EASTERN SIERRA CONNECT
FINAL REPORT
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Desert Mountain
Resource Conservation and Development Council
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1 Executive Summary

Based in California's frontier territories, the Eastern Sierra Connect Regional Broadband Consortium (ESC) began in 2009 and has been focused on assessing broadband demand and supply within the Eastern Sierra region including Mono, Inyo, and Eastern Kern Counties. According the California Broadband Availability Map[1] for our region, at least 95% of the land area has less than 2Mbps service. The majority of this region is considered unserved.

The project is important because broadband availability in our study's rural area is insufficient relative to urban areas or non-existent due to a variety of factors: lack of providers/service; lack of adequate bandwidth/speed; and cost excessive access. The dichotomy is described as the Digital Divide. The explanation for the lack of adequate rural broadband availability is clear: providing the infrastructure necessary for adequate availability over vast, sparsely populated service areas that are environmentally and geographically challenging does not appear a good fit with traditional investment models of broadband providers.

The largest problem facing this region is the lack of middle mile facilities to support last mile infrastructure. Even where the maps currently show service, the lack of middle mile facilities has stopped some service providers from offering broadband connections until the midyear 2012. The California Broadband Cooperative's Digital 395 project, funded by CASF and federal stimulus funds, will bring the much-needed middle mile to the majority of the region in mid-2013. But there are other areas that will remain unserved, as they are far from the Digital 395 footprint.

1.1 Project Leadership

The Eastern Sierra Connect Project was managed by the Desert Mountain Resource Conservation and Development Council (Desert Mountain RC&D). Desert Mountain RC&D is a nonprofit which works to promote environmental protection and economic development. The Eastern Sierra Connect Regional Consortia has been operating under the auspices of the Desert Mountain RC&D since its inception. The Desert Mountain RC&D has been operating for over ten years and has received funding from a variety of private and public sources over the past ten years including USDA-Rural Development, California Department of Conservation, Southern California Edison, Sierra Nevada Conservancy, US Department of the Navy, and more. The California Department of Conservation believes in the Desert Mountain RC&D's success and has provided three watershed coordinator grants totaling funding of over $600,000 and nine years of funding.

1.2 Aggregated Demand Results

Most of the information used to determine prospective broadband users was taken from the Community Survey, which was open from April until June 2011. 777 surveys were completed which netted a plus/minus 5% margin of error. Additional information was obtained from attendees at the 7 regional community meetings. Attendees at the broadband forum also commented on the initial findings and their comments were taken into account in the overall analysis. The town-by-town demand was calculated using survey results. Regional leadership needed was determined through participatory exercises at the community meetings. The industry demand was created through an industry study from the California EDD of the 3 county regions industry growth and employment and then confirmed with local meetings.

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[1] CPUC broadband maps
http://www.cpuc.ca.gov/PUC/Telco/Information+for+providing+service/Broadband+Availability+Maps.htm

1.2.1 Survey Findings

- A majority of survey respondents indicated that the availability of broadband Internet was highly important when making significant decisions.
- Over 80% of survey respondents indicated that Internet availability was important in both the home and business settings.
- Health care affordability and access to health care professionals topped the list of resident concerns.
- Personal use of the Internet is important for many regional activities.
- Businesses ranked business and financial services highest for Internet benefits.
- Survey respondents indicated the willingness to pay current market rates or higher for Internet broadband services.

1.2.2 High and Medium Demand Communities

The high and medium demand communities are good targets for early implementation of broadband infrastructure. Local leadership needs to ensure that the low and no demand communities become aware of the importance of broadband.

Demand	Mono Communities	Inyo Communities	Kern Communities	Tribal Communities
High	Bridgeport Chalfant Coleville Crowley Lake Lee Vining Mammoth Lakes Swall Meadows Topaz Virginia Lakes	Bishop Charleston View Darwin Lone Pine Olancha Tecopa	Bodfish Inyokern Kernville Lake Isabella Randsburg Ridgecrest South Lake Squirrel Mountain Valley Weldon Wofford Heights	
Medium	Devil's Gate Hammil June Lake Mono City Paradise Sonora Junction Sunny Slopes Tom's Place Walker White Mountain Estates	Alabama Hills Aspendell Big Pine Independence Keough Hot Springs Round Valley South Bishop Creek Starlite	Alta Sierra China Lake Acres Isabella Highlands Keene Onyx Weldon Valley Ranchos	Bishop Paiute

1.2.3 Broadband Opportunities Abound for Positive Industry Growth

The Industry Study results are remarkably positive when compared to other rural regions in California. The Eastern Sierra regional economy is primarily tourism-based. However the region's entire economy grew during a time of catastrophic economic downturn with other regions throughout the state losing thousands of jobs. Overall, it is perfect timing to focus economic and workforce development efforts on emerging, less concentrated growth industries in order to grow those industries into exporters of goods and services, especially the manufacturing sector and professional, scientific and technical services.

Growth Industries	Accommodation and Food Services
	Utilities
	Professional, Scientific and Technical
Emerging Industries *Greater than 15% average growth rate*	Educational and Health Services
	Manufacturing
	Other Services
	Private Education
	Transportation and Finance
	Admin & Support
	Arts, Entertainment and Recreation
Mature Industries	None
Declining Industry	Management of Companies

All of these sectors can benefit by the introduction of a robust broadband infrastructure. Any industry segment that "exports" goods and services from the region will need Internet as the 21st century business communications tool. All of the growth industries and all of the emerging industries will benefit. In particular, industries with the highest wages should be identified in each community and specific broadband development should be directed to them, to insure continued rapid growth and a healthy regional economy.

1.2.4 Regional Leadership

To determine community readiness for applications, services and leadership, we asked for input in four sectors: healthcare, government, education and small business at regional community meetings. Community meetings were held in eight regional locations. In Mono County, meetings were held in Lee Vining, Mammoth Lakes and Crowley Lake. In Inyo County, meetings were held in Bishop and Lone Pine. In Eastern Kern County, meetings were held in Ridgecrest, Lake Isabella and Mojave.

Today, residents believe that there are low levels of broadband advocacy and use in healthcare, government, education and small business. In 3 years, residents believe that targeted leadership in those segments should be playing a major role in regional broadband deployment and use.

1.3 Broadband Infrastructure

Interest in broadband is high in the region because of the activities surrounding the Digital 395 stimulus grant. We completed 777 surveys in the region, which netted a plus/minus 5% margin of error. Only 29 survey respondents indicated broadband connectivity that meets or exceeds the FCC current standard of 1 Mbps upload and 4 Mbps download. This equates to less than 4% of the entire region having adequate access to broadband. Official maps[2] lack accurate data and overstate availability in our region. This is important since maps determine funding eligibility. Much of the region is "at capacity" and new connections cannot be ordered due to lack of middle mile backhaul facilities. The official California broadband map erroneously shows adequate capacity in the region. In order to qualify for funding as underserved or unserved, locals must convince the state and federal authorities that there is no capacity available. This time-consuming extra step would be unnecessary if the state map was correct.

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[2] http://www.broadbandmap.gov

1.3.1 Broadband Providers

Provider	Service Type	Provider Type
AT&T U-Verse	Wired DSL	National
AT&T Wireless	Cellular Wireless	National
Cricket Wireless	Cellular Wireless	National
High Desert Wireless	Wireless	Local
HughesNet	Satellite	National
IWVISP	Wireless	Local
Lone Pine TV	Cable Modem	Local
Mediacom	Cable Modem	National
NPG Cable (now SuddenLink)	Cable Modem	National
Schat.net	Wireless	Local
Sprint	Cellular Wireless	National
SuddenLink	Cable Modem	National
Time Warner	Cable Modem	National
Verizon	Wired DSL	National
Verizon Wireless	Cellular Wireless	National
Virgin Mobile	Cellular Wireless	National
Wild Blue	Satellite	National

1.3.2 Infrastructure Scenarios

The infrastructure scenarios include regional groupings, mainly based on geographic circumstances, and suggested infrastructure that may be feasible in the regional groupings. It also shows the current providers in the grouping and may suggest an appropriate organizational structure to allow for new infrastructure builds in the absence of a viable broadband service provider.

As part of the Digital 395 national and state investment, the California Broadband Cooperative is building fiber drops to hundreds of community anchor points along its installation path. These fiber drops are tremendous regional assets and, even if the drop location doesn't know how to pay for the connectivity in the future, the drop should be installed now to "future proof" important public safety, healthcare and educational sites and ensure the potential of connectivity. These anchor points can and should investigate opportunities with regional providers or community groups to share connectivity and costs.

Implementation of any of the various infrastructure scenarios will be dependent on a number of factors including:

- Funding sources particularly the Connect America Fund and the California Advanced Services Fund
- Construction methods and the associated environmental considerations
- Existing or planned provider connections to the places where people need connectivity
- Geographical issues such as view-shed, weather, earthquakes and fire
- Technical performance issues including ease of maintenance
- Open or closed infrastructure and competition
- Shared interconnection availability
- Middle mile access (backhaul to an Internet connection point)
- Distance to Internet connection points

1.4 Public Policy

Public policy including right of way play a significant factor in providing encouragement for service providers to build Internet last mile connections in a region. Google's fiber project is an example

where "cheap and optimized are the name of the game. The existing conduit, the utility pole access, and other things the [Kansas City] granted Google (such as on-site inspectors) will cut the cost of laying fiber significantly. Milo Medin, Google's Vice President of access services, credits Kansas City's existing infrastructure, streamlined government rules, and general business friendliness with some of the reasons Google chose the city."[3]

The qualities of the Eastern Sierra region are not conducive to service provider investments (low population, long distances, environmental sensitivities.) Local leadership teams need to sincerely consider policies and business friendly processes in order to encourage serious service provider investment.

Factors that should be considered when creating effective regional broadband policies include:

- Imminent death of Plain Old Telephone Service (POTS), maybe as early as 2018 as Telecoms are urging regulators to discontinue
- Local policymakers can create rules to encourage deployment Right of Way, Permitting, Partnering
- CPUC is making rules that influence funding availability in rural areas
- FCC is making rules on funding wireless deployment, nominal speeds, actual vs. advertised performance, high cost subsidies, etc.

Specific local policies are being studied and amended to help the Digital 395 installation stay on time and on budget. These local policies, once finalized, will help other providers who wish to expand their local services and utilize the Digital 395 middle mile in 2013.

1.5 Conclusions

With the imminent death of POTS, Eastern Sierra Connect hopes to achieve widespread awareness of the importance of broadband last mile deployment and create motivation for ongoing planning to ensure ubiquitous broadband throughout the region by 2017. In addition, we anticipate that key anchor institutions, which already have plans to utilize broadband infrastructure for health care, education, public safety, and community services, will sufficiently demonstrate the power of broadband in delivering improved services by 2014.
Regional leadership teams that include government, healthcare, education and business should be formed to ensure a comprehensive planning effort continues to provide last mile broadband connectivity to every resident in the region. Funding programs such as the federal Connect America Fund and the state California Advanced Services Fund should be tapped to ensure connectivity region wide. Regional governments should continue to work together with providers to encourage infrastructure investment and start to work with citizen groups who want to build their own infrastructure.

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[3]

http://www.businessweek.com/technology/content/apr2011/tc20110418_467722_page_2.htm