledge Divide.”

With this shift, the two most pressing issues in solving the Digital Divide are:

- Access and Cost: Availability of reliable, high speed internet at an affordable cost
- Knowledge/Literacy: Ability to use technology and understand information and data
B. Identifying Broadband Unserved and Underserved Areas

Broadband Service Definition of the Unserved and Underserved

The California Public Utilities Commission (CPUC) has set broadband standards for the terms “unserved” and “underserved.”

- An **unserved area** is an area that is not served by any form of wireline or wireless facilities-based broadband, such that Internet connectivity is available only through dial-up service.

- An **underserved area** is an area where broadband is available, but no wireline or wireless facilities-based provider offers service at advertised speeds of at least 6 Mbps download and 1.5 Mbps upload.

(Note: satellite in some cases provides internet service; however, CPUC does not include it in their current definition of being unserved, underserved or served by broadband.)

Below is information from the CPUC as of June 2014 regarding the number of unserved and underserved households in the Inland Empire. The CPUC information is based on data they receive from internet providers along with their own field testing and consumer data collected.

If advertised broadband rates are accurate, which many believe are not, the number of households **unserved** in the Inland Empire is 23,758, and **underserved** is 33,430 for a total of 57,188 out of approximately 1.2 million households.

<table>
<thead>
<tr>
<th>CPUC Fixed Broadband Availability As of June 16, 2014</th>
<th>Unserved Households</th>
<th>% of Total Households</th>
<th>Underserved Households</th>
<th>% of Total Households</th>
<th>Total Unserved and Underserved Households in the Inland Empire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riverside County</td>
<td>8,352</td>
<td>1.2%</td>
<td>15,939</td>
<td>2.3%</td>
<td>24,291</td>
</tr>
<tr>
<td>San Bernardino County</td>
<td>15,406</td>
<td>2.5%</td>
<td>17,491</td>
<td>2.8%</td>
<td>32,897</td>
</tr>
<tr>
<td><strong>Total Inland Empire</strong></td>
<td><strong>23,758</strong></td>
<td><strong>33,430</strong></td>
<td><strong>57,188</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Inland Empire survey reveals, for disadvantaged, basic needs take priority over broadband

The Inland Empire United Way, as part of its free 2-1-1 telephone and online referral and crisis counseling service for San Bernardino County, conducts surveys when providing services to the at-risk and disadvantaged. The United Way now includes questions about internet usage, the importance of the internet and interest in it. Those surveyed represent people in extreme poverty, seniors, the disabled, veterans, immigrants, homeless, and individuals previously incarcerated.

The 2-1-1 survey results are surprising, as they reveal how the disadvantaged actually feel about the importance of internet access: Those in the Inland Empire who are the most vulnerable are not able to consider internet, much less broadband-level service, as an item of importance until the basics of their human existence—food, shelter, clothing, safety and health—are resolved.

The 2013 United Way 2-1-1 survey shows that of approximately 1,300 people in San Bernardino County responding to internet access questions, 518 do not use the internet, 524 access the internet less than once per week, with 47 using the internet at school, work or the library, and 19 using internet on their phone.

Further, 544 are not interested in reduced cost for internet service, 371 do not own a computer, 741 are not interested in reduced cost or refurbished computers, 824 are not interested in free or low cost computer classes, and 891 do not want to know about free computer access in the community.

Conventional thinking considers high speed internet access via a personal computer, laptop, tablet or smartphone (often all four) a necessity, right along with food, shelter and clothing; yet, the most disadvantaged among us, when asked, do not share this view.

Importantly, there are no clear policies, and few programs in place, within our region that specifically address closing the Digital Divide. Without regional leadership in the Inland Empire taking action to make closing the Digital Divide a priority, those without access will become even more marginalized leading to a myriad of social, economic, and civic problems.
The survey clearly shows that for those surviving at subsistence levels, internet access is often not seen as a necessity. It is not even on their radar or wish list. As more public assistance, business, and government services go online, those living below poverty in the Inland Empire become virtually “invisible” and further disenfranchised.
### Survey Results

#### Would you be interested in free or low cost computer classes in your community to support employment and computer proficiency? (Count)

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>824</td>
</tr>
<tr>
<td>Yes</td>
<td>169</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>993</strong></td>
</tr>
</tbody>
</table>

#### Would you be interested in learning about reduced cost high speed or dial up internet services? (Count)

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>544</td>
</tr>
<tr>
<td>Yes</td>
<td>535</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>1079</strong></td>
</tr>
</tbody>
</table>

#### Would you be interested in learning about sites in your community where you can access computers for free? (Count)

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>891</td>
</tr>
<tr>
<td>Yes</td>
<td>120</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>1011</strong></td>
</tr>
</tbody>
</table>

#### Would you be interested in learning more about a program providing reduced cost refurbished computers? (Count)

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>741</td>
</tr>
<tr>
<td>Yes</td>
<td>289</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>1030</strong></td>
</tr>
</tbody>
</table>
How will the disadvantaged access services when everything is online?

The United Way effort also shows that while there may be a telephone number and address available for a service, a common direction upon phone or in-person contact is the instruction to “go online” to apply, find information, or get further assistance. United Way staff gets involved in navigating this as those without internet access, let alone competency to use the technology, are put on a critical needs list to ensure they get the help they need. This type of intervention work is intensive and expensive.

The need for programs that provide internet access and technology training is paramount. However, the United Way 2-1-1 experience shows that to bridge the Digital Divide, it is not as simple as just providing funding and programs—there are many in our community in crisis who cannot deal with, afford or comprehend getting connected.

**Riverside and San Bernardino Counties are part of the State’s “C4Yourself.com” benefits website**

Those in need can apply for public assistance, food stamps, Medi-Cal, CalWORKs, etc., and they can use their online accounts to recertify and check benefits.

As services continue to move online, internet-only access is also taking place all around us. The Digital Divide gets deeper and more complex.

For example, the federal government offers Benefits.gov, which currently has eligibility prescreening available online—applications cannot yet be submitted online.
Public agencies, assistance programs, healthcare, banking, utilities, taxes, pensions, basic news, etc. are all online with some moving to an online access-only model. Some are moving too fast—for example, as of April 2014, the Social Security Administration (SSA) announced it is changing its 2011 policy of no longer mailing annual statements and requiring an online account to access information, such as credited work history.

According to a recent article from Reuters, starting this September, SSA will resume mailings at five-year intervals to workers ages 25, 30 through 60, who have not signed up to view their statements online. SSA was clear they will continue to promote use of the online statements.

The SSA stopped mailing most paper statements in 2011 in response to budget pressures, which saved $70 million annually – about 50 cents per mailed statement. So far, only 10 million wage earners - just 6 percent of all workers - have signed up at the site. According to the article, “Critics note that many of the workers who will be most reliant on Social Security in retirement are least likely to have internet access, including low-income and non-English speaking minorities.”

California’s DMV now wants drivers to have online accounts. The online option is listed first on the State’s Employment Development Department website for filing unemployment and disability claims. Even when online services are discretionary such as shopping, without internet access, disadvantaged people don’t participate and often lose out on savings and convenience the rest of the community takes for granted. Not to mention that most of these organizations drive their customers to communicate with them only online.

In the Inland Empire, both the Riverside and San Bernardino County Housing Authorities no longer provide print-outs for available HUD Section 8 housing voucher rentals—instead they advise those in need to go online, using www.GoSection8.com. Across the State and nation, housing authorities are driving clients to this website. It has photos, maps, and detailed information about each rental, as well as neighborhood schools, parks, shopping, services, nearby transit, and even a walkability score. Note: GoSection8.com is not a government site—it is operated by Affordable Housing Network, LLC.
Moving government processes and services online saves time and money. Most of us appreciate the convenience and savings. People also want to connect when they are waiting for services.

However, public agencies like the DMV, SSA, the U.S. Post Office, Courts, etc. typically do not offer WiFi, even when they have long wait times at their offices. Further, they do not include making sure those on the wrong side of the Digital Divide, who need their services, have access to the internet or computers. When they move their services online, their counter and telephone customer service representatives often suggest clients find essential information and forms online.

In fact, when a business or public agency’s internal internet service is out, they often close or only offer limited service.

At the right, is a “Cash Only” Notice posted on the Calimesa Post Office front door September 17, 2014 due to no network service. They were unable to provide any window service other than to sell stamps—accepting only cash for payment.

Free or low-cost WiFi in public buildings, businesses, and community hot spot locations is a growing trend. There are also government agencies and businesses in the Inland Empire that provide WiFi for their customers.

However, more is needed than just providing WiFi. For example, looking for rental housing, filling out forms to receive food stamps, social security, unemployment, and disability requires time and thought, where computer stations could be helpful. The usual public agency response to those in need of services, who also seek internet connectivity, is to advise them to go to the library. This works in theory, except that libraries are overtaxed, have limited business hours, and libraries have queues and place time limits on their internet and computer resources.
Some agencies, such as the San Bernardino County Housing Authority, have online resources – their website identifies six Neighborhood Network Centers. The Housing Authority Centers offer internet access, basic training on Microsoft Office programs, education, career planning, job search, and employment application assistance.

Contrast this with the San Bernardino County Superior Court, which has one computer available on the first floor with limited-to-no technical support, with many of their forms now available only online as they have phased out offering paper forms.

**CPUC CASF now has $25 million available in new Broadband Public Housing Account**

The CPUC California Advanced Services Fund (CASF) was expanded in September 2013 with the approval of Assembly Bill (AB) 1299, which allocates $25 million in grants and loans to the newly created Broadband Public Housing Account for broadband access and adoption in publicly supported housing communities.

Providing broadband access in public housing communities is important to close the Digital Divide. Public Housing in the Inland Empire does not routinely offer free or reduced broadband services. Residents, who are already identified as disadvantaged and in need of public subsidies, are basically on their own for internet access. The Inland Empire lags far behind other parts of California and the nation.

A recent study in Kansas City found that when all the high school students were given a laptop to take home, 60% of the students in Kansas City, Kansas, and 70% in Kansas City, Missouri were taking them to homes that had no internet connection. As the study looked further into Section 8 public housing, the percentage was much higher. At one complex, the researchers could only find one student whose household had internet access and could therefore use the school-issued laptop at home.

Leadership and policies are needed in the Inland Empire to plan, budget, and provide for internet access in public housing just like other assistance in these communities, such as child care, health services, education, and job search support.
News Flash: Telephone banking phased out in favor of online-only access

As an example of how customers may be informed that internet access is needed to do business, Union Bank recently sent this notice to its customers, many of whom are in the Inland Empire, alerting that their telephone banking bill pay option is discontinued—online bill pay only from now on.

Email and technical skills are part of the Digital Divide

Another concern is that people without email accounts are being left behind, as email is often preferred by business and government over mail and phone calls, and in some cases, is the only communication method accepted. Online accounts require email addresses, either as a log-in, or for account set up. It is not a stretch that everyone is expected to have an email, and regular online access to it.

There is even an expectation that everyone knows how to type, fill in information online and use online forms, as well as to create, attach, and send word processing, spreadsheets, and PDF document and photos. It is also assumed people have a budget for computers, anti-virus software, and they can distinguish between important and junk emails.

As smartphones gain popularity and become more functional, many feel this might equalize the Digital Divide; however, these devices have costly monthly internet subscriptions, in addition to having limited capabilities so they are not always computer replacements. Mobile sites often have different content and load differently than on computers. Owning multiple devices is becoming the norm—a smartphone, a desktop and/or laptop computer, a tablet, and a printer. This further deepens the Digital Divide.
Older residents are least likely to have broadband access

Older Californians are less likely than younger residents to have an internet connection at home. The charts below show that those who are 45 and older are the least likely to have broadband access compared to those who are younger.

Older people have a greater need for Medicare, Social Security, government and health care services. Without affordable and accessible internet access, older people in our community can easily find themselves significantly affected by the Digital Divide.
Inhibitors to broadband adoption are clustered around:

- Level of education (completion not above secondary school)
- Age above 65 (related, in some cases to absence of children in the household)
- Location in rural areas
- Disadvantaged socio-demographic groups, which is also correlated with level of education and employment status (unskilled workers, retirees and homemakers)
- Lower income households

Lack of broadband access, especially for the low-income, can be associated with specific equipment or setup requirements imposed by internet providers, large monthly subscription fees and ownership of appropriate equipment such as personal computers or smartphones. As the United Way surveys show, those who are the most vulnerable, are not attempting to get connected.

Access. Typically, basic internet and broadband access is most problematic for the disadvantaged and for rural areas with low population levels. Expanding service to rural areas can be costly and offers a lower return on investment for telecommunications and cable companies. There are opportunities for partnerships, both private and public, to be forged to establish service not only in rural areas lacking sufficient broadband service, but also in low-income neighborhoods that have traditionally been overlooked by providers.

Broadband affordability. Another obstacle of adoption is an affordable price for the service provided. The price of broadband needs to be reasonable for all income levels especially with the proliferation of smartphones and multimedia communications services.

A variety of costs are associated with home broadband adoption, including purchase of a computer and equipment to enable broadband, startup service costs, and recurring monthly subscription fees.

Users pay an average of $41 per month in service fees, and typically need to bundle their broadband internet connections—in many cases, without limited contract discounts and bundling of services with internet, the cost for a household could be in the range of $80 to $100 per month. Rural and low-income areas can also have higher fees, than the suburbs, urban areas, and more well-heeled areas, because service and upgrades are not seen as profitable by internet providers.
As the Inland Empire United Way surveys confirm, low-income households must make choices about how they spend the portion of their income that does not go to the necessities of housing, utilities, food, health care, and transportation. They often decide that the cost of home broadband internet service simply does not fit into their limited budget.

Nationally, only 43% of households with annual incomes less than $25,000 have broadband internet access at home. A quarter of households without internet services say they do not subscribe because service is unaffordable.

**Broadband usage.** While access and affordability of broadband are the foundation elements, the third and perhaps most important component is getting the unserved and underserved to embrace the technology and become literate users. This requires an awareness campaign and training programs for a variety of end users, from young to old, encompassing affordability, language issues, and needed equipment, such as computer/laptop/tablet/printer, etc. This does not even address the knowledge divide.
Many non-adopters do not understand or recognize the value and benefits of basic internet, much less broadband level service. A significant portion of non-adopters are lower income households and older people, who do not want to change how they have always done things—they tend to consider the internet expensive, a “waste of time” or the content uninteresting or irrelevant.

The most common reason cited for not using the internet is a “perceived lack of need or lack of interest.” This barrier has become more apparent in the past few years with the increase in use of social media, online entertainment, and junk emails cluttering inboxes. Paying bills, emailing and reading news may not be enough to bring in new users. However, as services become exclusively online, non-adopters will be confronted with how they access parts of their daily life without internet access.

Targeted outreach by companies has evolved online as well—companies are expanding their marketing, sales, and customer service through website and e-commerce capabilities. This rapid move to provide deals and specials to those online furthers exacerbates the Digital Divide between users and non-adopters.

<table>
<thead>
<tr>
<th>Reasons why they don’t use internet</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Just not interested</td>
<td>21%</td>
</tr>
<tr>
<td>Don’t have a computer</td>
<td>13</td>
</tr>
<tr>
<td>Too difficult/frustrating</td>
<td>10</td>
</tr>
<tr>
<td>Don’t know how/Don’t have skills</td>
<td>8</td>
</tr>
<tr>
<td>Too old to learn</td>
<td>8</td>
</tr>
<tr>
<td>Don’t have access</td>
<td>7</td>
</tr>
<tr>
<td>Too expensive</td>
<td>6</td>
</tr>
<tr>
<td>Don’t need it / Don’t want it</td>
<td>6</td>
</tr>
<tr>
<td>Think it’s a waste of time</td>
<td>4</td>
</tr>
<tr>
<td>Physically unable (e.g. poor eyesight or disabled)</td>
<td>4</td>
</tr>
<tr>
<td>Too busy/Just don’t have the time</td>
<td>3</td>
</tr>
<tr>
<td>Worried about privacy / viruses / spam / spyware / hackers</td>
<td>3</td>
</tr>
<tr>
<td>Other (SPECIFY)</td>
<td>7</td>
</tr>
</tbody>
</table>

**Summary of reasons**

- **Relevance** (not interested + waste of time + too busy + don’t need/want) 34%
- **Usability** (difficult/frustrating + too old + don’t know how + physically unable + worried about virus/spam/hackers/etc.) 32
- **Price** (too expensive + don’t have computer) 19
- **Lack of availability / Access** 7
C. Eliminating the Digital Divide

The Five A’s of Digital Inclusion

As digital technology is increasingly used for educational, employment, health, commercial, and informational purposes, Digital Inclusion is critical for full engagement, participation, and opportunity in the social, economic, and civic life of society.

More than just access to the internet, Digital Inclusion means that all stakeholders are engaged in the use of internet technology, services and information; that all potential users can access the technology and know how to use it; and with increased adoption comes more services, increased information, and greater community access.

To truly pursue a comprehensive Digital Inclusion strategy and reach high adoption rates, it is necessary to focus on five components:

Access, Applications, Affordability, Accessibility, and Assistance

Digital Inclusion means that everyone—regardless of who they are or where they live—are able to participate in and take advantage of the economic, educational, health, and civic opportunities afforded by broadband and related information technology.

The Five A’s of Digital Inclusion

- Access
- Applications
- Affordability
- Accessibility
- Assistance

Adoption
1. **Access** refers to the infrastructure necessary to use broadband to reach applications on the internet. Access in the Inland Empire, as well as throughout California, is typically thought to be a primary issue in rural communities. For example, rural areas in Riverside and San Bernardino Counties may be quoted $40 per month to receive 256 Kbps internet service or $50 to $90, or more for 1 Mbps to 6 Mbps.

In addition, CPUC data collection efforts are showing that internet providers, both wired and wireless, advertise internet bandwidth and speeds that are not always validated in the field. By relying on what internet providers say they deliver, CPUC maps show the majority of the two counties as being “served.” This simply is not the case. Broadband field surveys continually show lower internet speeds than shown on the CPUC mapping based on internet provider data.

Rural areas clearly are in need of a solution. However, access is also an issue in lower income urbanized communities in need of revitalization. Internet service is lacking in these areas—often time service varies street by street. Providers are not inclined to invest, especially knowing that affordability of service is a major concern to residents. Low income families, children, and the elderly in both rural and lower income neighborhoods in the Inland Empire have limited internet access.

Below are two maps based upon CPUC broadband data showing served, underserved and unserved areas based upon data for the Inland Empire from internet providers such as Verizon, AT&T, Time Warner, etc. for wired and mobile service, using the CPUC standard of served being 1.5 Mbps up and 6 Mbps down.

The maps show that urbanized areas are mostly served by wireline, and that the majority of the region, including rural, desert and mountain areas, is served by wireless. Therefore, when combining the two exhibits, it looks like the Inland Empire is not unserved or underserved at all, but rather, is receiving service to CPUC policy standards through access to the two technologies—wired service directly to homes and buildings, or by mobile wireless service.

This information is out of touch because it basically just shows advertised rates. When field testing is done, many times the results show little or no internet service, especially related to mobile wireless service. People living throughout our region, especially in rural, mountain, desert, and economically distressed urbanized areas report a much different story about actual speeds being delivered. Many have little, poor, or no service.
CPUC Mapping: Wireline Internet
- Served/Underserved in the Inland Empire

CPUC Mapping: Mobile Wireless Internet
- Served/Underserved/Unserved in the Inland Empire
CPUC California Interactive Broadband Map and public feedback

The California Interactive Broadband Map is a tool created by the CPUC that identifies and provides analysis for broadband services throughout the state. The map displays all of the broadband providers offering service within the area around a particular address. The data displayed is as of June 30, 2014, and it is updated approximately every six months.

According to the CPUC, a primary use is for California residents to access information about the broadband services available to them, and to make them better informed consumers. The information is also used to inform public policies intended to make sure broadband is available throughout the State, and to promote digital literacy and broadband usage. The CPUC data is also used by the federal government for the same policy purposes. The CPUC Communications Division provides an opportunity for anyone to validate broadband availability throughout the State. This public feedback is displayed, along with other broadband information and data on the California Interactive Broadband Map at www.broadbandmap.ca.gov.

Anyone can submit information to the CPUC for the Broadband Map using the following three methods available on the website listed above.

- Complete the CPUC online survey.
- Fill out and mail a hard copy of the survey questions (available on website).
- Use the CPUC CalSPEED Android mobile app.

![CPUC CalSPEED Android App]
2. **Applications** refer to the content online. Data indicates over 30% of those not online say they are just not interested. Research also indicates more culture and community specific content is needed to attract underserved communities to the internet. Content must be relevant to the lives of the target audience to increase adoption. Outside of being forced onto the internet to access needed services, many non-adopters just don’t see the value to including the internet into their lives.

3. **Affordability** refers to the total cost of "being connected." It includes the price of online devices (computers, smartphones, tablets, printers, scanners, etc.), software, set-up costs, ongoing, necessary upgrades, training, and monthly service. While it is true that in many areas in the Inland Empire and throughout the state, internet prices have dropped to some extent, and capacity has risen, the cost of internet continues to be a serious obstacle to inclusion.

Those who only access the internet through smart phones and tablets are subject to limited bandwidth and data caps. Not all content, services and information is available on these devices. It is not a fair comparison to look at the price of internet on a smartphone in the same way as for a home or business, which has no data caps.

Internet providers do not offer low-income, senior, disabled, or veteran discounts. For a person on social security or disability whose monthly check may only be $700 to $1,000 per month, internet service and equipment could easily cost them more than 10% of their income. If this same person were to take on a smart phone, the cost of internet takes up an even higher percentage of their income. In fact, in either scenario, the cost may be higher than what they spend on utilities in their home.

Also, home internet is charged per household; therefore, internet service per capita is less expensive for families than for households with one or two people. This clearly shows that seniors are at a disadvantage as many live alone with only one income.

Internet providers regularly offer discounted bundles combining home phone, TV/cable and internet. For those who would rather choose a mobile phone, or don’t need TV/cable, the cost of internet alone is nearly as high as the cost of the bundle. Internet providers spend thousands of dollars on advertising and mailers. They also have “helpful” customer service that lead consumers to bundling by highlighting monthly savings. For those on limited incomes, or who live on strict budgets by choice, the price of internet service is simply unaffordable.
4. **Accessibility** refers to the ease of use people with disabilities have when using equipment and services needed to access the internet and using websites and applications online. The more accessibility is considered and addressed, the more those with disabilities will have equitable access internet in the 21st century.

5. **Assistance** refers to technical support, training and upgrading technology over time. Accessing the internet can difficult to understand, require knowledge of specialized software and applications, and can also be costly for even those with means. The technology for the online participation still has a way to go before it is "plug and play."

Many believe one reason smart phones and tablets are so popular is that they use touch-screens and are considered plug and play without having to learn complicated software, maintain computer equipment, and manage multiple cables and power cords.

In this sense, the Digital Divide should be much easier to eliminate through the increased distribution and use of affordable smart phones and tablets. However, lower monthly service costs are essential to making progress. In addition, mobile devices have limitations and have not replaced the functionality of laptop or desktop computers.

Assistance is also needed to get computers and devices into the hands of those unserved, underserved and unskilled in their use, such as children, adults in low-income households and the elderly who are less likely to embrace a new technology.

Finding ways to close the Digital Divide in remote rural, mountain and desert areas in the Inland Empire is also an infrastructure and investment issue. The lack of internet service in addition to the cost and excruciatingly low speeds when internet is available gnaws at those who live in rural and remote areas. Rural residents are becoming vocal and expect their phone and cable companies to help them; often this fails because these companies either have no plan to extend service, or have limitations on their existing infrastructure with no planned upgrades.

When this effort fails, rural residents search for new technologies, innovative companies, and local government to help find solutions, often times coming up short, being told there isn’t any profit in serving them, or that there are no government policies or programs or even being developed to address getting them connected.

It would be good policy for regional leadership to include if and how people access the internet as visions and policies are created.
D. What about regulation?

The internet is **not** regulated. Surprised? It’s an open internet according to the FCC.

Although the CPUC has set policy for California regarding internet service speed related to unserved and underserved areas, it does not actually regulate those speeds, or any internet service for that matter. In fact, the CPUC has only recently taken on the task of studying internet speeds and service within the State.

For clarification, the CPUC regulates privately-owned electric, natural gas, water, telecommunications, railroad, rail transit, and passenger transportation companies, but not the internet, even if these groups provide internet service.

However, recently the CPUC has taken a step in focusing on the cost and availability of broadband services in its review of a proposed merger between the two largest cable and broadband providers in the state: Comcast and Time Warner Cable.

CPUC will be considering how the proposed merger will promote state and federal goals, such as encouraging broadband deployment and further innovation, community choice and protection, as well as economic benefits to California, including benefits to increasing adoption and access to broadband in order to close the Digital Divide.

According to the Federal Communications Commission (FCC), it does not regulate the internet. The FCC states it supports the “Open Internet” aka “Net Neutrality.” However, from May to September 2014, the FCC received approximately 3.7 million responses regarding its controversial proposed rulemaking entitled Protecting and Promoting the Open Internet, GN Docket No. 14-28.

According to the FCC, “...it does not regulate internet content or applications. To the contrary, the FCC seeks to develop and implement high-level, flexible rules of the road for broadband to ensure that no one – not the government and not the companies that provide broadband service – can restrict innovation on the internet.”
ISPs (Internet Service Providers) – won’t they take care of us?

An ISP provides the necessary technical and communication services to allow a user to connect to the internet either through a wired or wireless connection. An ISP provides and sells physical internet access. Services provided by ISPs include web hosting, e-mail, voice over internet protocol (VoIP), and business-level internet service.

While the big players in broadband tend to be telephone or cable providers, e.g., Verizon, AT&T, Comcast, Time Warner, etc., broadband can be provided by anyone with the capability of providing the service. Government can also provide internet service, and some in our region—the cities of Loma Linda and Ontario, and the County of Riverside—are doing just that. Loma Linda built and runs its internationally recognized Connected Community Program providing a city-wide fiber optic network, as well as modifications to building regulations to ensure development will be designed to meet the needs of future communication technologies; Ontario is now building its own municipal fiber system for public safety and economic development purposes; and, Riverside County is designing a “ring of fiber” to connect its rural and urbanized services.

For telephone and cable providers, also offering broadband access is a source of profit, with no limits on rates or service quality, other than what the market will bear—in other words the price the consumer is willing to pay. Any company can become an ISP and there has been growth in non-telecom/cable companies getting into the ISP game to find ways to serve rural areas, compete with the existing providers, and also to fill the niche of providing higher cost internet service tailored to business needs.

All of us gain internet access through ISPs—mostly through telecoms, cable companies, mobile providers, and in a few cases, through government as an ISP. We also gain access through WiFi networks—some free, location-based, or for a fee.

Is it working? Many think we are doing all right. Those of us who live in areas with fast and reliable service, where ISPs invest in upgrades, and who can afford monthly service cost and needed equipment, are just looking for the next highest speed offered, the next gadget, and to discover new software and application. So the answer is for some, the system is working, and for those on the other side of the Digital Divide, probably not. Those on the other side may not even realize they are being affected until one-by-one, services, information, and assistance are only available through online access.
Can’t we call Google and ask them to provide our internet?

With all the technology advancements happening around us, one might ask, won’t Google just take care of our broadband needs? After all, Google has famously deployed Broadband in Provo, Utah and is deploying it now in Kansas City, Missouri “fiberhoods” with Austin, Texas in the pipeline, along with 34 cities in other metropolitan areas as shown below.

Note that in California, San Jose is the only area shown – no city in Southern California is included in Google’s planned roll out.

In trying to determine when Google might come to the Inland Empire, news reports and Google’s own Fiber Blog are not promising:

“Don’t hold your breath. Current estimates peg the cost of a nationwide deployment near the $140 billion mark — technically possible, though a huge financial stretch for Google. Then there’s the high likelihood that Fiber will still face incredible challenges from current providers to keep new entrants out.” -- Tim Worstall, Forbes

This information does show that leadership and stakeholders can organize and lobby Google to add the Inland Empire to their broadband deployment list. However, this should only be considered part of a broader strategy that is needed to close the Digital Divide in our region.
Inland Empire
Regional Broadband Consortium

Blog highlights that cities wanting Google Fiber need to be engaged and willing to help

Back in February, we started working side-by-side with 34 cities in nine U.S. metro areas to explore what it would take to bring Google Fiber to their communities. Each city has been busy tackling a checklist of items to help prepare for a big local fiber construction project. We’ve been impressed by the enthusiasm and engagement of every one of these cities, and all of them have, for the most part, completed their checklists.

We say “for the most part” because there’s still a lot of work to do over the next few months. We’ll start by working with cities to tie up some checklist-related loose ends. For example, we worked with city staffers to draft agreements that would let us place fiber huts on city land; several city councils still need to approve these agreements. We may spend some time working together to figure out an ideal permitting process that would be fast and efficient. And, as we review the information that cities have already provided, like infrastructure maps, we’ll probably have a lot of follow-up questions.

There’s also a lot to do beyond the checklist. We’ll need to work with either the city or the state to get something called a video franchise agreement, which would basically grant us permission to build a local network. We may also need pole-attachment agreements with local utilities or other companies who can rent us space on their poles. (Stringing fiber along existing poles is the fastest and least disruptive way to deploy it.)

After all of these steps, we’ll start drawing up construction blueprints for local fiber networks. These detailed designs will help us see how complex it would be to build in each city, and will be used as we make our final decisions.

Finally, don’t be surprised (or get too excited!) if you run into a Google Fiber crew doing work around your town, or see postings for local jobs on our Fiber team; before we make a decision about bringing Fiber to your city, we may do some exploratory work and recruiting so that we’re ready to start construction and operations quickly. We still plan to announce which cities will get Google Fiber by the end of the year.

Posted by Jill Szuchmacher, Google Fiber expansion team, May 1, 2014
A debate is brewing: should the internet be treated like a public utility?

There are robust arguments on both sides of this issue, and even as this document is being published, the FCC is considering new rules that will affect the internet. The FCC states clearly: they are not “regulating” the internet—just considering rules that affect it and will keep it “open and consistent” with net neutrality.

The FCC is not considering regulation that would treat the internet as a public utility. Those debates have yet to be held. However, the information coming from the FCC is that they will take public comment, but plan on moving forward with some form or type of new rules.

Fast, reliable internet service is becoming, and for many of us has already become, a necessity. How this service is provided to all of us, including the disadvantaged, unserved, and underserved in our community, as well as to businesses, entrepreneurs, education, healthcare, and government, is now an important consideration.

The following quote from PublicCEO offers an idea of how important internet access really is to us:

“Is broadband connectivity a public utility? Getting an education, finding a job, accessing high quality healthcare: increasingly, high speed internet access is a prerequisite to full participation in many aspects of modern life.

And yet, a confluence of telecommunications policy decisions and industry dynamics have left the United States and California with slower, scarcer, and more expensive connectivity than most of the rest of the developed world. One third of Americans don’t have home access to a high speed connection.

– PublicCEO, March 28, 2014
II. **The IE can be a Smart Region**

The Inland Empire Smart Region — it is possible

Not only must the Inland Empire bridge the Digital Divide, it should *raise the bar* and aspire to become known as a “Smart Region.” The Inland Empire can start by recognizing its scientific and technological resources by using a “Smart Region” designation. Yes, it requires more than just saying the region is smart—all the factors of a smart region should be reviewed, analyzed and implemented. Regional leadership, by embracing technological opportunity, could showcase the region’s successes, and build the Inland Empire up to attract start-ups, tech firms and technology investment.

This type of effort can lead to synergistic growth where supporting industries taking hold. IERB contends that thinking big should be embraced, especially when it comes to technology. Evidence shows that being known for having fast, reliable and affordable broadband is part of becoming a “Smart Region.”

Considering just a few enterprises in the Inland Empire that have focused on technology—world-renowned Loma Linda University and Medical Center and the City-owned high speed broadband network providing Fiber to the Home (FTTH), the University of California, Riverside with its new School of Medicine and achievements in agricultural research, aerospace leader Kelly Space and Technology in San Bernardino, and Esri—the global force in Geographic Information Technology (GIS) headquartered in Redlands-- the Inland Empire could, in fact, build itself into being known state-wide, nationally, and even globally as a “Smart Region.”
What is going on in Chattanooga, Tennessee? It is now the “Gig City”

The Inland Empire can look to Chattanooga, Tennessee, which in a matter of just a few years reinvented itself into the “Gig City” by creating a public fiber network in 2009 as a joint venture with their power company EPB. Tech companies, venture capitalists, as well as dozens of start-ups and hundreds of entrepreneurs, are flocking to Chattanooga to take advantage of internet access speeds of one gigabit per second—200 times the speed of the national average.

In roughly four years, the “Gig City” has enjoyed thousands of newly created jobs and hundreds of millions of dollars in investment, while the rest of the country, including the hard-hit Inland Empire, suffered through the Great Recession. Aaron Welch, who owns Iron Gaming, a tech start-up he wants to turn into the biggest name in online gaming, recently said that, “What would take several days to transfer over a normal network, you can do in a matter of minutes...Even if we went two hours north or south to Nashville or Atlanta you are still looking at twice as expensive for operating costs.”

Annual “GIGTANK” events are being held with innovators joining in from all over the United States, and internationally. Many of the winners move to Chattanooga.

According to www.thegigcity.com, Chattanooga’s GIGTANK is the only startup accelerator where entrepreneurs can test, innovate, and launch high-bandwidth business ideas using the broadband platform of the future. Hundreds participated in this year’s event.

Chattanooga also shows what superfast internet connections can do for city services

“The true benefits of municipal high-speed networks are...the vast range of possibilities they open. The fiber network is a wireless mesh that allows government, so often wary of innovation, to try new approaches. Police in Chattanooga have vastly expanded their communications and mobile data analysis. Traffic lights respond in real time to changing traffic patterns. Rubbish can be collected more efficiently. This sort of network can improve a city’s operations while broadening its tax base.”  The Economist, April 2012
“It created a catalytic moment here,” said Sheldon Grizzle, the founder of the Company Lab, which helps start-ups refine their ideas and bring their products to market. “The Gig,” as the taxpayer-owned, fiber-optic network is known, “allowed us to attract capital and talent into this community that never would have been here otherwise.”

Since the fiber-optic network switched on four years ago, the signs of growth in Chattanooga are unmistakable. Former factory buildings on Main Street and Warehouse Row on Market Street have been converted to loft apartments, open-space offices, restaurants and shops. The city has welcomed a new population of computer programmers, entrepreneurs and investors. Lengthy sideburns and scruffyhipster beards — not the norm in eastern Tennessee — are de rigueur for the under-30 set.

“This is a small city that I had never heard of,” said Toni Gemayel, a Florida native who moved his software start-up, Banyan, from Tampa to Chattanooga because of the Internet speed. “It beat Seattle, New York, San Francisco in building the Gig. People here are thinking big.”


Smart Regions consider broadband a catalyst for economic growth and sustainability

What would the Inland Empire’s economy and investment be like in five years, if regional leaders took serious interest and a closer look right now into technology, innovation and its relationship with broadband service as an economic catalyst?

IERB is proposing that these topics become part of our thinking, strategic planning, and implementation—rather than saying we can’t, our population won’t support it, and we are not capable, we could be saying we want to be known for having a thriving technology sector, identifying what is needed to support it, and setting goals to achieve it.
The City of Riverside is a “Smart City”

Our region can also take a cue from the City of Riverside, which is now known as the “City of Arts and Innovation.”

The City started by imagining, striving, and implementing policies and programs to become a “Smart City.” In 2012 Riverside was named the “Most Intelligent Community in the World,” by the Intelligent Community Forum, a think tank that studies the economic and social development of the 21st century community.

Riverside succeeded the 2011 winner, Eindhoven, Netherlands, and was at the top of a list of seven finalists in 2012: Riverside, California; Austin, Texas; Oulu, Finland; Quebec City, Quebec; Saint John, New Brunswick; Stratford, Ontario; and, Taichung City, Taiwan.

The City was recognized for fostering SmartRiverside and its digital inclusion efforts, technology incubation, and e-waste recycling, as well as attracting technology businesses to the City and promoting the UC Riverside School of Medicine, California’s first new public medical school in four decades, which will bring more physicians and research to the region.

Certainly, if Riverside can move forward embracing technology, and smart city type policies, and if Chattanooga can imagine and recreate itself as the Gig City, the Inland Empire can also aspire to embrace this type of thinking.

As noted, the Inland Empire region has technology and science innovators; yet, the economic adversity the region faces seems to always make the headlines. It is up to the region’s leadership to move us forward—and implementing a “Smart Region” strategy just might be the way to do it.
Leaders in the Inland Empire should start moving on the idea of becoming a “Smart Region” by learning what makes a region “Smart,” seeking guidance from industry experts and innovators while creating policy and taking actions that supports it.

**What makes a region Smart?**

- High Speed Broadband
- Gigabyte Internet Speeds
- Internet Provider Choices
- Affordable Internet Access
- Wireless Hot Spots
- Free WiFi
- Fiber to the Home
- Smart Homes
- Excellent Job Opportunities
- Telecommuting
- Technology Companies
- Start-up Incubators
- Venture Capitalists
- Entrepreneurs
- High School and College Graduates
- Online Education
- Research Universities
- Quality Healthcare
- Telemedicine
- 24-Hour Government
- Connected Citizens
- Social Networking and Meet-ups
- Culture Experiences and Art
- Tourism
- Smart Grid
- Sustainability
- Quality of Life

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**Smart City in the I.E.**

*Riverside, CA*

--- Awarded 2012 Most Intelligent Community in the World

**Gig City in U.S.**

*Chattanooga, TN*

**Google Fiber in U.S.**

*Kansas City, MO
Austin, TX
Provo, UT*
III. **Broadband and Economic Development**

A. **The New Business Paradigm**

A new business paradigm

The internet, as we have grown to know it over the years, is fundamentally changing. As broadband speeds increase and approach the internal data transmission rates that exist between computers and devices within the same home or building, a paradigm shift in the way we use and conduct business over these networks, begins to emerge. That change is happening now and it affects the entire digital world around us. For many small businesses on the wrong side of the Digital Divide, the result is higher overhead costs and the added penalty of missing out on the benefits of new technologies that arise from having access to increasing broadband speeds.

Today, for those with fast broadband internet access, the requirement that servers be located inside the building, or that software systems run using local equipment, or even the need for operating systems running on local computers, is no longer a necessity. Essentially the walls and distances separating homes and businesses from the rest of the digital world become negligible. The fundamental need for the digital worker to be at the office in order to make use of local business resources is no longer valid.

This paradigm shift is affecting everything from how businesses are organized and structured, to how and where employees can work (telecommuters). This new age of faster connectivity is even affecting how new office spaces are being designed. This idea of Cloud Computing - using software resources remotely and storing data in the “Cloud” has become a universal concept and a mainstream term in today’s vernacular.

However, without access to increased broadband speeds and the fundamental infrastructure that can sustain increasing transmission speeds over time to keep up with advances that come with this new paradigm – those left standing on the wrong side of the Digital Divide will suffer. Both the consumer – and the businesses they shop and work in – are affected.
Everything as a service

Cloud computing is the next big step in the evolution of the Internet. Computer systems and IT infrastructure are no longer required to be housed locally; they can be hosted at external locations or data centers. Data storage and computer processing no longer need to be local to the user, and computer systems become more reliable, easier to acquire and implement, and more affordable.

The European Commission, which represents the interests of the entire European Union, has an initiative study (the 2020 Initiative) that estimates that, “Cloud computing...represents considerable savings in IT budgets, and the end of headaches linked to older computing methods. Private sector businesses using cloud computing report 10-20% lower IT costs, while cloud computing can also help the public sector improve efficiencies and lower costs.”

Unfortunately, in order to benefit from the rewards of new technologies like cloud computing – small businesses – a fundamental driving force of economic development in California, as well as across the globe, face increasing demand for higher and higher broadband speeds, and access to increased internet data speeds.

What are acceptable broadband speeds for small businesses? Now, and in the future?

The same European Union study mentioned above found that a “10% increase in broadband penetration brings up the GDP by 1-1.5%.” The same concepts used to determine the impact in Europe of increased broadband access can be applied to the Californian economy. Just the fact that GDP can be significantly improved by increased access to broadband is significant.

Akamai, a global player in content delivery across the internet releases an annual “State of the Internet” report that is considered by the tech markets and the media to be a highly accurate and revealing report on the state of the global internet. In 4th Quarter 2013, the United States finally broke into the top ten for the first time in average broadband delivered speed. The U.S. placed at #10 and at exactly a 10 Mbps average broadband connection speed.

Compared to 2012’s rating of 5.8 Mbps, progress was made. In the 4th Quarter 2013 Report, countries such as the Czech Republic and Latvia reported higher rates.
Keep in mind – these are average speeds when and where broadband is available. Additionally, Akamai now considers “High Speed Broadband” to be greater than 10 Mbps speeds, and interestingly, the average connection speeds in the top 10 countries and regions in the report are all now at, or above, the high broadband threshold of 10 Mbps.

Considering the research, this should be the minimum bar at which we rate the broadband “served or underserved” in California – especially for businesses, and considering California’s high-technology placement in the global economy.

Also of note, California did not place in the top 10 of best available broadband speeds in the 50 states. Also, the CPUC targets of 1.5 Mbps up and 6 Mbps down, isn’t relevant to households in the future, much less businesses, large and small. If trends continue, by 2020, reasonable estimates of what will be considered “high broadband” should be in the range of 15 – 20 Mbps.
B. Broadband Availability, Pricing, and the Small Business

Broadband availability, price, and the small business

Broadband availability and price are two metrics that give a poor combined view of the real world bandwidth challenges faced by small businesses, especially in the more inland and rural areas of California such as Riverside and San Bernardino Counties.

It is difficult to gauge the true impact availability will play on small business if the affordability is not up to par. For instance, the map based on CPUC broadband data below shows blanketed coverage of speeds in the “High Broadband and up” speed categories across the Inland Empire.

Not represented are the available rates at maximum price that can be afforded by certain types/sizes of businesses. For example – 50 Mbps fiber availability is great, but not if the business is a retail shop with four employees and rates above 10 Mbps are $899 per month, and up to $3,500 for 50 Mbps.

Effectively, a business has no other option than a 3 Mbps or 7 Mbps DSL line. Where is the chart that shows affordability? It can’t be demonstrated. Different businesses have different measures of what is affordable.
The availability of low cost business fiber and fiber supported solutions from Verizon and AT&T are proving to increase widely the average connection speeds in areas where it is available, but also proved to widen the Digital Divide even more – sometimes between businesses that are located across the same parking lot.

This was the situation with L & L Environmental in Redlands – one of the businesses studied for this report, where initially Verizon FIOS was unavailable in a rear building they were to lease. Eventually Verizon was able to make it available. Often, this is not the case.

And in this particular business park, not all of the units have access to Verizon fiber. However, Verizon’s FIOS availability sealed the deal for them, and they relocated from a broadband deprived area of Riverside for the broadband FIOS high ground of Redlands. Actually, calling Redlands well served by FIOS might not even be a fair call. Out of eight potential locations in the same area that were presented by realtors, only two had access to high speed broadband over Fiber or Cable.

The differences in broadband speed and cost that a new or re-locating business can face can be startling. Typically, for around $150 per month of overhead – a small business might end up with 7 Mbps/768 Kbps, or 75 Mbps/25 Mbps for the same price, depending on the location.

**Business parks left behind with no long term solutions**

Another situation prevalent in the small business community is multi-unit business complexes – both retail and industrial – especially older built units. So many times, as in the case of Inland Aerial Surveys in Riverside, a major carrier will run fiber down the street directly in front of the premise. High speed fiber based broadband is then available to the front facing units, with rear located units left unserved except for the original copper lines that were installed as part of the original construction of the complex.

Inland Aerial Surveys had a 384 Kbps up/down connection for over 10 years, with no option for cable, no option for fiber, and no affordable option for fixed wireless. This is a surprising challenge for a tech-based company located in a well-known business economic zone – the Riverside Municipal Airport.

Finally, just this last year, AT&T, utilizing recent improvements to their “last-mile technologies” (a common industry term describing xDSL technology), were able to extend a connection of 12 Mbps/1.5 Mbps to this business located in a back industrial unit.
Yet we still know that low-cost fiber will never be run to these buildings, unless the property owner or some generous donor decides to provide the funding.

Businesses like this will benefit from technology from the major telecoms that extend the bandwidth of copper – but when businesses 10 years from now are trying to compete with low-cost speeds of 300 Mbps and up – copper will never compete.

Extending copper technologies is literally kicking the can down the road. Perhaps wireless broadband at some point will be a solution for these businesses – but in today’s Southern California business community – when it comes to broadband affordability – location is still “everything”.

Fixed wireless is a technology that can provide broadband in areas where traditional ISPs do not provide service. The map below based on CPUC broadband service data shows that where fixed wireless is available, the majority of the areas are not served, or are considered underserved. Providers will say at the initial contact they can bring businesses broadband through fixed wireless—many times, it is just a wild goose chase or the cost is prohibitive.
Another availability issue is multi-unit business parks, industrial complexes, and older business properties with problematic access to internal telecom points of entry. Broadband coverage maps leave out these types of properties and mark them as served – yet there they are, left without upgrades – sometimes the front of the business park is connected when telecoms, cable companies and other internet providers make upgrades; often the middle or back of the parks are avoided and left alone.

Clearly, the coverage of fiber in these areas is not blanketing the marked areas; despite the fact the map above appears to do so. Such is the case of Hemborg Ford in Norco, where fiber from a major cable provider exists directly adjacent to the dealership.

Yet – after inquiries to the provider, the costs of bringing fiber to the premise has to be provided by the property owner – at the cost of $20,000 or more. The dealership has elected to stay with the Ethernet over Copper service they currently have. They will not be served by fiber anytime soon.

**Location is everything to finding affordable business-level internet service**

When it comes to location – and locating a new business, or moving a business – controlling start-up costs and operational costs are tantamount. Yet, most business owners are unaware of the potential hidden cost of monthly broadband fees, and once hit with these costs, will often opt for slower DSL speeds.

For example, Allied Injury Management, Inc. of San Bernardino, employing over 70 people in the city, is considering investing in a new office in Rancho Cucamonga. Availability of AT&T or Verizon fiber, or cable-based broadband would represent a monthly cost savings of at least $1,500 over copper T1 technologies (including telephone savings). Noteworthy, however, is that ALL of these technologies are unavailable at the new building that was purchased by Allied. The biggest surprise is that the new building was purchased for its low cost/sq. ft. value, and this additional cost literally nullifies those advantages.

In another case, L & L Environmental, mentioned previously, literally chose to re-locate their business to Redlands due not only to the cost per square foot of industrial space, but also factored in the low cost of Verizon fiber.

Another surprising and unfortunate fact for businesses that are looking to locate in areas wooing them to startup or expand, some of the area’s regional and local governments focused on the purpose of economic development often have some of the most under developed broadband.
We looked at areas such as the San Bernardino International Airport economic development area, March AFB manufacturing area, Downtown San Bernardino, Downtown Riverside, and Barstow – and more often than not – potential locations for new or re-located businesses were severely underserved by affordable broadband.

For the purposes of this report – lease inquiries were made (see map below) where calls were made to city governments and leasing offices responsible for attracting business to these locations.

The study, while clearly unscientific – had results with emerging patterns. Central leasing offices and city offices had no information available regarding available broadband access at these locations, and often we were directed to leasing companies or realtors for information.

Clearly, work needs to be done so that economic development agencies and leaders have the tools to educate and attract potential businesses for these areas.
Below is a map showing CPUC’s broadband wireline internet availability data for Riverside and San Bernardino Counties with the case study business locations referenced in this section.
The cascade effect

Once a business is able to procure high speed broadband, more doors are opened to them. There is a “cascade effect” that occurs and businesses can gain even more cost savings, and other advantages as a result of the better internet speeds.

Not only can they gain the cost savings associated with cloud based services described herein, their phone bills can be lowered as well. Telephone bills are a major headache for any small business – any technology that can lower these worrisome monthly bills is welcomed.

For example, VOIP – or “Voice over IP (Internet Protocol)” is a method of running the phone circuits over the internet. With this advanced technology, now – instead of paying an average of $40 per month per copper phone line (plus long distance or troublesome bundle packages) – telephone service can be run over the internet and savings incurred.

In most cases a reduction of 30-40% or more can be realized. Businesses can even replace their traditional phone system with a cloud based model that can save even more money.

In one Inland Empire business we reviewed – exactly, this happened. Select ACR, a commercial HVAC company located in Riverside moved their business in 2013 a few miles from its original location, discovered that the new location had cable internet at speeds over 20 Mbps+, (as opposed to the DSL line at the old location), and switched their phones to VOIP – saving over $300 per month.

Riverside-based Inland Aerial Surveys – after 10 years being stuck at 384 Kbps – was able to procure an enhanced DSL circuit of just 6 Mbps down/1 Mbps upload in early 2014 and shortly thereafter switched to a cloud-based hosted phone system, saving an estimated $300 per month—literally, having the ability to finally get better internet service, which immediately saved them $3,600 per year.

Clearly, increasing broadband speeds for the typical small business opens doors to significant cost savings, reduced business startup costs, the ability to use new technologies, and more.
Decreased competition and broadband pricing for business

Small businesses are impacted more heavily by lack of competition in the broadband market than large businesses. Large companies will always have the capital to invest in proven technologies that improve the bottom line.

They tend to do more research when locating their headquarters, branches and ancillary buildings, perhaps being able to locate in higher rent districts. They are also in the position to budget to install their own T-1 or fiber optic lines if needed. And, finally, large companies, due to their operations, staffing and needs, can often negotiate costs directly with telecoms, cable companies and other internet providers. Broadband rates and deployment costs are small compared to their larger enterprise budgets.

However, to the small business, access to high speed broadband was not considered when they initially opened their business; and, if not considered up front, when starting a business and signing leases, businesses are left with few options. Ongoing costs in both scenarios can be significant, with no end in sight.

Additionally, metrics that look at cost per megabyte are typically looking only at residential pricing – and gives a skewed view when it comes to the real world costs facing small businesses.

Small business owners--and many of those who help them find their business location--such as realtors, leasing agents, non-profit resources, government economic departments, small business advisors, and other development advisors—do not have broadband quality of service and cost as a primary consideration for starting a business. In fact, many may think that businesses will pay similar prices to what they pay for residential service.

Business grade internet pricing certainly differs from residential. Large telecom providers will have flat rate pricing structures for residential customers, but the business pricing structure is often 10 times or more than that of residential clients.

In markets where only copper has existed, and then fiber is delivered, business will see this new option to buy more bandwidth, but the costs will always match the current offerings from the copper providers.

The pricing structure from competing cable/fiber providers varies based on what the market will bear. But when competition is minimal – pricing goes through the roof. There is no competition or incentive for these telecoms to offer the service at a lower rate. The business will benefit from increased bandwidth, but often sees no cost reductions.
For example – Allied Injury Management, Inc., in San Bernardino, recently was offered Time Warner internet service from a freshly deployed fiber line in May of 2014. Their price quote for a 100 Mbps circuit is $3,295 or more per month, depending on the contract term.

Interestingly or perhaps coincidently, the starting plan offers increased bandwidth (20 Mbps vs. 6 Mbps existing copper service) for approximately the same cost. These companies certainly know their markets. However, the bottom line is that this lack of competition when it comes to business pricing for internet service stifles progress and significantly impacts small businesses.
C. Making Broadband Easier for Small Business

Plain sense broadband and economic development

Most Small Businesses just don’t have the information available to them to make the most informed decisions about the availability and acquisition of broadband - especially businesses seeking new locations – whether starting up a new business or relocating from another area.

Even existing businesses suffer from lack of awareness, such as the business owner who signs a three-year term at $1,200 per month and finds out the following month that low-cost fiber just got delivered in front of their building.

Often, it is the actual sighting of the Verizon or AT&T truck in front of the premise that precipitates this ugly realization. The decision process on which carrier to call – telecom, cable, wireless, etc.--can be problematic at best for businesses.

Businesses need to be aware of cities that are offering high speed municipal broadband. This information needs to be promoted within the region. For example, few people in the Inland Empire realize that Loma Linda offers city-run high speed broadband directly to homes and to businesses, or that Ontario is building its own fiber network in targeted areas.

As there are many factors that go into business planning, businesses need to know what broadband options exist, including these types of municipal programs—finding out about them after-the-fact is really a costly let down.

Clearly, there has to be a better way to help our businesses and to promote economic development through the adoption of faster broadband. Business educational materials and resources for business-level high speed broadband need to be developed and distributed.

Targeted distributors of this information could be:

- Real estate boards, brokers, and business leasing agents
- ISPs—telecoms, cable, independent providers
- Small Business Administration—local assistance
- Regional and city governments promoting economic development, local business investment, and re-locations, and startups
- City and county planning offices
- Inland Empire Regional Broadband Consortium
- Statewide resources, such as the Governor’s Office of Business and Economic Development, California Small Business Development Centers, and CPUC
Current programs and educational resources should be identified and expanded to include high speed broadband as an important business component. Those responsible for promoting regional and local economic development areas need to address broadband as one of the central factors used in promoting business growth in their regions.

In addition, state and regional policy makers, as well as local economic development leaders, need to addresses services in the business internet markets, which include, working with internet providers so that economic development goals are better aligned with their services and pricing.

Businesses need to understand the importance of their location in order to access high speed broadband, as well as, the availability of broadband now and long term, the cost of business-level broadband, and how it will affect their overhead costs.

Businesses, especially small businesses and start-ups, will also benefit from understanding how they can gain long term and continued benefits by using high speed internet for their business task, i.e., cloud applications, teleconferencing, telecommuting, etc. Education and awareness can only further economic development.
D. Case Studies

The case studies presented above were prepared by Michael Mack, owner of Netreva, which is located in Redlands and provides business IT services in the Inland Empire and Southern California.

Below is a list of businesses within Riverside and San Bernardino Counties whose stories are used for the case studies.

**Crown Printers**
*Printing Company – Downtown San Bernardino, CA*
Increased options 2014 = 4x increase in speed, 20% potential reduction in costs
Options were stagnant for 5-6 years
New internet rates: 20 Mbps/20 Mbps $900 EOC – was 3 Mbps

**Allied Injury Management, Inc.**
*Medical Management Company – San Bernardino, CA*
SB 6 Mbps/6 Mbps $1,300/month
New options: Time-Warner fiber now available, same costs, higher speeds up to 100 MB and more

**Hemborg Ford**
*Auto Dealership – Norco, CA*
6 Mbps/6 Mbps, copper only (EOC), $1,200 per month

**One Stop Multi-Specialty Medical Group**
*Medical Office – Alta Loma, CA*
T-1 $400/month
1.5/1.5 (cable and copper available, upload speeds too slow)

**Select ACR**
*Commercial HVAC/Air Conditioning Service and Contractor – Riverside, CA*
20/5 Cable under $200/month
Pre-2013 old location: DSL only 768 Mbps/384 Mbps

**Inland Aerial Surveys**
*Aerial Survey Company – Riverside, CA (located by the Riverside Municipal Airport)*
xDSL 12 Mbps/512 Kbps $100 per month
Was 384 Kbps/384 Kbps for 10 years plus with no other options
Inland Empire Broadband Infrastructure and Access Plan

L & L Environmental, Inc.
Environmental Resource and Planning Services, Consulting – Redlands, CA
Verizon FIOS 75 Mbps/35 Mbps $150 per month

Home Pride Chem-Dry
Carpet Cleaning – Corona, CA
Chem Dry - Copper Only AT&T U-verse 15/1.5 $130/month

Cedar Pines Park Mutual Water Company
Municipal Water – Cedar Pines Park, CA
Copper Only, DSL 3 MB/768 Kbps -all other options T1, etc.
Not affordable for business; no improvement in options for over 10 years
Rural

Sigalas Insurance
Farmers Insurance Broker – Barstow, CA
Copper Only, DSL 7 MB/768 Kbps -all other options T1, etc.
Not affordable for business
No improvement in options over four years

One Stop Multi-Specialty Medical Group
Medical Office – Hesperia, CA
Copper only – choose T1 – 1.5 Mbps $400/month
Upload speeds provided by copper too slow
Following are additional maps showing wireline internet service in the Inland Empire based upon CPUC collected broadband data.
IV. Rural and Remote Areas

Rural and remote areas have difficulty accessing internet service, much less high speed broadband. In December 2007, the CPUC authorized the California Advanced Services Fund (CASF) to provide grants and loans to bridge the “Digital Divide” in unserved and underserved areas in the state. CASF supports projects that will provide broadband services to areas currently without broadband access, and build out facilities in underserved areas.

In 2013, SB740 authorized an additional $90 million for the CASF Infrastructure Grant and Revolving Loan Account, which includes $25 million targeted for connecting broadband in publicly supported housing. The CPUC is in process of preparing CASF grant fund guidelines for applications in late 2014.

This year, as part of the CASF annual regional consortia learning summit held in Sacramento in March, the CPUC requested each consortia to present high priority unserved and underserved areas in their region that are in need of broadband infrastructure grant funding.
Rural and remote Priority Areas within Riverside and San Bernardino Counties

IERB Consortium presented the following unserved and underserved communities to the CPUC as important priority areas within Riverside and San Bernardino Counties that should be given consideration when reviewing applications for CASF funding.

These unserved and underserved communities are in rural and remote areas that qualify for CASF funds. They either suffer with sketchy, unreliable internet connections or they have no internet service at all. CPUC field testing and input from residents confirm that ISP advertised wireless rates are sometimes not being provided, if at all, in these areas.

In some cases, internet service exists, but the ISPs have no plans to expand service so that customers are finding themselves on waiting lists with little hope that they will be served.

In these cases, when a resident or business stops their service, a new household or business at the same location will not be able to get internet service—even if service was on and working for the previous family or businesses.

What is happening is that as soon as an internet service connection is closed, it is immediately given to a customer that has been waiting. Therefore, it can come as quite a shock to the new family or business when they are refused internet service and cannot receive any, and at best can get on the waiting list.

These unserved and underserved priority areas are also often disadvantaged with high rates of poverty. Although there are more areas in the two counties in need, the CPUC requested that only a few communities be provided to them at this time that stand out based on field testing and known complaints that residents suffer without service or from low-levels of service.

Following are maps and information for each priority areas in Riverside and San Bernardino Counties submitted to the CPUC.
A. Riverside County Priority Communities

California Public Utilities Commission (CPUC)

Riverside County: Unserved and Underserved Priority Communities

- Mecca and Thermal
- Ripley
- Aguanga
- Anza, Mountain Center and Pinyon Pines
Mecca and Thermal – Unserved and Underserved

- Population: 11,442
- Housing Units: 2,791
- Median Income: $29,000
- 45% families below poverty
- Average resident is 25-years-old
- 33% High School Graduation Rate
- 95% Hispanic
- Farm Worker Community
- Rural Desert Living

**Community Anchors**

- Augustine Band of Cahuilla Indians
- Cabazon Band of Mission Indians
- College of the Desert
- Medical Clinics
- Sheriff and Fire Stations
- Thermal Airport
- Torres-Martinez Desert Cahuilla Indians
Ripley – Unserved and Underserved

- Population: 692
- Housing Units: 295
- Median Income: $16,000
- 42% families below poverty
- Average resident is 25-years-old
- 38% High School Graduation Rate
- 80% Hispanic
- Year-round Farm Worker Housing
- Rural Desert Living

**Community Anchors**

- Fire Station
- Riverside County Housing Authority Desert Rose Apartments (76 apartments with opportunity for a community center)
Aguanga – Unserved and Underserved

- Population: 1,128
- Housing Units: 581
- Median Income: $48,000
- 8% families below poverty
- 85% High School Graduation Rate
- Average resident is 49-years-old
- Rural Living

Community Anchors

- Aguanga General Store
- Cahuilla Band of Indians
- Post Office
- Rancho California RV Resort
- Stage Coach inn
Anza, Mountain Center and Pinyon Pines –

Unserved and Underserved

- Population: 4,675
- Housing Units: 2,477
- Median Income: $39,000
- 17% families below poverty
- 84% High School Graduation Rate
- Average resident is 36-years-old
- Rural and Mountain Living

Community Anchors
- Camp Ronald McDonald
- Fire Station
- Idyllwild Arts Academy
- Idyllwild School K-8
- Post Office
- Santa Rosa Band of Cahuilla Indians
B. **San Bernardino County Priority Communities**

California Public Utilities Commission (CPUC)

San Bernardino County: Unserved and Underserved Priority Communities

- Phelan and Pinon Hills
- Red Mountain, Searles Valley and Trona
- Morongo Basin
Phelan and Pinon Hills – Unserved and Underserved

- Population: 21,576
- Housing Units: 8,144
- Median Income: $37,000
- 20% families below poverty
- 84% High School Graduation Rate
- Average resident is 44–years-old
- Rural-Mountain Living

*Community Anchors*

- High-Desert Transportation Corridor (E-220) from Victorville to Palmdale
- Phelan-Pinon Hills Community Service District
  (Note: CSD research identified that Verizon will not expand internet services)
- Snowline Unified School District
- Sheriff and Fire Stations, CALFIRE, and US Forest Service
Red Mountain, Searles Valley, Trona –
Unserved and Underserved

- Population: 1,864
- Housing Units: 1,068
- Median Income: $30,000
- 22% families below poverty
- 77% High School Graduation Rate
- Average resident is 40-years-old
- Rural-Desert Living
- Tourism and Filming

**Community Anchors**

- Digital 395
  (Note: The area is poised to take advantage of the new Digital 395 high speed fiber line from Reno to Barstow just built with federal stimulus and CPUC funds – Searles Valley and Trona are nearby, and Red Mountain is literally on the Digital 395 route.)
- Post Office
- Sheriff and Fire Stations
- Searles Valley Minerals
  Boric Acid, Sodium Carbonate, Sodium Sulfate, Borax, and Salt
- Trona Unified School District
Morongo Basin – Unserved and Underserved

- Population: 59,356
- Housing Units: 29,238
- Median Income: $37,000
- 20% families below poverty
- 87% High School Graduation Rate
- Average resident is 37–years-old
- Rural-Desert Living
- Tourism and Filming

Morongo Basin includes:

- City of Twentynine Palms
- Johnson Valley
- Joshua Tree
- Landers
- Morongo Valley
- Town of Yucca Valley
- Wonder Valley

Community Anchors

- Joshua Tree National Park
- Hi-Desert Medical Center
- Marine Corps Air Ground Combat Center
- Morongo Unified School District
- Sheriff, Police and Fire Stations
V. Local Government Broadband Solutions

Local government leadership can help close the Digital Divide by setting policy, making laws, creating programs, understanding what infrastructure is in place and what upgrades are needed—whether public or private.

Leaders should be in pursuit of knowing the issues related to broadband service so that solutions to closing the divide can be found. They also need to be resourceful, and go after funding, as well as advocating, and negotiating with ISPs wherever possible for better service and lower costs to their constituents.

Local government can also collaborate with community stakeholders and business leaders to find ways to impress upon the ISPs the need for improved service in disadvantaged areas, rural and remote areas, and to help spur economic growth.

Leaders at every level—elected, appointed commissioners, department heads, staff, and volunteers can make a difference. For example, by collaborating and stimulating a “Smart Region” movement within the Inland Empire.

Local government collects Franchise fees from the cable companies and has built relationships with telecoms over years—it is worthwhile for cities, counties and agencies to use those existing relationships to discuss ways to improve internet service and encourage those, as well as new internet providers, to improve service in the community.

Local government can also create their own fiber networks for internal needs, for economic growth, or to give their residents more choices for internet service. In the Inland Empire, Loma Linda owns and operates its own broadband fiber network, and statewide, Santa Monica’s “City Net” and “Lit San Leandro” are model programs explained below.

Local government can choose policies and laws that lead to improved broadband. For example, the City of Beaumont supports telecommuting and low-impact home businesses. The City actively promotes “always on” broadband in new housing tracts, and encourages including its cost and service in Home Owner Associations (HOA’s) because it is often cheaper if the cost is spread through the community. Beaumont does not limit choice of service providers—it gives residents more choice when it comes to broadband service. There is no Digital Divide in these neighborhoods—everyone has access and it is always on. The Beaumont program is also explained below.
California Emerging Technology Fund (CETF) is a valuable resource

The California Emerging Technology Fund (CETF) is a valuable resource for local government. CETF established the ground work for communities statewide to consider the importance of technology and broadband access by creating the “Get Connected” public awareness and education movement to close the Digital Divide in California. The Get Connected program has been embraced by all counties, and many cities within the state.

Both Riverside and San Bernardino Counties, as well as the City of Riverside and the City of San Bernardino, adopted “Get Connected” Resolutions that declare closing the Digital Divide is vital to economic prosperity and quality of life for their residents, and that broadband is essential for 21st century infrastructure in a digital world and global economy.

- CETF is a valuable resource that can help our communities.
- CETF has identified successful model policies and programs that help local government create their own policies to address broadband access and help close the Digital Divide.
- Local government in the Inland Empire should build upon CETF’s work and utilize programs CETF has identified that are working in other communities within in the State.

CETF website [www.cetfund.org](http://www.cetfund.org) has resources for local government and the community.
Digital 395—recognize the value of publicly funded broadband projects in the IE

Local government needs to recognize public investment and use resources when made available, such as Digital 395, a publicly funded broadband super highway from Reno to Barstow. Digital 395 was built with federal stimulus and CPUC funding, and opened for business in 2013.

Digital 395 gives competitive rates for internet service to “anchor institution” which include government, hospitals, schools, and community centers.

Digital 395 covers over 580 miles and cost $112 million.

Digital 395 offers 20 to 1,000 Mbps (1 Gbps), and beyond.

Look who benefits:
- San Bernardino County
- Barstow
- Red Mountain
- Searles Valley
- Trona
- Kramer Junction
FirstNet—nationwide broadband public safety network

The First Responder Network Authority (FirstNet) was created by Congress in 2012 to establish a nationwide wireless broadband network for public safety. The purpose of the network is to provide broadband wireless communications to police officers, firefighters, paramedics and other public safety and support personnel.

Coverage will be based on geography for public safety service as well as population. It is being planned to reliably serve urbanized, rural and underserved areas through redundancy and resiliency built into the network, as well as support a variety of devices.

FirstNet will provide a single interoperable platform for emergency and daily public safety communications at the local, state, tribal, and federal levels.

The Governor’s Office of Emergency Services (Cal OES) is California’s point of contact for FirstNet. This summer, Cal OES held statewide meetings, including workshops in Diamond Bar and Santa Ana, to solicit input from stakeholders and provide implementation information.

Congress allocated $7 billion in funding for the construction of the network. To contain costs, FirstNet will be leveraging existing telecommunications infrastructure and assets. This includes exploring public/private partnerships that can help support and accelerate the creation of the network.

San Bernardino County, with an area of 20,105 square miles, is the largest county in the United States and Riverside County covers 7,208 square miles. It makes sense with this much area that the Inland Empire region stands to benefit from FirstNet.

Participation will be key. Local agencies will need to understand the program, develop policies that support the network, and begin identifying and encouraging private/public partnerships with existing telecom and ISP assets in the region. No program of this magnitude will be easy to implement nor without challenges.

The question for the Inland Empire will be if our region will embrace deployment and find ways to utilize this new broadband asset.
Fiber and conduit mapping is necessary and is a perfect application for using GIS

A big issue statewide, and here in the Inland Empire, is that jurisdictions do not track exactly where fiber and conduit is located, and who is responsible for it. Since, counties and cities in the Inland Empire are already invested in Geographic Information System (GIS) software, creating an inventory of fiber and conduit makes good sense.

In fact, Esri, the global leader in GIS software and mapping applications, was founded and has its headquarters in Redlands. Riverside and San Bernardino Counties, along with many cities in the Inland Empire were among the first to recognize the value of this advanced mapping software and are already set up to use it to help close the Digital Divide, if they made using it for this purpose a priority. Mapping fiber and conduit is one of the best ways to identify and address infrastructure needs. This helps planners and engineers, both public and private, figure out the best way to improve internet service in their area.

Fiber location data can be mapped using GIS to show exactly which streets and properties lack service. Every community should be working closely with its top engineers to create a conduit and fiber plan showing what has been installed—regardless of who owns the fiber—within public right-of-way, and on private property.

If data is not complete at first, this is normal, as almost all GIS mapping projects start out with limited data sets that need to grow, but will eventually become robust, providing opportunity to identify issues, analyze, and solve problems. Database layers can also be added showing information such as land-use, terrain, utilities, income, poverty rates, age, educational levels, etc.

Using GIS to map and track fiber can help to understand where a lack of infrastructure affects broadband service. It also could help identify fiber that may be at jurisdictional boundaries, as data can be shared to find otherwise missed collaborative opportunities.

The City of Ontario, discussed below, just adopted its first Fiber Optic Plan for the City. Others should be looking to do the same—local agencies have the technology, why not use it? The Inland Empire should be a leader in mapping fiber. This should be routine for every jurisdiction that has purchased or has access to GIS software. Esri is right here local to help guide us if we need assistance.
Local government in California, and in the Inland Empire, created broadband solutions

There are some cities in the Inland Empire and within California that are leading the way on improved broadband service and choice with visionary model programs.

Loma Linda Connected Community Program (LLCCP)

Loma Linda owns and operates its own high speed fiber optic broadband network. The program is called the Loma Linda Connected Community Program (LLCCP). The first customer was signed up in 2005. LLCCP includes a City ordinance requiring all new construction include fiber and connectivity technology. Loma Linda’s vision is “fiber to anywhere” not just to the home.

The City has in place a fiber ring serving their commercial community. Bandwidth is made available at very competitive pricing to make it affordable for all sizes and types of businesses. The City works closely with the Loma Linda University Medical Center to provide infrastructure and support for sustainable growth.

The fiber network connects various facilities so that information seamlessly flows instantly from one facility to another. The new Loma Linda University Heart and Surgical Hospital has the ability to connect a remote surgeon, in real time, through the fiber optic system, to a robotic system to perform actual procedures.

Loma Linda’s vision is that affordable broadband enables local businesses to prosper, students to do work, research, study, and take classes at home, and residents to have an affordable option for high speed, reliable internet.

LLCCP also serves City utilities and traffic management, including traffic control and red-light cameras. It feeds the City’s wireless system too.
Fiber To The Home (FTTH)

Loma Linda Expands FTTH past the home, reaching out to businesses, wireless, anywhere...we call it FTTX.

Why is FTTX important to Loma Linda?

- This city believes in infrastructure
- Provide a better infrastructure for economic growth and development (e.g., higher home values, better business environment, etc.)
- Promote competition (Open Ethernet System)
- Strengthens the image of the City as innovative and progressive
- Supports the commercial and residential interests of the citizens
- Enables the City to play a very central role with our larger business in the City
- Create a globally competitive community
- Establish a new revenue source
- Empowered more community involvement

Loma Linda’s FTTX Ordinance

New Construction Requirements:

- Data Cabinet in Master Bedroom
- Cable Bundle Set – 2 Cat 6, 1 Coax in each Living space, 2 sets in Master Bed Room and Family Room
- Fiber into Data Cabinet and Community MDF
- Fiber throughout the development
- Build a community MDF
- Deed the infrastructure over to the City once completed
- City provides builders with design, SOW and SDM
- City provides list of certified and approved contractors
- Cost to the Builder ~ $9,300 per unit

CITY OF LOMA LINDA FINANCE DEPARTMENT

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<td>29</td>
</tr>
<tr>
<td>381</td>
<td></td>
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</tr>
</tbody>
</table>

- Water: $84.51
- Sewer: $43.82
- Refuse: $37.34
- COA Internet: $29.95

Web Pay is now available. Please log on at www.lomalinda-ca.gov to pay your bill.
City of Beaumont Fiber to the Home (FTTH) for new housing tracts

The City of Beaumont promotes FTTH in all new housing tracts. Houses are wired directly with fiber and provided a modem inside. For example, households in Fairway Canyon are served by Greenfield Communications, an ISP that that contracts with its Home Owners Association (HOA) providing 24-hour customer service along with a dedicated technician who is available during business hours on-site.

The broadband is “always on” with speeds of 15 Mbps down and 10 Mbps up, and is included in monthly HOA dues. Greenfield offers affordable business packages, VoIP, and other services too. Programs like this are forward thinking and recognize the importance of technology. FTTH should be considered standard procedure for all new homes. This is a prime example of being a “Smart City.”

There is no Digital Divide in the new homes built in Beaumont.
Inland Empire local government fiber plans

**County of Riverside Information Technology Department** has a $19 million budget to create a “fiber ring” to connect county services. The design work is in process now.

**City of Riverside Public Utilities**, earlier this year, solicited proposals from broadband experts to prepare a feasibility study for a municipally run fiber system.

**City of Ontario** approved a Fiber Optic Master Plan in September 2013, and approved a million dollar design contract in April 2014 to start building the system.

Ontario’s fiber plan also includes a structured wiring ordinance for development to follow.

Here are key reasons Ontario is pursuing their own fiber system:

- Planning – Smart Community
- Engineering – Backbone construction and traffic
- Utilities – Foundation for service and operations
- Library – Distance learning and Internet
- Recreation – Community Centers
- Public Safety – Command Center, Wi-Fi
- Economic Development – Business attraction, marketability
- IT – Service Delivery, Wi-Fi, CCTV
- Ontario Airport and surrounding area – many potential benefits
Santa Monica’s “City Net” and “Lit San Leandro” provide powerful local models

**Santa Monica City Net** is a 10 Gbps broadband initiative by the City of Santa Monica to support an environment for local businesses to compete in the global economy with cutting edge network solutions. The City’s fiber optic network assets extend throughout the downtown area and cover the majority of multiple tenant commercial buildings.

Money that would have been spent on leasing slower, less reliable connections from existing providers is instead used to expand public infrastructure and other public amenities, free Wi-Fi, public safety video cameras, and real time parking information.

- The City reduced their telecommunication expenses by 92%
- The system enabled new services like disaster recovery, active directories, Exchange, and VOIP

City Net is run out of the Information Systems Department. The vision for the network and its expansion was created in their 1998 Telecommunications Master Plan, standardizing the procedure that is known as “dig once.” Careful mapping and foresight laid the foundation for growth.

The first goal of the network was to save public dollars by eliminating leased lines from private providers. The first $530,000 investment in fiber infrastructure ultimately resulted in an ongoing savings of $700,000 per year.

As part of their long term strategy, the City reinvested those savings in expanding the network. Over the past 10 years, the network expanded to offer dark fiber and services of 100 Mbps to 10 Gbps to businesses, as well as free Wi-Fi to the public in many areas.
Lit San Leandro – a public/private broadband partnership – was conceived of by Dr. J. Patrick Kennedy, a San Leandro resident, and CEO and founder of OSIsoft, one of the City’s largest employers. This high speed fiber loop project is seen as an opportunity to revolutionize San Leandro’s broadband infrastructure, positioning the City to be a major player in the high-tech and clean-tech economies.

On March 2, 2012, Lit San Leandro went live, with the first piece of fiber being activated connecting its first building to the fiber optic network. As of August 2012, the vast majority of the loop has been installed and is operational.

Lit San Leandro and San Leandro Dark Fiber LLC comprise the private partnership that work with the City of San Leandro to create the Fiber Loop. San Leandro Dark Fiber owns the fiber optic cable that runs through the City’s underground conduit.

The City has provided 11 miles of underground conduit so far. Lit San Leandro owns and operates the switch and routing facilities that bring lightning-fast Internet service to the community.

According to Lit San Leandro, Palo Alto is netting more than $2 million a year on dark fiber on city poles and conduit.

World-class connection speeds is also making San Leandro a hotbed of innovation, cultivating and growing the industries of the future. San Leandro is also poised to capitalize on its manufacturing legacy by becoming a hub for advanced manufacturing, medical research, graphic arts, and software development.
Fiber and conduit in public infrastructure, including highways and rail

Public infrastructure should include broadband connectivity—for public use as well as to lease or provide additional capacity to private internet systems. Fiber and Conduit should be considered at the beginning of projects—not at the tail end, or after bidding is done and contracts are awarded.

The Federal Highway Administration (FHWA) estimates it is ten times more expensive to dig up and then repair an existing road to lay fiber, than to dig a channel for it when the road is being fixed or built.

Here are high-profile projects where conduit and/or fiber should be included. This type of investment helps connect the dots to fiber systems—the ISPs could lease from the public agency owning the right-of-way, or public agencies could use the fiber to create their own network for their community and to improve their own internal connectivity for current and future projects—traffic signal synchronization, public safety applications, and communication.

- California High Speed Rail
- Xpress West High Speed Rail, from Las Vegas to Victorville
- E-220 High Desert Corridor (HDC), from Palmdale to Victorville and Apple Valley
- Metrolink Extension to Redlands

High speed rail may be the best corridor to plan for a backhaul system. Especially with routes planned between major urban centers that also cover rural areas, as well as the proposed extension to Las Vegas, and the possibility of a future segment to Phoenix through the Coachella Valley.

A broadband transmission system along State Highways and country roads could be helpful with basic collector grids primarily being located in cities and urban areas.
Following the example of Digital 395, a high speed fiber network should be included in the design of the California High Speed Rail so that tie-ins can be made to the local communities and lower broadband costs can be provided to community anchors such as government facilities, hospitals, schools, libraries, and community centers.
High speed fiber should be included in the XpressWest High Speed Rail, which will be built on exclusive, new double track over approximately 185 miles between Southern California and Las Vegas. Primarily within or adjacent to the I-15 freeway, XpressWest will have no at-grade crossings with vehicle or pedestrian traffic.

XpressWest is approved for construction and operation within the I-15 freeway corridor. Through extensive collaboration and coordination with the Federal Railroad Administration, Federal Highway Administration, Caltrans and Nevada DOT, all parties agreed to a Highway Interface Manual (LINK) demonstrating how high speed rail can effectively work within an operating interstate freeway.

In December, 2011 XpressWest executed a lease agreement with the Bureau of Land Management for all federal land required for the project comprising a majority of the 180 miles of railroad right-of-way varying from 60 to over 100 feet in width. Working under an executed Memorandum of Understanding with the State of California, XpressWest is positioned to secure all of the required California state property.
San Bernardino County, Los Angeles County, and the Cities of Adelanto, Victorville, Apple Valley, Lancaster, and Palmdale have formed a Joint Power Authority (JPA) to develop from SR14 to I-15. IERB has contacted Metro, who is the Lead Agency for the environmental process working with Caltrans. As of February 27, 2014, Metro has confirmed that, “a high speed fiber corridor is an important component of the project.”
Metrolink Extension to Redlands

A fiber network should be installed as part of the Metrolink extension to Redlands. IERB research found that Loma Linda has identified this as an important broadband connection.
Location alternatives

High transport and collection speeds require a large bandwidth. Fiber Optic cabling best meets that need. Single mode fiber optic cabling is recognized as having essentially an infinite band width which means there is no effective limit on how fast the data can be transmitted. The Single Mode Fiber Optic Cable will not hinder the development of emerging technologies to meet future demands for greater speed. The issue is physically a decision about implementation layout. The two primary locations for fiber optic cable are either above ground or buried.

Above ground would be installed on poles either owned or leased from another entity. Above ground are more susceptible to environmental degradation, accidental damage or vandalism.

Below ground has less risk, but a higher initial installation cost. Locational rights for underground facilities may be acquired from public entities whereas above ground would likely need to be negotiated with a private sector owner. Technology also exists for data transport by microwave and by satellite. Satellite is currently available with somewhat restricted bandwidth. As stated previously, the CPUC is collecting information about satellite broadband service in the State.

Deployment of additional satellites may be cost effective to serve some remote regions. Microwave transmission is a proven technology. The line of sight limitations may be a drawback in some areas.

Shared facilities

A substantial factor in the installation of a new buried fiber optic conduit system is right of way acquisition and environmental impact mitigation and reporting. The entire network should include a long distance backhaul for the transmission and collection segments. Differences occur between urban (dense) and rural as well as between new developments and existing (built out) urban areas. Several alternatives are available for consideration as shared facilities.
<table>
<thead>
<tr>
<th>Alternative</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated right-of-way</td>
<td>▪ Unrestricted access</td>
<td>▪ Expensive to acquire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Requires environmental approval and regulatory authorization</td>
</tr>
<tr>
<td>Shared right-of-way, typical</td>
<td>▪ Lower cost</td>
<td>▪ Requires encroachment permit</td>
</tr>
<tr>
<td></td>
<td>▪ Less environmental issues</td>
<td>▪ May require license fee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Coordination with other agencies</td>
</tr>
<tr>
<td>Shared w/Caltrans</td>
<td>▪ Minimal right of way costs</td>
<td>▪ Requires longitudinal encroachment permit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Requires maintenance coordination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Not allowed on interstate highways</td>
</tr>
<tr>
<td>Shared w/countsies or cities</td>
<td>▪ Only requires encroachment permit</td>
<td>▪ Requires more oversight and coordination with other utilities.</td>
</tr>
<tr>
<td></td>
<td>▪ Minimal environmental regulations</td>
<td>▪ Difficult to site above ground plant facilities.</td>
</tr>
<tr>
<td></td>
<td>▪ Underutilized conduits may be available in urban areas</td>
<td></td>
</tr>
<tr>
<td>High Speed Rail</td>
<td>▪ Only requires encroachment permit</td>
<td>▪ May require payment of operating license fees</td>
</tr>
<tr>
<td></td>
<td>▪ Conduit can be installed as part of new construction at minimal cost</td>
<td>▪ Requires coordination for maintenance</td>
</tr>
<tr>
<td></td>
<td>▪ Environmental concerns will have to be addressed</td>
<td>▪ Timing of construction may not coincide with broadband implementation schedule</td>
</tr>
<tr>
<td>Satellite</td>
<td>▪ Avoids construction in terrain w/limited access</td>
<td>▪ May not meet capacity requirements</td>
</tr>
<tr>
<td></td>
<td>▪ Avoid buried conduit construction</td>
<td>▪ Currently only limited availability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Higher cost to end users</td>
</tr>
<tr>
<td>Microwave</td>
<td>▪ Avoids underground construction</td>
<td>▪ Line of sight transmission</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ May require airspace and ground easements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▪ Transmission tower may be vulnerable to vandalism</td>
</tr>
</tbody>
</table>
Inland Empire Broadband Infrastructure and Access Plan

Institutional constraints

The successful deployment of a state wide broadband system will require compliance with the policies, regulations, permits and environmental concerns of local, county, state and federal agencies.

Policies

Much of the collection systems will occur in the urban areas of cities and counties. The adoption of an ordinance or resolution of support is critical to the successful implementation of the system.

State and county support is needed to complete the backhaul component. A waiver of longitudinal encroachment policy by Caltrans will allow backhaul installation between cities and counties. County support is vital to connect unserved and underserved regions not readily accessible by state highways.

Compliance with Federal requirements is necessary to assure the eligibility of each project to accept Federal grant funds. Full compliance with the State Environmental Quality Act (CEQA) and the Federal National Environmental Protection Act (NEPA) need to be included in each project.

Regulations

Regulations are the rules issued by each agency to implement laws, code requirements, resolutions and ordinances. City and county authorization will typically be allowed upon issuance of an encroachment permit, license agreement or other permits.

Environmental clearance

The deployment of a comprehensive broadband system in Riverside and San Bernardino Counties will involve Federal, State, County and local agencies that have decision making authority or jurisdiction over the project. This includes environmental clearance compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Listed below are the most, if not all, of the federal and state agencies and regulatory mandates required before an authorization to construct could be issued.
Regulatory agencies and permit requirements

The permit listings below are representative. Each conduit and fiber project will require an evaluation of the specific need and requirements of each agency involved.

Permits

Each agency with oversight responsibilities may choose to control the installation work by issuing construction and other permits. The requirements of each agency must be determined early on in order to correctly assess the cost of permits.

| Federal |
|-------------------|-------------------|
| Regulatory Agency | Authorizing Action/Permits |
| Department of Commerce, National Telecommunication and Information Administration | NEPA Environmental Clearance |
| U.S. Army Corps of Engineers | Individual/Nationwide Section 404 Permit (Clean Water Act) |
| Bureau of Land Management | ROW Grant, Temporary Use Permit, Cultural Resources Use Permit, Plan of Development, NEPA Decision Document |
| U.S. Forest Service | ROW Grant, Temporary Use Permit, Cultural Resources Use Permit, NEPA Decision Document |
| U.S. Fish and Wildlife Service | Formal Section 7 Consultation (Endangered Species Act, Migratory Bird Treaty Act, Fish and Wildlife Coordination Act) |
## State of California

<table>
<thead>
<tr>
<th>Regulatory Agency</th>
<th>Authorizing Action/Permits</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Public Utilities Commission (and Local Agencies in some cases)</td>
<td>CEQA Environmental Clearance</td>
</tr>
<tr>
<td>California Department of Transportation</td>
<td>Encroachment Permit</td>
</tr>
<tr>
<td>California State Lands Commission</td>
<td>Right of Way Easement</td>
</tr>
<tr>
<td>California Department of Fish and Game</td>
<td>Streambed Alteration 1601 Permit, Section 2081 Permit</td>
</tr>
<tr>
<td>California Regional Water Quality Control Board</td>
<td>Section 401 Water Quality Certification, Waste Discharge Requirement, Storm water Permit, SWPPP, National Pollutant Discharge and Elimination System Permit (NPDES)</td>
</tr>
<tr>
<td>Section 402 of Clean Water Act</td>
<td>Authorizes the NPDES program and allows coverage under a NPDES General Construction Permit with implementation of a SWPPP</td>
</tr>
<tr>
<td>Section 303(d) of Clean Water Action</td>
<td>Requires states to identify impaired water bodies and water quality standards, and develop Total Maximum Daily Load (TMDL) requirements</td>
</tr>
<tr>
<td>Porter Cologne Water Quality Control Act</td>
<td>Authorizes the SRWQCB and RWQCB’s to implement Regional Water Quality Control Plans, which identify Beneficial Uses for waters in the project area</td>
</tr>
</tbody>
</table>

## Local Agencies

| Counties of Riverside and San Bernardino | Encroachment and other Permits |
| Cities within Riverside and San Bernardino Counties | Encroachment and other Permits |
Fiber and conduit deployment in public infrastructure projects

The deployment of fiber and conduit for broadband in Riverside and San Bernardino Counties will need to be phased. Commercial providers should be encouraged to participating in those regions where it is commercially viable.

Public assistance will be required to meet the needs of unserved and underserved areas with special attention to low income, health and safety sectors.

Schedule

Deployment of a comprehensive broadband system in Riverside and San Bernardino Counties will require four primary elements:

1. Backhaul System
2. Installation in new developments
3. Retrofit installation in existing urban areas
4. Upgrading of existing and proposed private systems

Design and schedule considerations

- The region should immediately pursue commitments from the high speed rail authorities to include fiber and conduit into their design and engineering plans.
- However, a backhaul system, if installed as part of planned high speed rail projects, will take time as the Inland Empire segment is not yet scheduled for construction. Counting on these projects for immediate fiber/conduit implementation should not be considered until plans are finished and the rail authorities can provide viable schedules.
- Installation in new developments could be initiated in the near term with adoption of code/ordinance requirements by local and county agencies. Some agencies like Loma Linda and Ontario have already taken this step.
Retrofit installation can be handled in two ways. Initially, a portion may be installed in vacant conduit. The second would be installation with new conduit. Each option will be affected by the availability of infrastructure development funds.

Privately operated high speed fiber and fixed wireless systems have been developed in areas of commercial viability. A review and upgrading of capacity may be required to assure system uniformity.

Institutional adoption of uniform standards may be required as well as policies to assure funding and oversight. Private upgrades could be initiated in the near term after implementation strategies are finalized.

Cost considerations and multi-agency or public-private cooperative agreements

Adding fiber and conduit into public infrastructure projects will typically require a “fair share” of funding contribution from those proposing the project. However, keep in mind that the cost of adding fiber or conduit during construction, in a “Dig Once” scenario is much cheaper than going back after the fact to install.

There are a number of cost factors. In addition to the installation cost of infrastructure, the system cost estimates must also reflect the cost of planning, design, construction, inspection, right of way, permits, environmental clearances, as well as community outreach.

There is also operation and maintenance costs associated with these projects.

Multi-agency and/or public-private partnership cooperative agreements may be necessary depending on the complexity of the project. Including fiber/conduit in projects like the high speed rail and Caltrans projects will likely require such agreements. Also, if projects are in public right-of-way, costs should be null or likely, minimal.
VI. Programs for Underserved and Disadvantaged Residents

A. Digital Inclusion Programs

Broadband access can have a major economic impact on low-income populations. For example, broadband is essential to the job search process. For underserved populations to more successfully compete in today’s job market, they must have the ability to access and use the internet to seek and apply for jobs and to participate in workforce preparation and educational activities.

The most effective broadband adoption efforts are those specifically targeted to the population most impacted by the Digital Divide and addresses the barriers or affordability, access and adoption. Community anchor institutions such as libraries, schools, community colleges and local government and public assistance providers could offer free or low-cost high speed broadband services while the government agencies could seek partnership solutions to achieve affordable in-home broadband access rates combined with free or low-cost equipment for adoptability.

Access to and adoption of broadband enhances social and economic development and has other positive effects in the community. It can help improve delivery of government services and create strong relationships between policymakers and constituents by fostering better citizen engagement.

Government services are increasingly being made available online. Municipal government, using social media such as Facebook and Twitter, is also helping keep residents apprised of what is going on in the community in easier and faster ways. Government efforts to go online should include consideration of providing internet access to those who don’t have it.

Stakeholder groups at the local level are another valuable resource—their expertise in the individual needs and challenges that arise with the diversity of disengaged groups helps develop innovative approaches to ensure successful adoption standards across all demographics.
There is no “one size fits all” solution

No one-size-fits-all solution exists for promoting broadband adoption among unserved and underserved populations, but the solutions must include these factors:

- Recognize the variety of adoption needs. Cities and neighborhoods have different broadband adoption needs.

- Increase relevance of broadband adoption. Relevance and meaningfulness can be increased for those who are non-adopters by incorporating broadband use into existing social structures and social service delivery (e.g., accessing public information and resources online).

- Understand the value of partnerships. With limited funding, developing partnerships is a way to maximize scarce resources. Whether existing equipment is being repurposed or information is being shared that would not be otherwise available, partnerships can be effective at helping stakeholders work with what they have.

- Provide tools to those who need them. In addition to the lack of access and digital illiteracy, an adoption barrier is simply not having the tools at hand to use broadband. Solutions may include incentives in the form of free broadband access or computers as a way to encourage and promote adoption.

- Engage other stakeholders. Different interest groups bring their individual perspectives to the table. Developing solutions to meet challenges requires a comprehensive understanding of the specific community’s playing field and players.
Broadband and technology is being used to meet important civic and public policy goals

**Educate and train people for 21st century employment**
Digital Inclusion means that students of all ages have access to broadband, new software, and online applications. With access to broadband, students are able to connect to a whole world of research and information, and gain new means of communicating with teachers at their local schools and other learners across the globe.

Some government reports and other kinds of information are now available most easily—and sometimes only—online. Self-paced online applications and distance learning give adults new skills to be competitive in the workplace. Online video, sound, and interactive education programs more readily excite and engage children in the learning process. Research indicates that such technology can have a strong impact on improving academic performance, particularly among children with lower grades. Interactive communications between students, teachers, and parents can also help improve student performance.

**Enable economic and community development**
Digital Inclusion is also fundamental to generate economic growth and develop strong, healthy neighborhoods. Employment in many industries is positively associated with broadband availability and use. It has been reported that 60% of jobs now require computer skills. Thus, computer training and experiences that produce skilled workers are essential for economic development and growth.

Broadband is also important for job creation. Every percentage increase in broadband availability increases employment by at least 0.2%. This direct correlation is particularly true in manufacturing and services industries such as finance, education, and health care.

Additionally, broadband, and specifically wireless technology, generates economic activity by attracting large and small businesses that need infrastructure to run their operations and draw customers. Travel and tourism are similarly enhanced — hotspots, information and reservation kiosks, and the ability to work remotely are attractions for recreational and business travelers. From the consumer perspective, many merchants offer discounts and rebates only available to customers online.
Support civic engagement
Digital Inclusion also enables new forms of civic engagement and participation in
democracy. Broadband has become an essential conduit for information. Many
Californians go online to research the decisions they make as voters, taxpayers, and
consumers. Additionally, the internet has facilitated the association and collaboration
of people for information and advocacy purposes.

Promote public safety and delivery of government services
Internet technology has changed the way citizens interact with their government. This
new dynamic is included in the term e-government — referring to the use of internet
technology both as a platform for exchanging information and for providing services.
Internet technology also enables greater citizen participation and the timely receipt of
public information.

Digitally inclusive technologies support the delivery of government services and
enhance public safety efforts. Jurisdictions use email to communicate with residents and
have implemented websites that deliver information and basic services online. People
can now apply for a professional license, check the status of a potential contractor, and
file their taxes online. Local governments have applied technologies to improve public
safety through services such as security monitoring and emergency communications.

Wireless broadband has proved beneficial in community disaster management, traffic
control, and citizen response. In their efforts to improve public safety, local
governments are making efficient use of video surveillance, hazardous material tracking,
incident reporting, and management from the field. Efficiencies have also
been reported in using wireless technologies for parking meters and
utility meter reading.

These examples of how broadband and computer technology are being
applied to support education, economic development, health care,
government services, and other civic goals highlight the importance of
pursuing and implementing technology with an eye to Digital Inclusion.
Serve low-income families, seniors, and the disabled

Internet connectivity equals opportunity. It is an absolute necessity in order to fully participate as a productive citizen in a digital society. Education is the number one thing that lifts people from poverty. In a digital society it is impossible to pursue a quality education without access to the internet. Therefore, internet access needs to be viewed as an essential service. Any digital inclusion strategy must include:

- Digital Literacy
- Internet connectivity
- Hardware

Neighborhood access centers and community technology centers

Located in underserved neighborhoods, with programs to promote technology use and access, including regular free classes in computer and internet use.

Digital skills classes

Curriculum designed to help people in underserved communities access online resources and create a brighter future for themselves and their families. The use of a portable computer lab in targeted areas might be one way to get a hands-on experience to low-income families through volunteer, business, non-profit, or government resources. Perhaps an ISP or computer company could provide the mobile lab/vehicle. Conducting free digital skills training and awareness sessions at local libraries and other community institutions are viable options.

Internet access and inexpensive computer equipment

Thousands in our area have no computer at home and cannot take advantage of all the benefits of internet connectivity. Collecting used desktops, laptops, tablets and smartphones for this purpose and donations from computer companies could fill the gap to provide equipment to low income residents at no charge or at an extremely low price based on income. Additional discounts might also be given to those who participate in digital literacy training programs.
Telecoms and internet providers discounts
Telecommunications companies and other internet service providers (cable companies, independent ISPs, etc.), as stakeholders, should consider offering low-income packages, or donating services to community and neighborhood access centers.

Expanding the California Lifeline program to include high speed broadband for low-income families is a logical addition to the existing programs for electricity, natural gas and telephone services (landline or cell). A prototype program was conducted, but results have yet to be shared and expansion of the program has not been initiated.

SmartRiverside as a model Digital Inclusion program

Another approach is to replicate model digital literacy programs like SmartRiverside that help students and families with online access and training. Another idea is to utilize a coalition of volunteers to work one-on-one or in small groups to facilitate digital literacy learning. Utilizing neighborhood and community centers for training, volunteer support, computer equipment and high-speed broadband access is essential.

The SmartRiverside Digital Inclusion Program is an example of a successful program with all of the components listed above designed to bridge the Digital Divide here in the Inland Empire. The program serves low-income families that do not have the resources and need digital and online training.

SmartRiverside’s program is multi-faceted and community based. It also trains at risk youth to refurbish computers that are then given to low-incomes families at no cost. Before the families receive their free computer, they receive eight hours of free computer training, and SmartRiverside provides ongoing technical support for the equipment.

SmartRiverside also has other innovative programs that range from helping local high-tech companies, providing a successful e-waste recycling program for Riverside and surrounding areas that offset the digital inclusion program costs, and the mentoring of at-risk youth through internship programs and a STEM school outreach program.
VII. Education

A. Schools

Educators in the Inland Empire are aware of the Digital Divide, and are working to help close it. They are also striving to support technology careers by embracing STEM educational programs and creating technology plans. Access to computers at school is improving. For example in 2012, San Bernardino County had a ratio of 5.4 students per computer which is above the state average of 5.8.

In 2012, STEM-related degrees accounted for 20% of the total number of degrees awarded in Riverside County with a growth rate 25% of these types of degrees over the past five years.

San Bernardino County is also seeing gains in STEM, as it had an increase of 73% over the past five years STEM-related Associate Degrees awarded, and a 9% increase in Stem-related Bachelor Degrees. However, studies showed that of those gains, San Bernardino County’s degrees in the specific field of Information and Computer Science declined 18%, while Riverside County did not experience this same decline. This type of information should be explored to find out why interest in this type of technology degree is not rising, as it is known as an area that is creating jobs.

More and more school districts are going online with class curriculum and assignments, ushering in the true digital age for education. Without access, preferably at home or a neighborhood access center, and the technology to achieve that access (computer/tablet), an unserved or underserved student will be at great disadvantage in maneuvering through the education system.

E-rate provides discounts of up to 90% to help eligible schools and libraries in the United States obtain affordable telecommunications and internet access. The program is intended to ensure that schools and libraries have access to affordable telecommunications and information services

Eligible participants include public and most non-profit K-12 schools as well as all public and many private libraries. Program participants must carry out a competitive bidding process to select the most cost-effective companies to provide the goods and/or services requested.
The call for E-Rate 2.0

FCC Commissioner champions school broadband, E-Rate 2.0
May 9, 2014 in Techwire.net, Digital Divide News

E-rate2.0  FCC Commissioner Jessica Rosenworcel – who is championing school broadband and E-Rate reform, said that while most schools are connected to the internet, connections must be faster and must go all the way to the classroom. She also took the FCC’s E-Rate program to task, calling it burdensome and bureaucratic.

And libraries, deep into the digital age, are included in the need for speed, she said. Libraries feature 3-D printers, on-demand book printing, eBooks, audio books, computer programming classes, Web-based instructional systems in many languages, and of course printed books and materials. And in most communities, internet access – which has become essential for information, job applications, education and homework — is free only in public libraries. Libraries as well as schools need more capacity. The solution, she said is E-Rate 2.0.

E-Rate 2.0, she explained, consists of speed, simplification and smart spending. Speed is 100 Megabits per 1,000 students to all schools in the near term and 1 Gigabit per 1,000 students by the end of the decade.

Simplification of the E-Rate program means multi-year applications and user consortia. Spending smart means better accounting practices, and focusing E-Rate support on broadband instead of outdated services such as paging.

School provided technology

More and more school districts are partnering with hardware and software suppliers to provide tablets to students from elementary to high school. Providing the technology helps students have a leg up on digital literacy. The weakness is where free high speed or wireless internet access is not available. There is also the in-home environment to be considered, as the children in a home may have digital literacy and parent and extended family members may not. Digital programs that provide computers and online devices which reach both students and their families are proven to be more successful for participating students.
Online schools in the Inland Empire

- **The Redlands eAcademy**

This online school is the newest Redlands Unified School District School, an online school that serves students in grades K-12.

Redlands eAcademy provides a learning environment for parents and students who prefer to work and learn independently. Students meet once a week with a RUSD teacher and have the ability to work with other students in small groups on activities and labs.

**New eAcademy in Redlands will offer online schooling**

Under the direction of the Redlands Unified School District, the academy combines online and in-person instruction to teach kindergarten through 12th-grade students a variety of subjects using modern technology and resources provided by its teaching staff, a counselor and Principal.

The move comes after district officials began to notice a boom in online learning, and an increase in enrollment numbers at area charter schools.

A staff of seven – including the principal -- will handle up to 120 students every year, with teachers laying out lesson plans and homework to be completed by each student at the beginning of each school week.

Each student will meet with their teachers on-site once a week for discussions, take tests and participate in additional activities, such as labs, with their peers.

Online videos and parent resources will be available throughout the week for lessons to be taught smoothly outside of the classroom setting.

And should any student or parent need help outside of the classroom, teachers are only an email away.
• **Snowline Virtual School**

Snowline Unified School District in Phelan offers a Virtual School along with a robust online program, in spite of underserved internet access. Snowline offers online and make-up classes from 3rd grade to high school and also partners with the San Bernardino County Library.

The mission of Snowline Virtual School is to offer students multiple pathways to achieve success within a 21st century learning environment. They provide flexible options in a safe, positive, and respectful atmosphere that meets the diverse educational needs of their students.

Snowline Virtual School (SVS) is a public, K-12, tuition-free blended school which offers high quality, interactive classes by combining online instruction with instructor-led courses taught by highly qualified, California credentialed teachers.

This educational program delivers content in a variety of formats to address the needs of students’ preferred learning style, while providing frequent and meaningful communication between student and instructors. SVS strives to create a learning environment that is active, engaging, cooperative, and meets the needs of 21st Century learners.
School2Home

School2Home is an innovative statewide program sponsored by CETF and The Children’s Partnership to help close the Achievement Gap and the Digital Divide by integrating the use of technology—computers and broadband—into teaching and learning at low-performing middle schools throughout California with an emphasis on parental involvement and home connectivity.

Closes the achievement gap

- Targets Title 1 middle schools in Program Improvement
- Helps students acquire core skills in reading, writing, math and science
- Encourages students to develop deep learning skills for academic success
- Engages parents as learning partners

Closes the Digital Divide

- Targets families who lack home computers and broadband
- Infuses technology into all aspects of student learning at school and home
- Makes technology relevant with school-centered parent education and engagement

A comprehensive program

The School2Home program consists of 10 components woven together into a comprehensive program to achieve sustainable academic gains. There is a focus on capacity-building so that schools can implement the program step by step.
B. EveryoneOn.com – National Campaign

EveryoneOn is a national nonprofit that aims to eliminate the Digital Divide by making high-speed, low-cost internet, computers, and free digital literacy accessible to all unconnected Americans.

By calling 1-855-EVRY1ON, texting CONNECT to 30364, or visiting everyoneon.org, users can search by zip code to find free computer and internet training classes in their area.

To drive awareness and relevance, EveryoneOn partnered with the Ad Council to launch a three-year, multi-media bilingual campaign about digital inclusion – the first of its kind.

The goal of the campaign is to help motivate the millions of Americans who do not have the digital literacy skills they need to succeed become connected and take advantage of free digital literacy training in their communities, including information on computer basics, job searches, accessing government resources, and connecting with family and friends.

Through partnerships with internet providers and device refurbishers, EveryoneOn offers free and reduced internet service and equipment costs to low-income individuals and families. Some of the options have data caps and set up fees. In addition there are few options for the Inland Empire, as it appears that Comcast and Cox provide most of the service.

Neither of these companies have a large presence in the Inland Empire. This program needs to expand to ISPs that serve our region. If it proves successful in other areas of the state, leaders in our region should work with EveryoneOn to get their help to identify broadband solutions for disadvantaged families in the Inland Empire.
C. Library Community Centers

Public and some private libraries have been standing in the gap for the groups most impacted by the Digital Divide: low income families, seniors and the chronically unemployed.

Public libraries have experienced exponential use, while economic pressures have brought about increasingly limited days and hours of operation as more and more libraries have been forced to reduce their hours of service during and post Great Recession. Libraries are not open 24/7. Often, they are not even open every day, or extended hours.

Broadband access is limited by the number of computer stations available, necessitating some libraries to institute usage time limits, Some libraries require users to have a Library Card and some libraries have a residency requirement where those living outside the service area must pay for a Library Card. The A.K. Smiley Public Library in Redlands is an example. Internet service is often problematic, many times not available for days as funds have not been put towards infrastructure upgrades.

Libraries, while an integral part of breaking the Digital Divide, cannot be the only community access centers available. The need is just too great.
D. Riverside Unified School District (RUSD) Technology Plan, 2013 - 2018

The RUSD Technology Plan – Vision 2020

This RUSD plan serves as a guide for technology implementation as well as to meet E-rate requirements.

The introduction of information technologies into virtually every aspect of our lives has led educational leaders, parents, and students to think differently about where and how learning takes place. Traditional concepts of schools, classrooms, and learning are being challenged as technologies introduce new ideas and capabilities into the system. Beyond the school walls, the global business market is demanding a new set of skills from college graduates and has an increasingly growing pool of workers from which to draw the best qualified employees. At the same time, the rate of change in both business models and related technologies makes identifying the specific skill-set difficult to articulate, let alone plan for. This technological change is being driven by five factors:

1. The technologies we use are increasingly cloud-based and access is decentralized. Information is accessible at any time from almost anywhere.

2. There is a growing shift in the way education is viewed; moving from a focus on the transmission of knowledge (teacher-centric) to the process of learning (student-centric).

3. The ease of access to resources and relationships made easily accessible via the internet is driving questions regarding the definition of teacher, class, and textbook.

4. People expect to be able to work, learn, and study whenever and wherever they want to and are increasingly resistant to arbitrarily established restrictions relating to time and place.

5. Technology devices are increasingly available at low cost, simple to use and support and owned by many students, parents and staff.

These new realities have produced calls from political and business leaders for schools to transform themselves, in order to create learning environments that promote an emerging set of 21st Century learning skills that include active learning, critical thinking, collaborative learning, and knowledge creation.
E. San Bernardino City Unified School District (SBCUSD) Technology Plan, 2012 – 2015

The goals, benchmarks, and timelines in this technology plan will guide acquisition and integration of technology in SBCUSD for E-Rate.

SBCUSD is a dual platform district. Elementary schools have primarily Mac computers and middle and high schools have a mix of Macs and PCs. The district has been working to provide teachers and students with access to appropriate technology during the school day and outside school hours.

Many schools have computer labs for specialized programs. A number of schools employ mobile labs with laptops or iPads that can be shared among a variety of classrooms. All school libraries have computers for student use.

- All teachers and instructional support personnel have access to at least one computer, and many have laptops.

- All students have access to at least one computer in their classrooms, the school library, and computer lab.

- Many schools provide students access to computers before and after school through after-school programs, Adult Ed and ROP programs, and site family resource centers.

- The use for e-mail, online job searches, creating and printing resumes, student homework help, etc.

In addition, a variety of electronic resources are used throughout the district for instruction, research, and enrichment, record keeping and data analysis, home-school communication, and professional development.
F. San Bernardino Community Colleges Digital Consortium

SBCCD wins grant to develop regional digital consortium

As part of their "Doing what Matters for Jobs and the Economy" theme, the California Community College Chancellor's Office (CCCCO) has divided the state into 12 regions, creating consortiums within each that have been asked to work together to identify priority and emerging economic sectors within their respective regions. Different parts of the state have different focuses and strengths.

Part of Region 9, the San Bernardino Community College District is represented through its Economic Development and Corporate Training Division (EDCT), which partners with companies (small and large) and government agencies to provide innovative approaches to education and business development.

In 2013, EDCT was awarded a three-year CCCCO consortium grant in the area of Information and Communication Technologies/Digital Media (ICT). This sector includes all rapidly emerging, evolving, and converging computer, software, networking, internet, telecommunications, programming, information systems and digital media technologies.

EDCT formed a “ICT Digital Consortium” consisting of educators, business and industry heads, labor groups, employment industry leaders and others to document the resources and educational opportunities already in existence locally that relate to ICT, and also to identify and close the gaps within the workforce to align them with the needs of the employers and labor market for the region.

IERB supports EDCT’s efforts and shares information and resources about the need to close the Digital Divide, and to promote the Inland Empire as a “Smart Region.”

EDCT notes that as the Inland Empire has been slower to recover from this latest economic downturn than other parts of the state, it is important not to rely on what always has been done. Instead the region must look ahead to those industries that will be the basis of the global economic recovery, and ICT/Digital Media is one area of commerce on which every other business relies.
VIII. Healthcare and Telemedicine

The medical field is also pursuing Digital Inclusion with the increasing use of new technology to provide health services, to monitor patient symptoms, and to train providers at a distance. Programs led by the California Telehealth Network, the University of California, the California Telemedicine and eHealth Center, and others are expanding the application of telemedicine and telehealth.

Research shows that these digitally inclusive systems can greatly improve the quality of care, enable patients to manage chronic conditions more effectively from home, reduce costs, and allow access to vital health information.

The initial enrollment for the federal Affordable Care Act, implemented through the California Connected website, shows that as of March 31, 2014, nearly 123,000 in the Inland Empire enrolled in Covered California health insurance plans.
A. **Doctor Visits Online**

One format requires patients to fill out interactive questionnaires that automatically generate follow-up queries based on the symptoms they initially describe. The answers go to the patient’s doctor, who typically responds within a day. Another type of digital doctor visit is more like secure email, with patients typing up a free-form message, often sent through a special Web site. Physicians often follow up with questions and then a written response within 24 hours.

Another option is live online visits via an encrypted setup for real-time interaction between doctors and patients, using Web video, live chat or a phone conversation connected through a secure computer system.

**The doctor will see you now via webcam, smartphone**

This photo taken May 8, 2014 shows Mark Matulaitis with his laptop that he uses for virtual house calls with his neurologist in his home in Salisbury, Md. Mark has had Parkinson's disease since 2011 and sees a neurologist at the University of Rochester via his laptop.

WASHINGTON (AP) - Mark Matulaitis holds out his arms so the Parkinson's specialist can check his tremors. But this is no doctor's office: Matulaitis sits in his rural Maryland home as a neurologist a few hundred miles away examines him via the camera in his laptop.

Welcome to the virtual house call, the latest twist on telemedicine. It's increasingly getting attention as a way to conveniently diagnose simple maladies, such as whether that runny nose and cough is a cold or the flu. One company even offers a smartphone app that lets tech-savvy consumers connect to a doctor for $49 a visit.

Now patient groups and technology advocates are pushing to expand the digital care to people with complex chronic diseases that make a doctor's trip more than just an inconvenience.

Telemedicine is broader than a Skype-like doctor visit. For years, doctors have delivered different forms of care remotely, from the old-fashioned phone call to at-home monitors that measure someone's blood pressure and beam the information to a clinic. Hospitals routinely set up on-site video consultations with specialists.
And the virtual house call is gaining interest. Insurers, such as CalPERS, are starting to offer Teladoc and Doctor Power. Often there is no co-pay to access these services. Saving money, as well as time traveling and waiting for appointments, are key selling points. Psychiatrists are also exploring mental health counseling from the privacy of a patient's home computer.
The big shift to telehealth

The promise of telehealth is rooted in its capacity to broaden health care accessibility and save money and time for consumers, insurers, businesses, and government.

The simplicity of the experience interwoven with an overwhelming consumer desire to access care, despite time or place, resonates in an evolving health care landscape.

Cisco released a recent study revealing 76 percent of patients find access to care more important than face-to-face interaction with their health care provider. Furthermore, three quarters of consumers indicate they are comfortable communicating with doctors using technology.

This truly represents a shift as more consumers are embracing the delivery of care outside of the doctor’s office and increasing demand for the service.

Telehealth ushers in new ways for providers to enhance and expand the health care experience. Seven percent of U.S. physicians are using online video conferencing to communicate with any of their patients, according to a recent study.
B. Medical Kiosks

Kiosks are now being used and are considered for a variety of healthcare environments

In many cases, users prefer self-service and will wait in a short line to use a kiosk, bypassing manned stations. Kiosks with online platforms have potential use in the following places:

- Pharmacies
- Grocery Stores
- Universities and Schools
- Urgent Care
- Medical Offices
- Hospitals
- Military Operations
- Large Employers
- Prisons
- Rural Areas

Healthcare organizations are implementing kiosks with online access to doctors and healthcare professionals to manage wait times, cost, and improve patient flow.

Kiosks offer other conveniences, such as:

- Easy access to account information to make co-payments and manage account.
- In some cases, a more pleasant waiting room experience: faster check in and staff able to spend more time with patients who need it.
- Ability to support multiple languages.
- In some cases, privacy is improved when patients don’t have to discuss in waiting rooms the reason for their visit.

**Popular Science awarded the HealthSpot Kiosk its "Product of the Future" award after experiencing the HealthSpot Station at the 2013 Consumer Electronics Show.**
New generation kiosks may also deepen the Digital Divide

Kiosks rely on high-speed internet to take vital signs like blood pressure and weight, and can provide ongoing patient monitoring.

Kiosks, such as the new start-up business “higi,” require a user account, email address, and password to check blood pressure, pulse, weight, and body mass index.

Higi also provides feedback at the kiosk, on a mobile app, online, and through email. It offers a reward program for regular kiosk visits. Right now the service is free—but the picture above shows a credit card reader, which higi states is for potential upgrades in the future.

This year, Rite Aid announced that by 2015 they will deploy 4,100 higi kiosks into their pharmacies replacing older units that measured blood pressure and did not require internet connectivity, emails and user accounts with passwords.

The assumption with these new kiosks is that everyone is familiar with online services, has email, understands touchscreen interfaces, and has access to the internet.

For those who are inexperienced online or do not have internet access, the Digital Divide just got deeper—a previously simple task of checking blood pressure at the drug store is now potentially out of reach.
C. California Telehealth Network (CTN)

The California Telehealth Network (CTN) focus is on increasing access for the underserved and those in rural areas to healthcare through the innovative use of technology which includes telehealth, telemedicine and health information exchange.

A product of an unprecedented coalition of stakeholders, including healthcare, technology, government agencies and others, CTN and this large and diverse group of partners are working together to create a telecommunications infrastructure that allows California’s rural and urban communities access to a broad range of technology-enhanced services to improve the quality of healthcare services.

CTN is California’s authorized FCC broadband consortia for healthcare with priority access to the FCC’s Healthcare Connect fund for California healthcare providers and began enrolling providers in the program as of April 2013.

CTN will connect over 800 California healthcare providers in underserved areas to a state and nation-wide broadband networks for healthcare.

CTN works with the California Telehealth Resource Center to expand telehealth training and support for rural and medically underserved clinics and hospitals.

This year, IERB worked with CETF and the Inland Empire Economic Partnership (IEEP) to help get the word out about CTN to healthcare leaders in the region. Using the map above, compare how the Inland Empire ranks in accessing CTN sites. There are 13 CTN sites in Riverside County and nine in San Bernardino County. There are healthcare facilities in the Inland Empire that are eligible, but are not accessing CTN as a resource.
IX. Priority List of Actions

Regional leaders, community stakeholders, and local government can do the following to improve broadband infrastructure and access in the Inland Empire to help economic growth and close the Digital Divide.

- Commit to closing the Digital Divide.
- Promote the Inland Empire as a “Smart Region.”
- Consider technology and internet access in every project you do.
- Educate leasing agents about business internet needs—speed, quality and cost matter.
- Areas planned for economic growth need to have business-level internet service.
- Be open to public-private partnerships that improve broadband service and access.
- Advocate for improved internet service in rural and disadvantaged communities.
- Meet with ISPs and ask for better services and for their help to close the Digital Divide.
- Counties and cities should create Fiber Plans using GIS, and put online and at counter.
- Ask for FTTH in new housing and for fiber and/or conduit in business developments.
- Support and require broadband, technology centers, and training in public housing.
- Support conduit and fiber in public infrastructure projects, including highways and rail.
- Cities and counties can consider creating their own fiber and/or wireless networks.
- Support WiFi in public places—government facilities, community centers, and parks.
- Research and apply for broadband and technology grants, such as CPUC and FCC funds.
- Add technology and fiber and/or conduit components when applying for other grants.
- Follow and comment on legislation/regulation affecting broadband and access.
- Start utilizing and benefitting from broadband investments, such as Digital 395 and CTN.
- Get involved in FirstNet, the national wireless broadband public safety network.
- Start Digital Inclusion and Digital Literacy programs—use SmartRiverside as a model.
- If directing clients to kiosks, computers, tablets, help them use the technology.
- Support investment in online education.
- Advocate libraries be open every day with longer hours and more online access.
- Include technology skills into workforce training, such as telehealth for medical workers.
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