

County Council Update

60% Project Review

January 31, 2012

Estevan Gonzales
IT Project Manager

Agenda

- Overview
- Management Action Plan
- National/Regional FTTH Projects & Lessons Learned
- Speed Options
- Capital Expenditure Cost/Funding Options
- RFI Response
- Next Steps

County Council - April 19, 2011

- Fiber-to-the-Premise
- 1 Gbps, dedicated
- Open Access Model
- All citizens and businesses (8,994 premises)
- Deliverables
 - Business case
 - Engineering design; shovel ready project

Project Timeline

Q4-FY11	Q1-FY12	Q2-FY12	Q3-FY12	Q4-FY12	Q1-FY13	>>>>>
<< Conduct Quantitative Surveys >>	<< Conduct Qualitative Survey >>	<< Business Planning >>			<< RFP Process >>	
<< Design Research >> << Network and Fiber Optic Design >> << Equipment Research >>					<< Permitting Process >>	
	<< Council 30% Approval >>	<< Council 60% Approval >>		<< Council 90% & Final Approval >>	<< Funding Approvals >>	

Project Budget

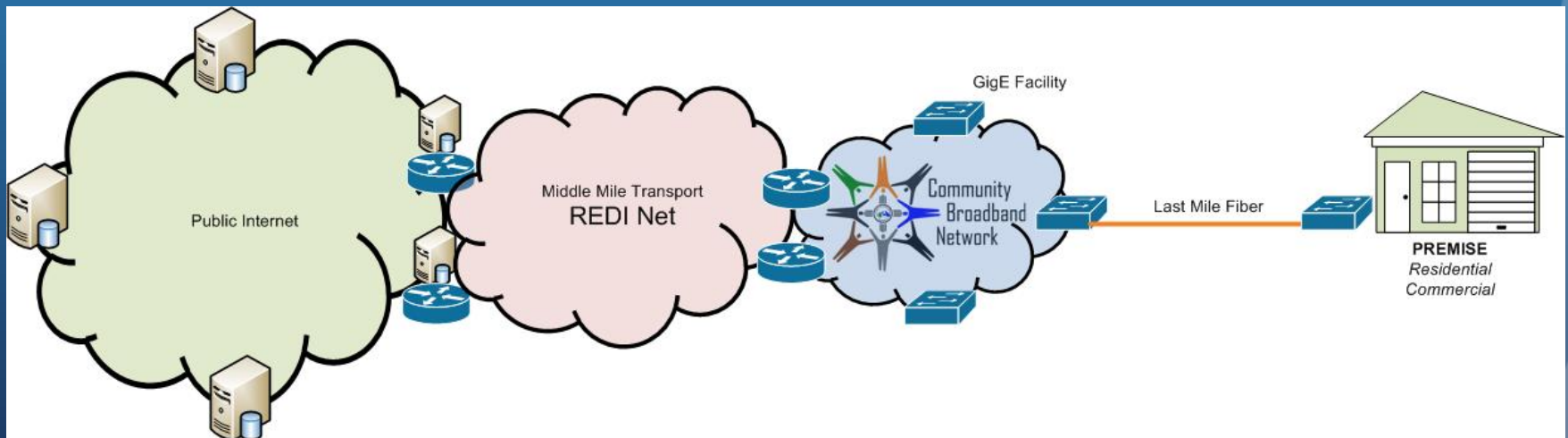
Purpose	Total Project Budget	Expenses to Date	Remaining
LAC	\$189,000	\$73,293	\$115,707
Design	545,220	416,726	128,494
Public Relations	39,000	24,355	14,645
Market Research	30,000	27,285	2,715
Contingency	46,485	0	46,485
TOTALS	\$849,705	\$541,659	\$308,046

REDI Net

- “Middle Mile” fiber network
- Brings fiber optics and connectivity to Los Alamos
- Only provides service to schools, medical facilities, government and ISPs
- Los Alamos partnership
- Not a county project


CBN

- “Last Mile” fiber network
- Broadband to your home or business
- 8,994 Premises
- County project



Management Action Plan

- Complete the Community Broadband Network (CBN) Study.
- Investigate providing a community broadband network (CBN) portal to LAPS, linking students' homes to the schools and making available on-line school resources.

Financial Sustainability		<input checked="" type="checkbox"/>
Quality Cultural and Recreational Amenities		<input checked="" type="checkbox"/>
Economic Vitality and Innovation		<input checked="" type="checkbox"/>
Well-planned Commercial and Residential Growth		<input checked="" type="checkbox"/>
Housing and Employment Diversity		<input checked="" type="checkbox"/>
Operational Excellence		<input checked="" type="checkbox"/>
Communication		<input checked="" type="checkbox"/>
Continuum of Education (K-20)		<input checked="" type="checkbox"/>
Environmental Stewardship		<input checked="" type="checkbox"/>
Intergovernmental Relations		<input checked="" type="checkbox"/>

The Future Demands It

- Global IP (data) traffic has grown 800% over the past five years
- Video on demand is expected to double every 2.5 years
- Internet TV growth rate anticipated increase at 33% per year
- Internet video also expected to rise by 23x in the next 5 years

The Future is Now

National

	2001	2010
Broadband Internet Use @ Home	8 million	200 million
Available Fiber Connection @ Home	19,400	21 million
Actual Fiber Connections	5,500	7.1 million
FTTH Service Providers	20	770

Global

	2001	2010
Internet Connected Devices	2 billion	10 billion

Devices in the Home



What is Broadband?

- FCC definition
 - 4 Mbps Download
 - 1 Mbps Upload
- The national average right now is 5 Mbps



National Broadband Plan

“Ensure every American has access to broadband capability.”

Year		Download	Upload
2011	FCC Broadband Definition	4Mbps	1Mbps
2011	National Average	5Mbps	
2015	National Broadband Plan - Home	50Mbps	20Mbps
2020	National Broadband Plan - Home	100Mbps	50Mbps
	National Broadband Plan - Schools, Hospitals, Government	1Gbps	1Gbps



Source: National Broadband Plan

National Broadband Plan

- “A broadband-enabled Smart Grid could increase energy independence and efficiency.”
- “Broadband can provide teachers with tools that allow students to learn the same course material in half the time.”
- “Broadband-enabled health information technology can improve care and lower costs by hundred of billions of dollars in the coming decades, yet the United States is behind many advanced countries in the adoption of such technology.”

Next Generation Services



- Smart meters; reduce outage, problem identification/correction expeditiously
- IPTV, security, personal communications, telecommuting, focused content
- High-definition video
- Online education and resources in real time; more teacher/student face time
- Telemedicine, transmitting medical images, patient consultation with distant specialists

Economic Development

- Cloud computing; access to new applications and services
- Reduce operational expenses, increase revenue
- Improved infrastructure to compete for, attract and grow business
- White Rock Civic Center and Los Alamos Conference Center
- *“Universal high-speed network access can increase the attractiveness of this community for potential Laboratory recruits and local business employees and their families.” -- P. White*



We're Not Getting There Now

Private providers are doing their best but cannot commit to building a comprehensive broadband fiber network in Los Alamos

Los Alamos is falling behind

The Answer

That leaves us to provide a solution —
The Community Broadband Network



National FTTH Projects

- 1,100 applications to Google FTTH
- 109 independent telcos and municipalities deploying fiber to the premises



Case Studies

- Chattanooga, TN - Green Energy and Speed
 - 2000 jobs created as result of infrastructure
 - *“Chattanooga has become the living laboratory for today’s innovations and tomorrow’s companies.”* Tom Wilson, President and CEO of the Chattanooga Area Chamber of Commerce
- Danville, VA - Fiber for Economic Development
 - Textile and Manufacturing town on the decline
 - Transforms community with technology and job creation

Kit Carson - Taos, New Mexico



The screenshot shows the homepage of the Kit Carson Electric Cooperative (KCEC). The header features the KCEC logo, the text "KIT CARSON ELECTRIC COOPERATIVE Owned by those we serve", and the Touchstone Energy logo. A large landscape image of mountains is on the left. The right sidebar includes a "Welcome to KCEC" message, a calendar for January 2012, a search bar, and a "CLICK" button for "NEW RATE INFORMATION". The main content area features a news article titled "Rural Broadband, Emergency Command Day at Kit Carson" with a video player showing a ribbon-cutting ceremony. The video player has a play button and a progress bar. Below the video, the text reads: "Taos, NM (August 17, 2011) – Kit Carson Electric Co-op (KCEC) today formally launched its \$64,000,000 broadband fiber-to-the-home project with a ground breaking ceremony that included Senator Jeff Bingaman and Congressman Ben R. Lujan as well as a host of other dignitaries." The left sidebar contains a "Customer Service" menu with links like "Pay My Bill", "Billing & Payments", "Forms", "Locations", "Contact Us", "FAQs", "Customer Feedback", and "New Service". Below this is a "News" section with a link to "Available at KCEC Compact Fluorescent Bulbs and Electric Water Heaters. CALL TODAY (575) 758-2258." At the bottom, there is a "Products & Services" menu with links like "Sign up for Fiber", "Products", "Proposed Rates", and "Services".

Customer Service

- Pay My Bill
- Billing & Payments
- Forms
- Locations
- Contact Us
- FAQs
- Customer Feedback
- New Service

News

Available at KCEC Compact Fluorescent Bulbs and Electric Water Heaters. CALL TODAY (575) 758-2258.

The Cooperative will provide a free energy use analysis of your home or business. An

NS-DHTML by Kubik-Rubik.de

Products & Services

- Sign up for Fiber
- Products
- Proposed Rates
- Services

Rural Broadband, Emergency Command Day at Kit Carson

*Electric Co-op hosts \$64 million fiber-to-the-home groundbreaking;
Ribbon cutting for Command Center
Taos Regional Command Center opening*

Taos, NM (August 17, 2011) – Kit Carson Electric Co-op (KCEC) today formally launched its \$64,000,000 broadband fiber-to-the-home project with a ground breaking ceremony that included Senator Jeff Bingaman and Congressman Ben R. Lujan as well as a host of other dignitaries.

NEW RATE INFORMATION

CLICK

BROADBAND UPDATE

BROADBANDUSA
CONNECTING AMERICA'S COMMUNITIES

Kit Carson Electric Cooperative, Inc
Fiber-to-the-Home Broadband Project.

CLICK HERE...

- FTTH project launched August 2011
- \$64 Million Cost (70% Federal, 30% Kit Carson)
- 100 Mbps
- 20,000 rural residents
- Economic development, education, public safety, healthcare, smart grid

Lessons Learned

- Network architecture adaptable for growth
- FTTC vs FTTP
- Importance of planning, phasing
- Take rate and revenue model
- Unanticipated pathway retrofit improvements
- System integration
- Operations, accounting

What Is The Right Speed for Los Alamos?

Proposed options for broadband speed:

- 1 Gigabit - per Council
- 300 Mbps
- 100 Mbps -National Broadband Plan

Design Principles to Lower Costs

Avoid new construction for fiber pathways as much as possible:

- Use existing utility poles
- Use existing underground conduit
- Explore use of abandoned water/gas lines

Capital Expenditure Costs

- End-to-end fiber connection
- Facilities
 - Collocation space for Service Providers
 - Public Safety, Utilities, LANL
- Optical equipment
 - Premise, field equipment, POP

Total Capital Expenditure Costs

Gigabit Architecture

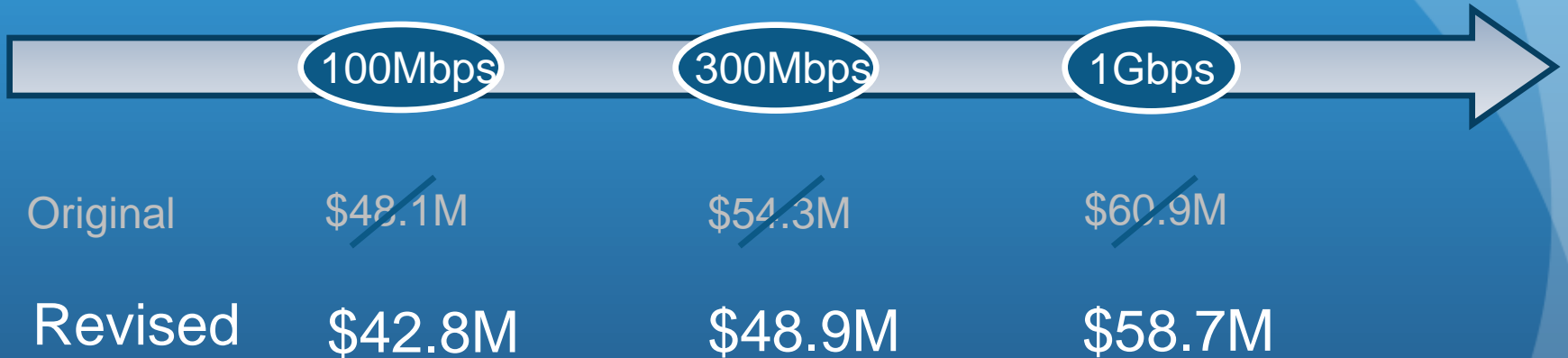


<u>Speed</u>	<u>Total</u>	<u>Fiber</u>	<u>Facilities</u>	<u>Equipment</u>
100 Mbps	\$48.1M	\$31M	\$5M	\$12M
300 Mbps	\$54.3M	\$31M	\$5M	\$19M
1 Gbps	\$60.9M	\$31M	\$5M	\$25M

Cost Saving Options

Cost Saving Option	
Ability to scale up to 1 Gbps for all premises	\$ (3,093,053)
Outsource NOC	\$ (1,263,995)
Use existing county facility for North POP if available	\$ (185,940)
Modular build strategy for service provider collocation	\$ (785,080)
Total	\$ (5,328,068)

Revised Capital Expenditure Costs



PARTICIPATING INTERNET SERVICE PROVIDERS



The Need to Be Shovel Ready

- 21 projects in New Mexico funded by the American Recovery and Reinvestment Act
- Critical to have a detailed design and business plan

NEW MEXICO BROADBAND GRANTEES

The following listing includes entities in New Mexico that have been awarded Broadband grants. Click the Grantee name for more details about the project and contact information.

Grantee: **Kit Carson Rural Electric Coop**
Total Awarded: **\$63,700,000**

Grantee: **University Corp. for Advanced Internet Development**
Total Awarded: **\$62,500,000**

Grantee: **Hughes Network Services**
Total Awarded: **\$58,800,000**

Grantee: **DoIT - Public Safety Network**
Total Awarded: **\$38,700,000**

Grantee: **Navajo Tribal Utility Authority (Commnet Wireless)**
Total Awarded: **\$32,200,000**

Grantee: **One Economy Corp. (Albuquerque)**
Total Awarded: **\$28,500,000**

Grantee: **Wildblue Communications**
Total Awarded: **\$19,500,000**

Grantee: **ENMR Plateau Telephone**
Total Awarded: **\$16,500,000**

Grantee: **Communication Service for the Deaf**
Total Awarded: **\$15,000,000**

Grantee: **La Jicarita Rural Telephone Coop**
Total Awarded: **\$11,800,000**

Grantee: **ENMR Plateau Telephone**
Total Awarded: **\$11,300,000**

Grantee: **NCNMEDD - REDINet**
Total Awarded: **\$10,500,000**

Grantee: **Peñasco Valley Telecom**
Total Awarded: **\$9,600,000**

Grantee: **DoIT - SBDDP**
Total Awarded: **\$4,800,000**

Grantee: **Mission Economic Development Agency (Anthony, NM)**
Total Awarded: **\$3,700,000**

Grantee: **Baca Valley Telephone Coop**
Total Awarded: **\$3,300,000**

Grantee: **Windstream Communications**
Total Awarded: **\$2,300,000**

Grantee: **New Mexico State Library - Fast Forward NM**
Total Awarded: **\$1,500,000**

Grantee: **Zero Divide (Santa Fe Boys and Girls Club)**
Total Awarded: **\$1,400,000**

Grantee: **San Ildefonso Pueblo - TewaCom**
Total Awarded: **\$1,200,000**

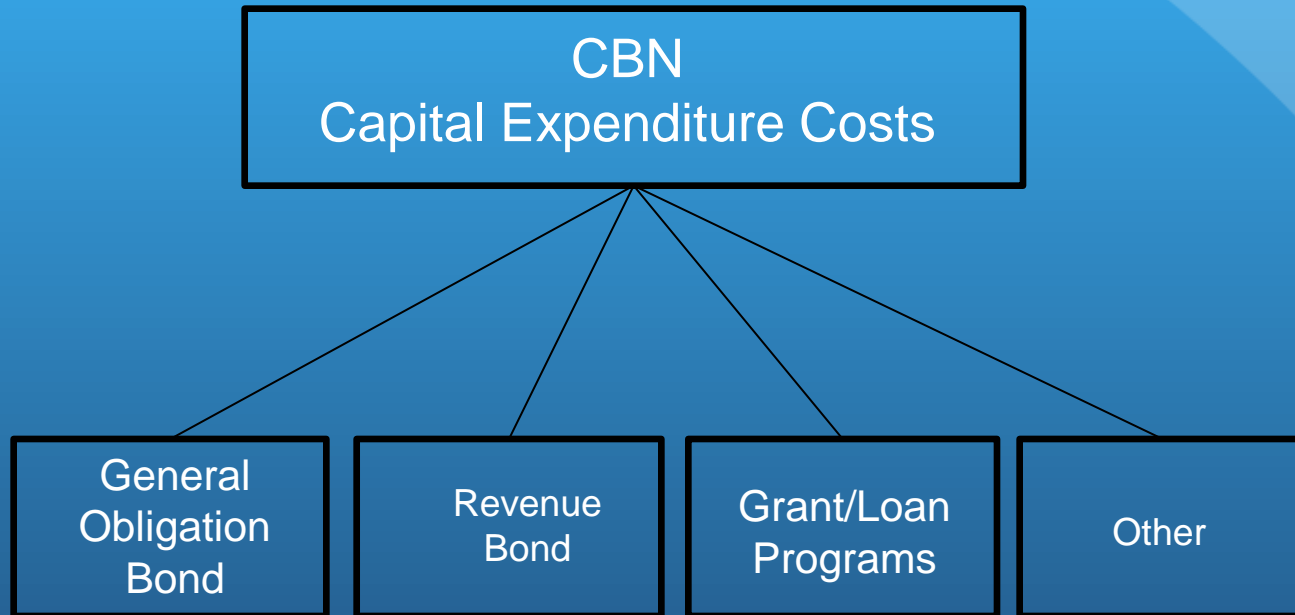
Grantee: **Santa Fe Civic Housing Authority**
Total Awarded: **\$200,000**

21 Grantees

38 service providers

Source: <http://www.doit.state.nm.us/broadband/>

Potential Sources of Funding



DPU Collaboration

- Benefits to CBN
 - Exploration of grant/loan programs that are uniquely available to Utilities
 - Leverage Utilities' expertise and operating history with utility infrastructure
 - Use of utility poles and underground conduit when possible to lower overall construction costs of the project

DPU Collaboration

- Benefits to DPU
 - CBN fiber count designed to accommodate Utility needs
 - Reduced outage duration
 - Strategic Plan for increased revenues - economic development
 - Comprehensive conduit installation plan

RFI Service Provider Response

- Services
 - Voice, video, data, web & email hosting, data transport, bundling

	Speed	Cost
Residential	1.5 Mbps	\$29.95
	5.0 Mbps	\$39.95
	10 Mbps	\$44.95
Business	25 Mbps	\$129.95
	50 Mbps	\$249.95
	100 Mbps	\$499.95

Unrivaled Discoveries

Los Alamos will have a broadband system that matches the expectations for one of the scientific capitals of the world



Next Steps

- Direction from council 100Mbps, 300Mbps, 1Gbps
- Continue project to design completion
 - Determine resident and business commitment
 - Explore funding options
 - Business plan (revenue and operational expense model)

Citizen Feedback

- “I liken CBN to the Interstate system of highways. What we have now is more like the non-interstate highways which were OK for the traffic that existed back then. What CenturyLink is building is like private toll roads.” -A.Greene
- “Keep onward with this project. Finish biz plan/revenue models/cost recovery. LANL will use this system in ways that cannot be presently foreseen.” -B.Sellers
- “I hope this goes forward.” - J.Fitzgibbon
- “The numbers are in the ballpark of Taos...I would like to see this project continue to the business plan/funding.”—J.Lin
- “Need to provide a much more detailed breakdown of fundamental costs and alternatives.” -R.Browning
- “We are geographically remote, but that hurdle can be leapfrogged with high-capacity network capability in a world increasingly dependent on efficient connectivity...Why wouldn't we make such an investment?” -P.White