



PRAXIS
ASSOCIATES

Digital 395 – Vision and Value

Inland Empire Regional Broadband Consortium

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Transforming Infrastructures – Eastern Sierra



Los Angeles Aqueduct - 1913

US 395 – 1910 to 1940

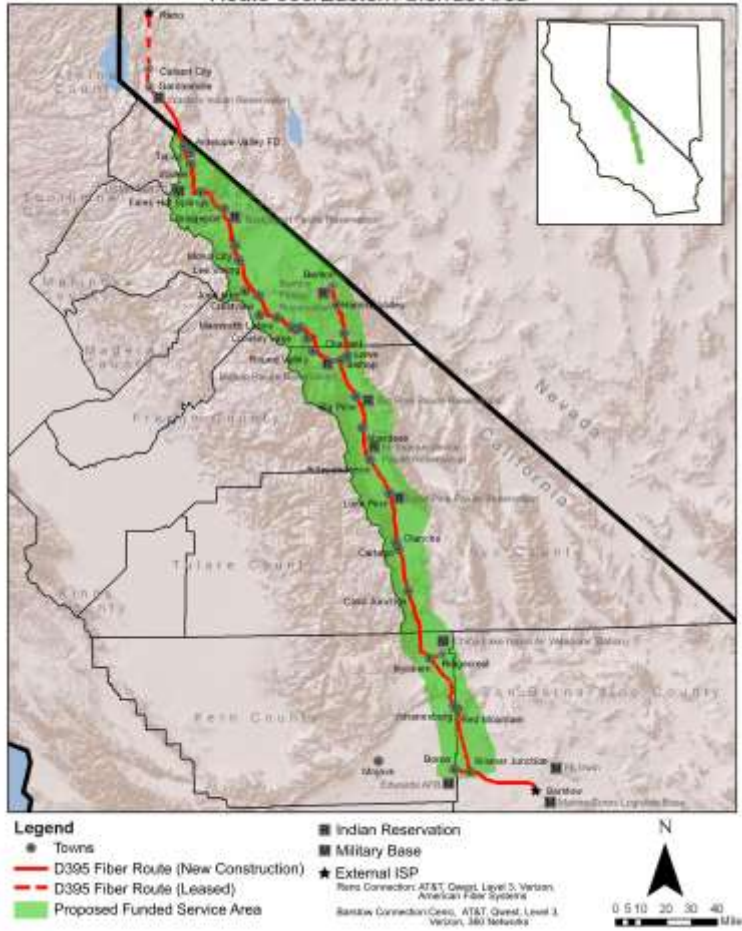


Digital 395- 2013



Digital 395 Project

Broadband Serving Area
Route 395/Eastern Sierras Area



Geographical Scope

- Eastern Sierra US 395 Corridor
- Barstow to Reno (I-80 to I-15 Internet Corridors)
- Serving 275 GEM and 49 Points of Interconnection

Network Profile

- 3.1 Million Feet (583 miles) of 432 Strand Fiber
- 9.2 Million feet of Conduit
- Initial Capacity 150Gbps
- Theoretical Capacity 86.4 Petabytes (86.4×10^{15})
- Backhaul Route, Spurs and Distribution

Funding

- ARRA Funded (Dept. of Commerce - \$81MM BTOP)
- CASF Funding (CASF - \$29MM)
- Total Funding (included Private) = \$112.5MM

Project Challenges



Typical Archeological Evaluation Site

- ❑ **Physical Challenges**
 - *Terrain, Geology, and Climate*
 - *Logistics and Scale of Operations*
- ❑ **Environmental Challenges**
 - *465 Cultural Sites (Avoidance Approach)*
 - *83 Sensitive / Critical Species (No “Takes”)*
 - *Incompatible Agency Environmental Guidelines*
 - *\$25.3MM of Environmental-Related Costs*
 - *Tribal, Biological and Archeological Monitoring*
- ❑ **Institutional and Policy Restraints**
 - *Established First Telecom Cooperative in CA*
 - *2 States; 47 Distinct Agencies*
 - *No precedent; training or adequate analogies*
 - *Policy and Permitting Innovations*
 - *Risk Management and Insurance (OCIP)*
 - *ROW Fees, Documentation and Conflicts*

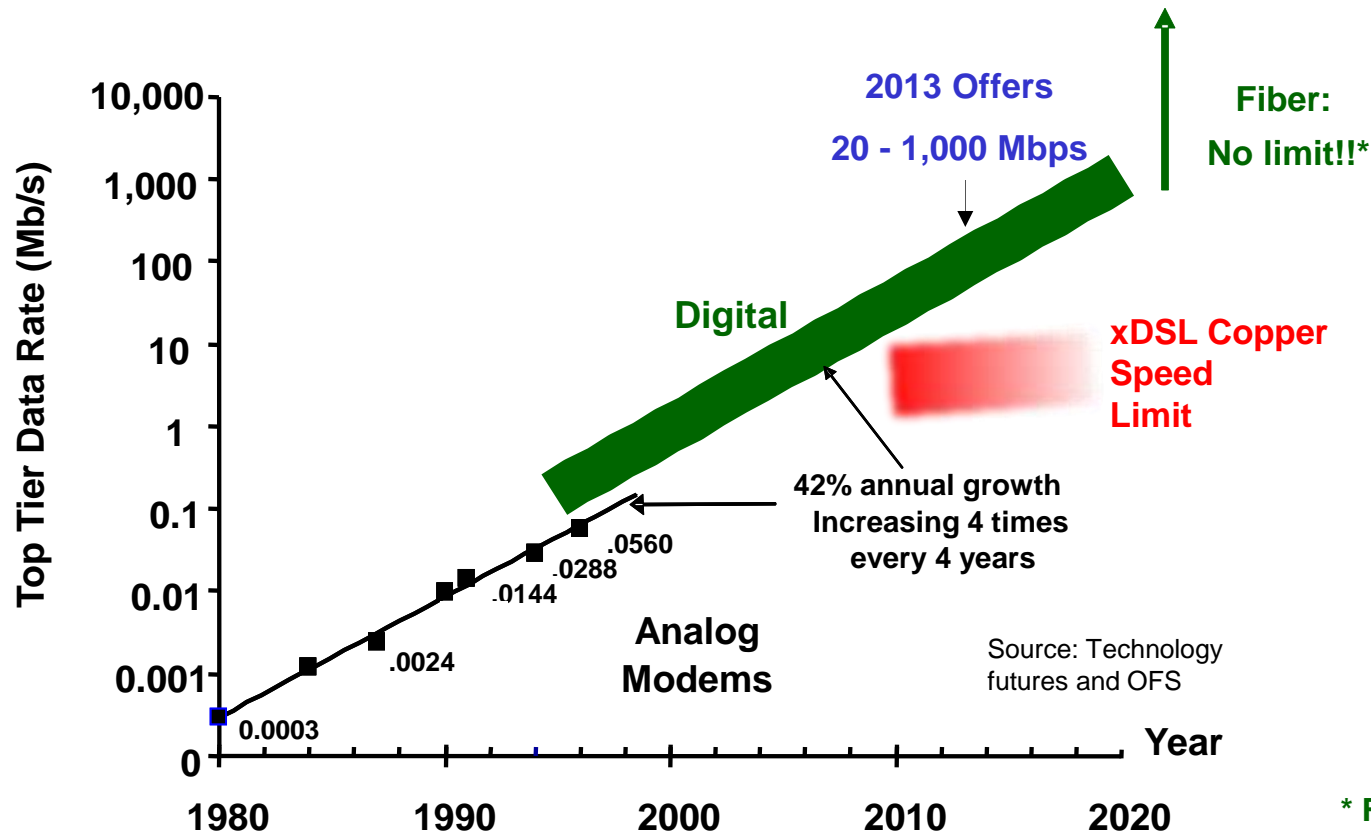


Initial Impetus for Project

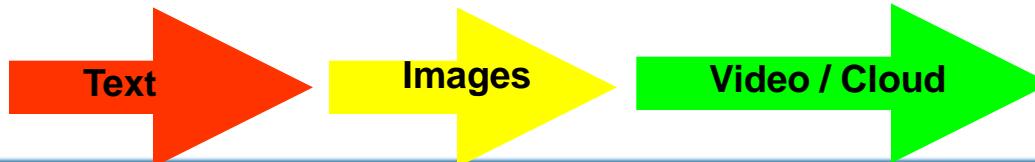
- ❑ ***Statewide Limits to Broadband Development – “Middle Mile”***
 - ***Clear Pattern of Unserved and Underserved Areas***
 - ***High Cost of Bandwidth for Service Providers and Consumers***
 - ***Limitations of Wireless (Cost, Reliability and Bandwidth)***
- ❑ ***“Narrow” Economic Base of Region***
 - ***Low percentage of Private Land***
 - ***Water Rights***
 - ***Transportation and Communications Limitations***
 - ***Other Limiting Factors: Education, Medical, Commerce***
- ❑ ***The Last Opportunity***
 - ***Cannot make the private business case***
 - ***Infrastructure at a scale only government can make***

Growing Bandwidth Requirements

Access Data Rates



* Fiber theoretical limit is >200 Tbps



Source:
J George, OFS

Bandwidth Drivers – A Digital World



More Devices



Speed Increasing



More Internet Users



More Rich Media Content



Source:
IEEE Bandwidth
Study and Cisco

The Digital World . . .



“The Real voyage of discovery consists in not seeking new landscapes, but in having new eyes.”

--Marcel Proust, Remembrances of Things Past - 1927

Broadband Ranking

GLOBALLY

8 →

Country/Region	Q4 '12 Avg. Mbps	QoQ Change	YoY Change
— Global	2.9	5.0%	25%
1 South Korea	14.0	-4.8%	-13%
2 Japan	10.8	2.7%	15%
3 Hong Kong	9.3	3.4%	5.4%
4 Latvia	8.9	2.3%	20%
5 Switzerland	8.7	0.5%	20%
6 Netherlands	8.6	0.1%	3.3%
7 Czech Republic	8.1	7.0%	21%
8 United States	7.4	2.3%	28%
9 Sweden	7.3	7.4%	29%
10 Finland	7.1	4.3%	20%



Figure 10: Average Measured Connection Speed by Country/Region

NATIONALLY

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State	Q4 '12 Avg. Mbps	QoQ Change	YoY Change
1 Vermont	10.8	3.8%	38%
2 Delaware	10.6	-3.0%	29%
3 District Of Columbia	10.2	-5.1%	37%
4 New Hampshire	10.1	-2.5%	25%
5 Utah	9.5	4.5%	26%
6 Maryland	9.3	5.8%	44%
7 Rhode Island	9.3	7.2%	25%
8 Massachusetts	9.3	1.9%	29%
9 Connecticut	9.2	1.4%	31%
10 New Jersey	9.1	4.3%	45%



Figure 14: Average Measured Connection Speed by State

BEWARE: Study Findings Inconsistent



CBC Vision and Value

Mission Statement

To operate and evolve a state-of-the-art, open-access, wholesale broadband network; **in a way that** attracts last-mile investment, excites a broad base of users with entertaining, useful and informative content, and fosters the creation of engaging applications; **so that** Digital 395 is a stimulant of vibrant economic development, entrepreneurial activity, patron success, and in so doing, ensure prosperity and well-being for the people of the Eastern Sierra.



Strategic Model – “Be Disruptive”



❑ **Market Strategy**

- **CBC Wholesale Model (GEM Anchors & Last Mile)**
- **Flood the region with broadband to stimulate application use and development**
- **Establish a metro or better pricing and product offering**
- **Many points of interconnection, shareable assets**

❑ **Last Mile Channel Strategy**

- **Adopt model of “Cooperation, not Competition”**
- **Symbiotic relationship – Mutual Benefit**
- **Last Mile Providers will stimulate demand, grow CBC**
- **CBC will encourage expansion of Last Mile solutions**
 - **Common Carriers**
 - **Cable Companies**
 - **Local ISPs**
 - **Wireless Service Providers**
 - **Hospitality Resellers**
 - **Other Business Models (Cloud Services, VARs, STS)**



Value to the Region



□ *Key Elements in Execution*

- *Support, expand and protect the network*
- *Stay Leading-Edge*
- *Service sophisticated customer base*
- *Don't be "First Tier" support of applications and premises networks*
- *Stimulate entrepreneurial development in the Region*

□ *Benefits*

- *Improved bandwidth, viable Last Mile business*
- *Better and more robust (4G/LTE) cell coverage*
- *Internet everywhere*
- *Local applications development complementary to other sectors and regional economy*
- *Will attract businesses, visitors and new types of local enterprise.*



Who is Praxis?

□ Praxis Associates

- *A Network Development Corporation*
- *Public and Private Networks / Publicly or Privately Funded*
- *Full-Service capability (Propose, Design, OSP, Nodes, Commissioning)*
- *Companion Service Provider Company: Inyo Networks*

Praxis Eco-System





Thank You



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