Local Technology Planning Teams
Lessons Learned

September 15, 2011

Colorado Broadband Data and Development Program

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Executive Summary

Local Technology Planning Teams are established by the Colorado Broadband Data and Development Program (CBDDP), a program created under a grant to the State of Colorado by the National Telecommunications and Information Administration. There are three lessons learned: 1) solutions for rural Colorado's broadband deficits can only be found at the local level, 2) the recent history of local efforts to improve telecommunications and broadband environments indicate that no one size fits all, and 3) it does not cost millions of dollars to build networks providing gigabit per second services to Colorado's rural communities.

Aggregate Local Experience

There is no step in this process more important than recruiting a strong Local Technology Planning Team. Team members for Local Technology Planning Teams (LTPTs) were recruited based on a) experience with previous or on-going efforts to improve broadband environments in targeted communities b) positions as community leaders (county commissioners, council of governments chairs, executive directors of economic development districts, etc) or c) technical expertise (service providers, IT directors) and d) local service providers.

Assess Broadband Environment

Initial meetings of LTPTs often lasted hours as team members assessed what their specific infrastructure challenges were (Middle Mile, Last Mile or both). Market failures on the parts of incumbent service providers are often noted. Network outages lasting days point to outdated infrastructure and a dire need for the LTPTs to take control of their broadband environment.

Assess Demand

Total bandwidth demand in many rural communities often exceeds 1 gigabit per second (Gbps). LTPTs are empowered with simple surveying tools to document slow internet speeds, exorbitant pricing for services and a lack of business grade bandwidth. Gauging total broadband demand for a community is a necessary first step in capacity building.

Aggregate Demand

Competition drives improved broadband environments. In many communities, there is no forum for consumers of large quantities of bandwidth (T1 and above) to compare pricing and "shop" their aggregate buying power. The LTPTs, by virtue of team members' status as consumers of large quantities of bandwidth, directly or indirectly represent a buyer's co-op for bandwidth.

Aggregate Resources

A frequent excuse for low broadband speeds is the assumption that the capital expense necessary to bring improved broadband to a community is prohibitive. That assumption is based on the notion that any new market entrant would require millions of dollars to trench fiber from a tier one internet service provider's nearest point of presence. Communities may have the resources (towers, existing fiber assets, power transmission lines, rooftops, etc) that can greatly alleviate that perceived, prohibitive capital expense. In aggregating those resources, capital expenses are cut and broadband environments greatly improve.

Aggregate Solutions

Broadband infrastructure can take many forms. When communities put aside the notion of "one size fits all" and look to a variety of technologies to provide an improved broadband environment, they win. Examples include carrier neutral locations, Gigabit Ethernet (GigE), microwave and fixed wireless.

Aggregate Sustainability

In the short time the CBDDP has been in operation, a number of success stories have emerged. LTPTs learn from each other. It is encouraging to note that taking control of that environment and making capital improvements do not require large infusions of outside capital. If a community follows the "7 A's" model they can gain gigabit per second broadband services without millions of dollars in government funding or subsidies.

1. Introduction

The Governor's Office of Information Technology (OIT) created the Colorado Broadband Data and Development Program (CBDDP) with a grant to the State of Colorado under the American Recovery and Reinvestment Act of 2009. The CBDDP is responsible for broadband mapping, planning and distance learning. The mapping component of the project assesses the availability of broadband service across the state and develops a geographically referenced database for public view of this availability. The planning aspect of the grant initiated an effort to develop and support Local Technology Planning Teams (LTPTs) in rural Colorado. These teams reflect a recognition that local ownership or control of the process of attracting broadband service to a community is critical for the long term success and sustainability of this service.

What Are LTPTs and Why Are They Important

The availability of gigabit per second broadband services in Colorado's rural communities will greatly boost gross domestic product over the next decade. Rural communities in Colorado have pursued improved telecommunications, especially internet access and broadband, for almost twenty years and still strive to keep pace with the Front Range in terms of speeds, availability and affordability. LTPTs are groups of local stakeholders knowledgeable about their technology availability, the economy and/or political dynamics in their area. They make take a variety of organizational forms, but all are focused on identifying and addressing gaps in their broabdband services through locally designed solutions.

The CBDDP facilitates LTPTs in gaining control of their broadband environment. While many communities and regional organizations have discussed means of improving their broadband environments, the CBDDP marks the first state-sponsored initiative to drive those improvements. The CBDDP's unique "7 As" approach to facilitating Local Technology Planning Teams is meeting with success in capacity building of Middle Mile infrastructure in Colorado's many rural communities.

The document provides an overview of the "7 As" process and a guide for communities in forming LTPTs. It reflects understanding gained from a year of work to date composed of many hours of meetings with local teams and several thousand miles of travel along Colorado's highways. Three principles have become evident through this work. They are a) all solutions are local, b) no one size fits all, and c) it does not cost millions of dollars to bring gigabit per second speeds to a rural community. With this in mind, this document presents a framework of the general steps for communities to take in improving their broadband environment. In empowering local communities to take charge of their broadband environment, an organic, sustainable process takes place that perpetuates improvements in broadband infrastructure for rural communities.

2. Introduction to the 7 A's

Improving access to broadband internet services in rural communities will greatly boost gross domestic product over the next ten years. Leaders in many of Colorado's rural communities are well aware of this possibility and strive to improve their broadband. Access to capital is a challenge for many service providers such that even when they can demonstrate a strong business case for investment in infrastructure, lenders will not make loans on rural broadband infrastructure projects.

Difficult times call for unique solutions. The Colorado Broadband Data and Development Program has developed an approach known as the "7 As" for the formation and facilitation of Local Technology Planning Teams which are empowered to improve the local broadband environments of Colorado's most rural communities.

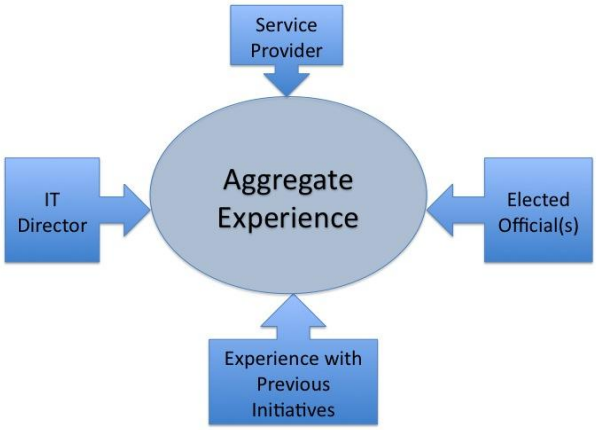
"A"1. Aggregate Experience

Recruiting a winning team is the first priority. Getting the right people on the team is the difference between success and failure.

Recruiting the Teams

It is very important to invite individuals with a clear stake in the broadband environment of the community, whether as community leaders or business people reliant on broadband. Parties who should be recruited to participate on a Local Technology Planning Team might include: a) persons with telecom experience, b) community leaders or elected officials, c) local service providers, and d) persons with experience in past community broadband efforts.

Figure 1: Potential members for a successful Local Technology Planning Team



Team Entity

Without a formal entity, sustaining a team will be a challenge. Formal entities such as telecommunications co-ops, non-profit corporations, corporations, and limited liability companies, can legally raise money and make investments in infrastructure. Local technology planning teams should assess these options and determine the best course of action for their team.

The table below will assist the organizers of a Local Technology Planning Team in assessing their progress toward creating a team.

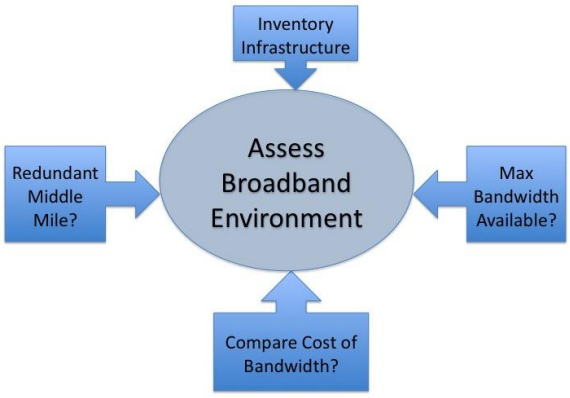
Factor	**Completed?**
Our team includes a decision maker at a local service provider.	
Our team includes a member with experience in past telecom/broadband infrastructure initiatives.	
Our team includes a member who is the IT director for a school district, county, or municipality	
Our team has discussed a legal entity our team should adopt in order to meet our goals	

Table 1 Self assessment table for Local Technology Planning Team recruitment

"A"2. Assess Broadband Environment

Once a winning team has been recruited, the next step is assessing a community's broadband environment via an inventory of the current telecommunications infrastructure and available service. The table below provides guidance for an LTPT to begin their inventory. The inventory assists a community in avoiding duplicative efforts or investments in their broadband environment.

Figure 2: How to assess the broadband environment



Broadband Mapping

The CBDDP is creating a geographical database of broadband coverage across the state. This data includes information about service providers in a given area, the types of technology on which they offer broadband services (DSL, cellular, etc), as well as the advertised speed tiers at which the service providers offer broadband services. The data is the source of the maps shown in Colorado's web based broadband map (http://maps.co.gov/ColoradoBroadband) and the National Broadband Map (http://www.broadbandmap.gov). These data sources serve as a central data source and support LTPTs in assessing their broadband environment. Survey and speed test tools to collect experiences of broadband consumers are also available from the CBDDP (http://www.colorado.gov/oit/broadband) and the Federal Communications Commission (FCC).

Planning Goals for LTPTs

LTPTs must establish concrete goals for their broadband environments. From a high level a team should be planning:

- Redundant Middle Mile connecting their community to the outside world,
- Abundant Middle Mile providing gigabit per second (Gbps)-plus speeds per community,
- Affordable Middle Mile connections with pricing on a par with Denver prices.

Redundant Middle Mile

Why is redundant middle mile important? On August 14, 2010, a posthole digger cut the fiber optic cable that connects the San Luis Valley (6 counties, 14 school districts, 18 municipalities) to the outside world. For 14 hours, for most of the Valley, there was no 911

service, internet access, cell phone service, long distance telephone or credit card authorization. In addition to putting the lives of the citizens of the San Luis Valley at peril, the coincidence of the outage with the height of the tourism season put a serious dent in the Valley's gross domestic product for 2010. LTPTs must plan for a physically separate or "diverse path" connecting them to the outside world. Similar network outages occur throughout rural Colorado on a regular basis putting lives and livelihoods at risk.

ABUNDANT MIDDLE MILE

The FCC's National Broadband Plan calls for a minimum 1 Gbps per community by 2020. Most LTPTs are in agreement that, based on preliminary assessments of bandwidth demand for their communities, middle mile speeds must be 1 Gbps by 2012, 5 Gbps by 2015 and 10 Gbps by 2020. Some rural Colorado LTPT communities already have 10 Gbps speeds, with others in the San Luis Valley expecting 4 Gbps service by 2012.

AFFORDABLE MIDDLE MILE

Mineral County pays $1,050 for T1 (1.54 Mbps) services from their local telephone company. The costs of comparable T1 services in the greater Denver area are about 10% of that figure. A survey of community anchor institutions in southwestern Colorado conducted by the Southwest Colorado Open Access Network shows the average cost per megabit per second per month is $438. Depending on the technology used and quantity purchased, such a figure for comparable service in the greater Denver area might be less than $10. If these rural communities had access to redundant (i.e., competitive) and abundant (1 Gbps or more) middle mile services, competitive market forces would drive down the cost of bandwidth for Colorado's rural communities.

Factor	**Completed?**
We have inventoried our broadband environment	
We have planned a redundant or "diverse path" Middle Mile	
We have targets for "abundant" Middle Mile services	
We have pricing guidelines for Middle Mile services	
We have a specific location(s) for a carrier neutral location for our community.	

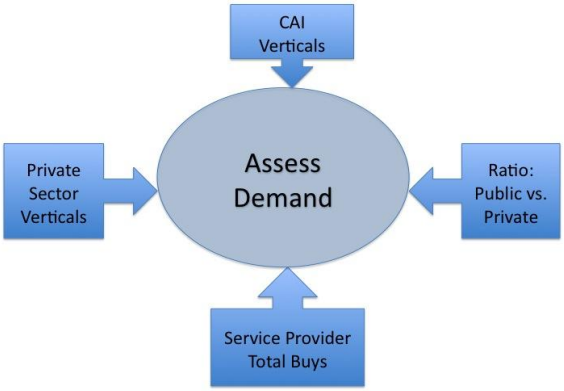
Table 2: Assessing broadband environment self assessment

"A"3. Assess Current Demand

Bandwidth is measured in capacity (kilobits/megabits/gigabits) per second delivered. The NTIA makes a distinction between "advertised" and "actual" speeds. "Advertised" speeds refer to what the service provider states it is providing, and "actual" speeds refer to the results of a speed test performed on-premise which indicates what is actually delivered, which may be measure by a speed test performed on-premise.

Speed tests of CAIs provide a baseline data set as to what speeds can be found in a given community. That data may not always agree with what service providers report for mapping purposes. Speed test data for a given community can also point to what the maximum Middle Mile speed connecting the community to the outside world might be.

Figure 3: Elements of assessing demand



Assess Demand: Survey Methodology

The CBDDP has enabled LTPTs with easy-to-use, free surveying tools to assess the demand for bandwidth in their communities. The CBDDP surveys businesses and residences are available online at http://www.colorado.gov/oit/broadband. LTPTs advertise the survey via their existing community social networks driving traffic to the survey. In addition, surveys of CAIs are largely done through the coordination of public officials directing their staffs to complete the tests in a timely manner.

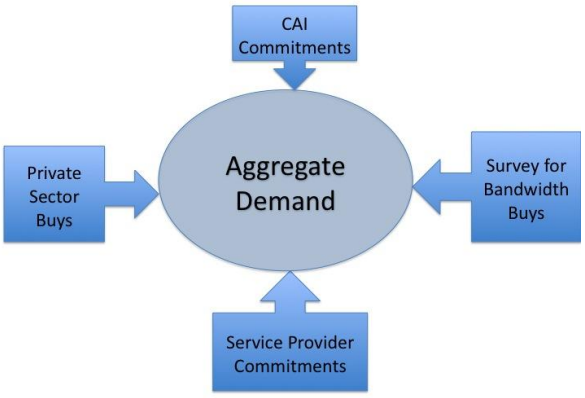
Factor	Completed?
We have inventoried our CAIs	
We have speed test data for a majority of our CAIs	
We surveyed our local service providers re: total demand	
We have surveyed our business community for bandwidth demand	
We determined ratios of public and private sector demand	
We have a means for determining total bandwidth demand for our community in order to plan an infrastructure that meets demand.	

Table 3 Assessing demand self assessment worksheet

"A"4. Aggregate Demand

This is perhaps the most important step for a LTPT. Once total demand has been assessed the next step is to get consumers of high levels of bandwidth to pool their demand together and commit to buy their bandwidth from either a new provider that will meet their demand or buy more bandwidth at a lower cost per Mbps. By aggregating demand, LTPTs create a more enticing scenario for service providers. Experience indicates new market entrants might offer services at less than 10% of the price of incumbents.

Figure 4: Aggregating demand is getting commitments from bandwidth buyers



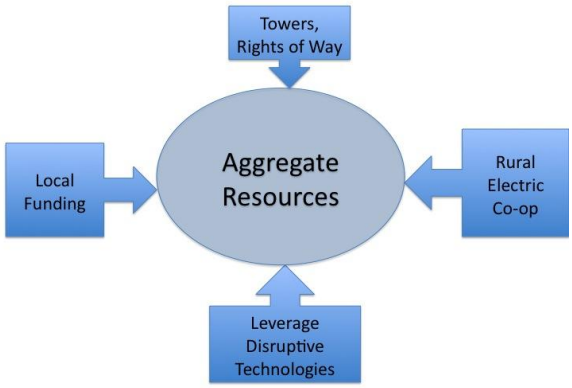
Factor	Completed?
We identified the major consumers of bandwidth	
We determined what their needs and multi-year future goals are in terms of total number of Gbps they require	
We have informal commitments from major bandwidth consumers to buy from alternative Middle Mile providers	

Table 4 Aggregating Demand self assessment worksheet

"A"5. Aggregate Resources

A major element of market failure in building out broadband infrastructure is the perceived exorbitant capital expense (CAPEX) associated with rural telecommunications. Demonstrating a reasonable return on investment (RoI) to an investor may prove difficult if not impossible. The solution is to aggregate local resources to minimize that CAPEX to a point where an appropriate RoI can be realized. How is this done?

Figure 5: Resources communities can aggregate



First, communities must invest in their broadband infrastructure in the form of physical assets they will pledge as part of the broadband infrastructure for their community.

Examples abound including:

- carrier neutral location where Middle Mile providers can terminate their circuits in a given community
- rights of way along county and municipal roadways, water or sewer pipelines
- conduits
- existing dark fiber
- towers or tall buildings
- community owned real estate
- manpower in the form of IT or telecom personnel
- money in the form of fees or taxes with funds to be directed toward broadband infrastructure (may require a local referendum)
- from the rural electric co-op: transmission towers, fiber, power poles, real estate for towers at electric substations, skilled manpower with bucket trucks and other tools

Factor	Completed?
We inventoried community resources that can help aggregate resources and leverage disruptive technologies	
We invited owners of resources that can assist with broadband infrastructure to share those resources in improving our broadband environment (Example: rural electric co-op, fire, water districts, Forest Service, etc)	
We evaluated disruptive technologies that may provide a low-cost means of achieving our goals in improving our broadband environment.	
We evaluated means of controlling our resources such that the community retains control of its broadband environment now and in the future.	

Table 5 Self-assessment for aggregating resources and leverage disruptive technologies for broadband infrastructure

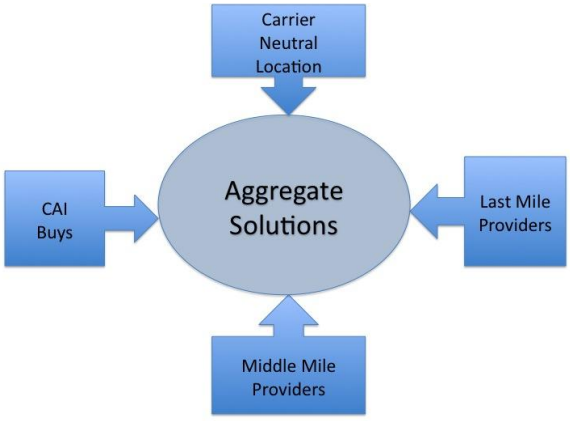
"A"6. Aggregate Solutions

Aggregating the building blocks assembled by the community is the next critical step. The question for community broadband planners now is how the pieces fit together in terms of middle and last mile solutions and providers.

Leverage Disruptive Technology

The term "disruptive technology" is defined as being "cheaper, simpler, smaller, more convenient to use". Local Technology Planning Teams leverage disruptive technology in telecommunications to bring broadband to their communities as a means of "disrupting" the perceived high cost of broadband infrastructure.

Figure 6: What are the solutions that can be aggregated to improve the broadband environment?



DISRUPTIVE TECHNOLOGY IN THE MIDDLE MILE: MICROWAVE VS. FIBER

Fiber optic cable is the gold standard of middle mile technology. The bandwidth it might deliver is theoretically infinite (relative to other middle mile technologies). A rule of thumb for rural deployments is that it costs $20,000 per mile to trench (terrestrial) and about half that if deployed on poles (aerial). A 1 Gbps microwave might cost $30,000 for a distance of 40 miles or $750/mile. As a cost effective, near-term middle mile solution for rural communities, microwave is an excellent example of disruptive technology.

Figure 7: Comparison of fiber and microwave as Middle Mile solution

Factor	Microwave	Fiber
Cost	$1,000/mile	$20,000/mile
Bandwidth	Gigabit per second (Gbps)	Gigabit per second (Gbps)
Reliability	Low cost of redundancy	High cost of redundancy
Time to Deploy	Very short relative to fiber	Very long relative to microwave

DISRUPTIVE TECHNOLOGY IN THE MIDDLE MILE: GIGE VS. ATM

Much of what is called broadband middle mile infrastructure in rural Colorado is part of a telephone network based on Asynchronous Transfer Mode (ATM), which has its origins in digital voice technologies of the 1980's. It was designed primarily for voice and not necessarily for high bandwidth internet applications of the 21st century. In contrast to ATM, Gigabit Ethernet (GigE) was designed for an all-Internet Protocol (IP) world.

One hurdle to improved broadband infrastructure in some communities is that the only middle mile is the incumbent provider's ATM network which is not an open network model.

Some Middle Mile service providers embraced by LTPTs lease existing fiber optic cable from owners other than telephone companies (electric transmission firms, for example), install the latest GigE switching equipment (about $30,000 each) and can then offer multiple gigabit per second services to even the smallest rural communities.

Table 6 Comparison of ATM and Gigabit Ethernet

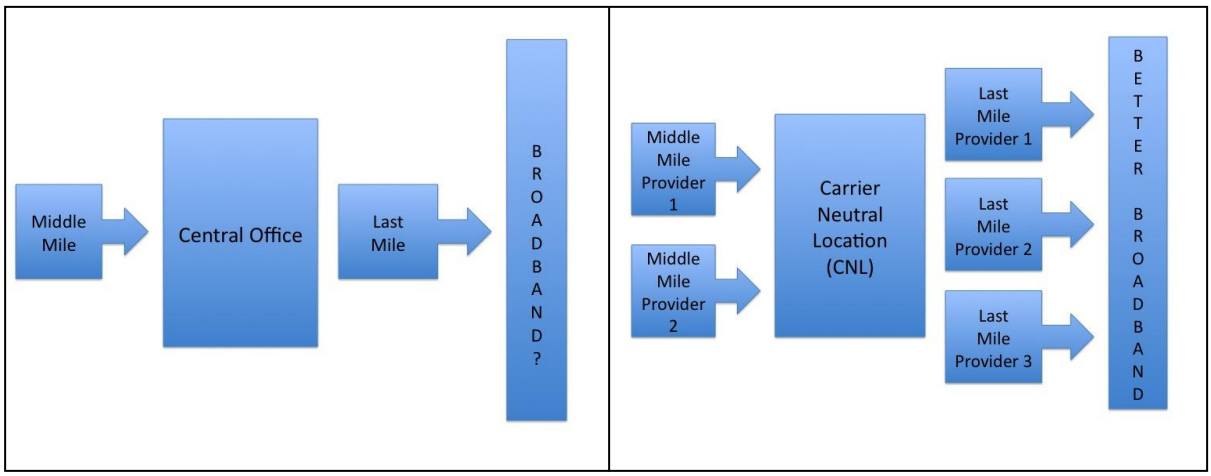
Factor	ATM	Gigabit Ethernet
Open Network Technology	No. Proprietary to telephone networks	Yes
Bandwidth	Limited to "OC" quantities often in the 100's of megabits	Measured in Gigabits (thousands of megabits)

As existing fiber assets can be identified, it is merely a matter of attaching relatively low-cost GigE switches at the end of those fiber or microwave assets to connect rural communities and offer gigabit internet speeds. Millions of dollars in CAPEX could be saved by middle mile providers to bring gigabit internet services to Colorado's rural communities if existing assets could be brought to the market.

Carrier Neutral Location (CNL)

Carrier neutral locations are a relatively new concept. They are locations where multiple middle mile providers terminate their services (fiber, microwave) and last mile service providers originate their services to the homes and businesses of the community and multiple carriers can gain access to it. They are often supported or provided by the community and encourage competition, and therefore better pricing, in an open access environment.

Figure 8: Current single provider model Vs. Carrier neutral location model



The CNL should be located in a publicly-owned building (city hall or county administration building for example) such that the community holds some leverage on their broadband environment over service providers. The table below provides a short checklist for LTPTs planning a CNL.

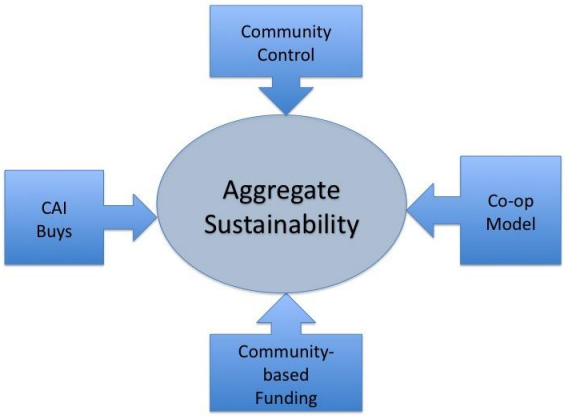
Factor	Completed?
We have a plan for a carrier neutral location (location, power, cooling, connectivity).	
We have inventoried and contacted potential Middle Mile service providers to service our communities	
We have inventoried and contacted all local Last Mile service providers and invited their participation in our planning.	

Table 7 Self-assessment for aggregating solutions

"A"7. Aggregate Sustainability

Broadband is a utility just like water and electricity. How does a team in rural Colorado create a service that is self-sustaining for generations? Conditions for sustainability for a broadband service are in place, with rural electric and rural telephone co-ops as multi-generational examples. The shareholders are the community's subscribers to the service. The co-ops employ community members, and community members sit on the board of directors. A broadband utility authority could function in the same model. Examples of sustainable community-based entities include rural telephone and electric co-operatives many of which were founded in the 1930's and are still in business.

Figure 9: Elements for aggregating sustainability



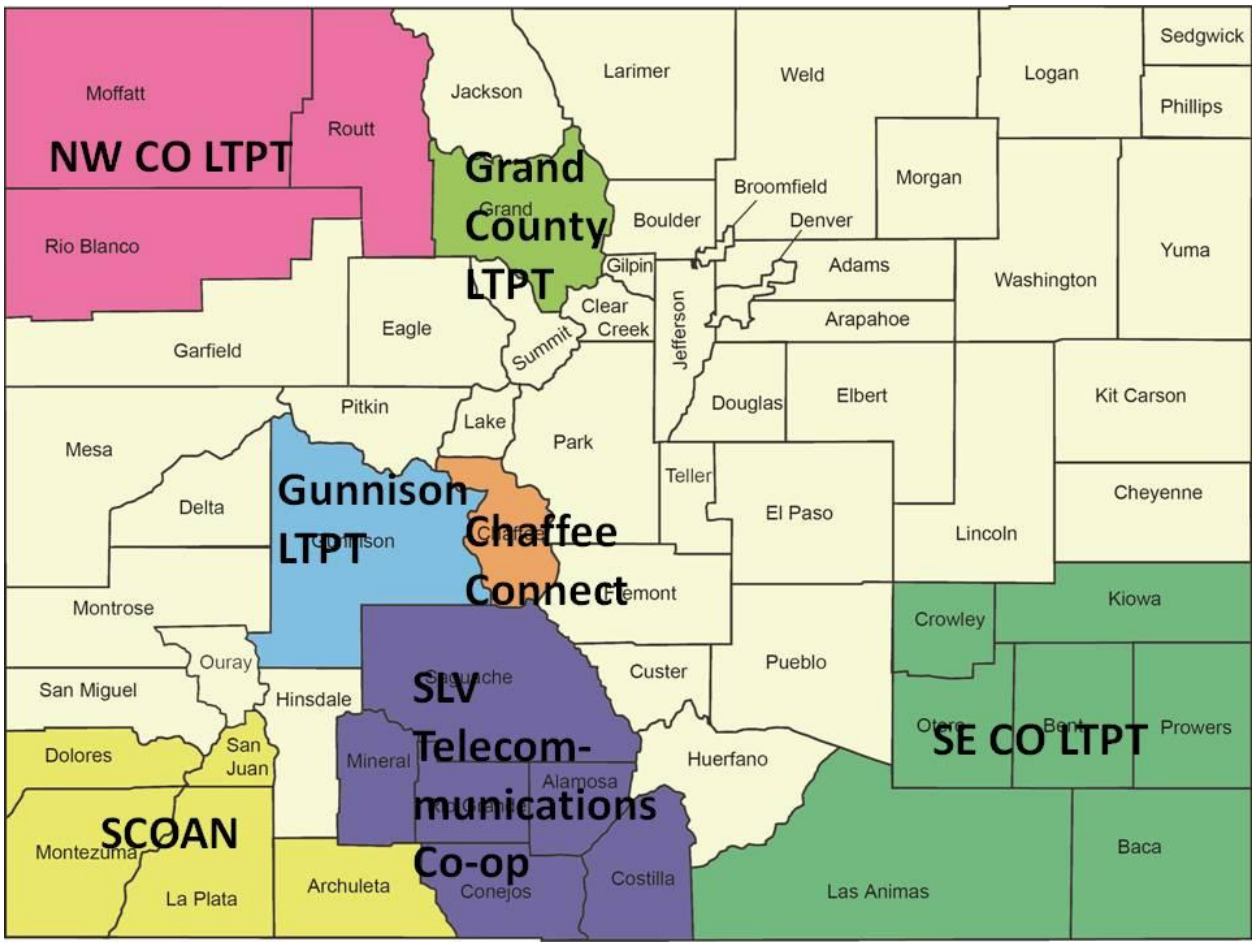
Factor	Completed?
We have a plan for multi-generational sustainability.	
We have a plan for community ownership or control of our broadband environment.	
We have a plan for keeping broadband dollars in our economy.	
Total score	

Table 8 Self-assessment for aggregating sustainability

3. LTPT Progress Summaries

The Colorado Broadband Data and Development Program began recruiting communities for pilot projects in June 2010. It began with four pilot projects shown as numbers one, two, three and four in Figure 10. Interest quickly grew in pursuing these locally developed and controlled efforts, and the CBDDP is currently coordinating a total of eight Local Technology Planning Teams. The map and table below summarize planning efforts for the Local Technology Planning Teams.

Figure 10: LTPTs as of summer 2011



Team	Description
Southwest Colorado Open Access Network (SCOAN)	The SCOAN was created through a grant from the Colorado Department of Local Affairs (DOLA) with funds from the Energy and Mineral Impact Fund ($3 million grant, $1 million local matching funds). To date, it is the best example of communities taking control of their broadband future. Construction is currently underway to build open access networks in the region. CNLs exist in the communities of Durango and Cortez. The CNL in Cortez enjoys a 10 Gbps circuit that terminates at the City Services Building. The Montezuma-Cortez School District subscribes to a 1 Gbps circuit from that CNL which makes it the most connected school district in Colorado. The open access network enables last mile service providers to buy bandwidth at competitive pricing and pass on the capacity and savings to last mile subscribers. A majority of the 280-plus CAIs of the five-county area serviced by the SCAN will have access to Gbps internet speeds by late 2012.
San Luis Valley Telecommunications Co-operative	The San Luis Valley Telecommunications Co-operative was formed as a non-profit corporation in February 2011 and serves as the Local Technology Planning Team for the San Luis Valley of south central Colorado. It exists as a buyer's co-op for purchasers of large quantities of bandwidth including Adam's State College, City of Alamosa, healthcare providers and local service providers. Demand aggregation by the Co-operative is driving a number of middle mile projects in the Valley. In coordination with the Co-op, a 4 Gbps route has been built over Wolf Creek Pass. That route will also provide middle mile service to the communities of South Fork, Del Norte, Creede, Center, Saguache, Crestone, and Moffat. Another private sector multi-Gbps middle mile route over La Veta Pass will be operational by year's end 2011. A CNL is planned for Alamosa. In short, some majority of the almost 300 CAIs of the San Luis Valley will have access to Gbps internet speeds by late 2012.
Northwest Colorado Local Technology Planning	This team has identified the chief barrier to a strong broadband environment is lack of abundant, redundant and affordable middle mile services. CNLs are currently in the planning stages for Steamboat Springs and Craig. That CNL will be a terminus for gigabit middle mile services from which multiple local last mile providers will offer services. Towns that will benefit from that CNL include: Craig, Hayden, Oak Creek,

Team	and Steamboat Springs.
Grand County Local Technology Planning Team	This team has identified a lack of Gbps middle mile services to be the chief barrier to a competitive broadband environment for their community. The team has assessed the aggregate bandwidth demand for the communities of Kremmling, Hot Sulphur Springs, Fraser, Granby and Winter Park. The team then determined that the most economical approach to bringing Gbps speeds to the businesses and CAIs is to invite private service providers to lease space on existing fiber optic cable running into this corner of the state from multiple directions. There currently exists a robust market of Last Mile providers who are active participants on the LTPT. The above named communities will have multi-Gbps speeds available to their businesses and CAIs by year's end 2012. A CNL is planned for Fraser.
Southeast Colorado Local Technology Planning Team	The broadband challenge for communities of Southeast Colorado is the inverse of the other LTPTs. This region enjoys a strong middle mile and suffers from a less than competitive last mile market, especially for the farms and ranches of the region. Rural electric co-op, Southeast Colorado Power Association (SECPA) created a telecommunications division known as SECOM, which deployed fiber optic cable on its power grid in the late 1990's. Currently, almost all K12 public schools in the region or about 18% of the state's total public schools, are connected to the Internet via Secom's fiber optic cable services. While last mile service providers offer competitive services in the towns of this multi-county region, farms and ranches outside of those towns have difficulty getting access to broadband services. Fixed wireless service providers are attempting to expand their footprints in the region. Finally, Secom is testing fixed wireless technologies to provide last mile as well as middle mile services.
Gunnison Local Technology Planning Team	The communities of Gunnison county suffer from a lack of middle mile that is redundant, abundant and affordable. Founded by the Board of County commissioners, this team is pursuing middle mile solutions to improve the county's broadband environment. Sites for a CNL are being considered.
ChaffeeConnect Local Technology Planning Team	An outgrowth of the Economic Development Corporation, ChaffeeConnect focuses on improving both middle and last mile infrastructure in Chaffee county. This Local Technology Planning Team has followed the "7 A's" in compiling a telecommunications business plan for prospective service providers to enter this market. . Carrier Neutral Locations have been identified in the county

Table 9 Local Technology Planning Team summaries

4. Lessons Learned Conclusion

In Colorado, there is a very strong tradition of rural communities working together to ensure their quality of life equals or exceeds that of urban communities. Most of Colorado's rural communities receive their electricity from a rural electric co-op and have done so for generations. In addition, rural telephone co-ops provide telephone and internet services to at least one-third of the land mass of Colorado. Water and sanitation districts are another example. Finally, 178 public school districts function entirely under local jurisdiction. There is no reason Local Technology Planning Teams cannot successfully address local broadband environments now and for generations to come.

"Command and control" or "one size fits all" solutions for broadband are not working in rural Colorado. A highly simplified comparison of broadband services in rural Colorado to urban markets of the state points to a disparity between these communities. Those communities that have locally-owned broadband solutions appear to have more options in terms of broadband services. Out-of-region or out-of-state service providers cannot be as responsive as local entitites to local demand for improved broadband services that are redundant, abundant and affordable.

As demonstrated by many communities across Colorado, improving the broadband environment does not cost millions of dollars. By aggregating local resources and leveraging disruptive technologies, and applying the 7 A's, communities can erase the disparities between their broadband environments and those of urban areas of the state.

5. Resources

Colorado Broadband Data and Development Program	http://www.colorado.gov/oit/broadband
Colorado broadband map	http://maps.co.gov/ColoradoBroadband
National Broadband Map	http://broadbandmap.gov
National Broadband Plan	http://broadband.gov

Appendix A: Broadband 101

Prepared by Susan Jesuroga for the Chaffee County (Colorado) Economic Development Corporation and Chaffee Connect Local Technology Planning Team.

What is Bandwidth?

Bandwidth is the amount of data that can be transmitted in a fixed period of time. For digital devices (like computers and cell phones), bandwidth is usually expressed in bits per second (bps) or bytes per second. Essentially, its the amount of data (expressed as "bits", which are the basic unit of computing) that can flow across your connection in one second. Examples: megabits per second (Mbps) or gigabits per second (Gbps)

What is Broadband?

As defined by the FCC, is download speeds of 4 Mbps and 1 Mbps upload. For example, streaming movies (i.e. those you view instantly as they download) through your computer, or gaming console, (such as Netflix) recommends at least 2.4 Mbps download for DVD quality video and audio.

What are Networks?

- A **backbone** network ties together various networks together, such as across a university campus or across geographical areas.
- The **middle mile** lies between the backbone network (such as the large bandwidth network the telephone company provides for Chaffee County) and the local access point, such as an ISP from whom you buy your service. These are typically large-capacity connections and can range from a few miles to a few hundred miles. They often consist of fiber optic lines, but microwave and satellite are also used.
- The **last mile** represents how service gets from your local access point such as your ISP's equipment to your home or business. It's not really a "mile", and in rural areas can be a distance of many miles.

Challenges for Rural Broadband

Many of the technologies needed to deploy broadband to rural areas exist today, each offering different cost and performance attributes. However, there are some basic challenges for providing higher speed bandwidth.

No network can run faster than the speed of its last mile, from the neighborhood access point to your house or business. This is the most expensive place to lay physical networks, and of the two methods commonly used, coaxial cable (e.g. from your cable TV company) is faster than a copper wire (e.g. DSL or phone line). However, basic copper and cable

Internet access cannot run faster than about 5 Mbps, which is just about fast enough to watch something uninterrupted on YouTube or for a decent quality video chat over Skype. Other options for the last mile include fiber optic lines and wireless. However, in reality, networks seldom run as fast as advertised.

What Drives Demand For Broadband?

- What is available now that is driving need?

- Businesses expect to have 24x7 access to basic applications like banking, VoIP phone services (Voice over Internet Protocol), credit card and payroll processing.
- Redundancy in the network is critical for businesses to avoid down times if any one part of the physical network components fails.
- Specialized business software needs large pipes to move video and data easily, and access to collaborative software development, including:
    - Real estate offices providing virtual tours
    - Construction firms sharing schematics
    - Health care facilities providing remote monitoring and diagnosis
    - Emergency management responders sharing data and information
    - Intelligent power grids
- Growth in general Web-surfing, blogging, social networking and consumer online shopping, where web sites that are providing the content are growing in size and complexity.
- Continued high-growth in consumer use of services such as video calls (e.g. Skype), on-demand movies (e.g. Netflix), downloadable books (e.g. Amazon or Barnes and Noble), music (e.g. iTunes) and multi-player online games (e.g. World of Warcraft).
- New consumer products (including cell phones) which take HD video and high resolution stills, whose output will be posted online, to YouTube, Facebook or sent to friends and family via email.
- Increased access to government services from e-filing taxes, searching land information databases to emergency management.

Increased Demand in the Near Future

- Mobile products are signaling the end of the PC as we know it. Mobile devices are just that, mobile. Consumers expect them to be lightweight, portable and able to go

online anywhere, along with the ability to access to their personal stuff. At home, in coffee shop or at a friend's house showing the kid's videos, they want untethered access.

- The same untethered requirements are true of business people.
- The "Cloud" is coming:
    - Google has created its Chrome OS which supplies a superfast browser, with theassumption that Web-based apps and services will provide all the functions that you need. No more running applications on your personal laptop, but "in the cloud".
    - Apple has just announced iCloud as a way to sync and share all personal files on your various Apple hardware (such as iPad movies and books, iPhone messages, iPod music and MacBook files).
- The market for iPads, tablets and other mobile devices will continue to grow. And with it, the bandwidth demand for downloading books, Netflix movies and the like will continue to grow. In addition, these mobile devices are not designed to store huge amounts of data, such as videos, so consumers will need to park their collection of personal stuff elsewhere.
- As more and more individual PCs get hacked, consumers and businesses will embrace the idea to put their data and software packages somewhere else in return for devices that work without the constant fear of losing data to hackers or hard drive crashes and won't need the level of systems administration as current PCs.
- More online and distance learning opportunities for education, where students in a class are running simultaneous multimedia content with embedded assessments or taking specialty classes, such as foreign languages, not taught locally. As education gets more expensive, schools and students will contract with larger institutions to provide curriculum not available locally.
- Bigger, better products, such as 3-D TVs, 100-inch TV screens, and 3-D gaming with increasing bandwidth needs.

Appendix B: Principles of Community Broadband from City of Cortez, Colorado

Universal Access: Every business and home should have the same level and quality of service. This is an economic development imperative as more and more people work and learn from home.

Geographic Equality: Every area of the community should have the same level and quality of service.

Level Playing Field: Every service provider should be able to play by the same rules. True competition creates more and better kinds of service and lowers the cost of services for all users, including governments and schools.

Public/Private Partnerships: Public telecom investments should create private sector business opportunities. We can manage telecom just the way we manage roads, which is a mature and time-tested public/private partnership. Communities build and maintain roads, but private sector businesses are free to use those roads to sell goods and services directly to their customers. We need to build digital road systems.

Fiber and Wireless: Wireless is essential for mobile access. Fiber is needed for high bandwidth applications. The good news is any community, even in a rural area, can afford a world class, fully integrated fiber and wireless network that will support business attraction and retention.

Community Control: Communities should have control over their economic future. Public development of shared digital roads, managed just as traditional roads are managed, lowers cost for private sector service providers and creates new opportunities for startup companies and incumbent providers that have said they cannot afford to build fiber networks in rural areas.

Multi-Service Networks: Multi-service open networks create true competition and lower prices. In a multi-service network, each category of service has multiple service providers offering many different service packages and bundles at a variety of price points. The community digital road system makes this model easy to implement and to manage, encourages innovation in service offerings, and lowers the price of telecom services because all providers share a single high performance digital road system.

Symmetric Bandwidth: Upstream and downstream data capacity should be equal. Limits imposed on customers restricts economic development, entrepreneurial activities, and work from home opportunities.

Unlimited Bandwidth: Every home and business should have the capacity to use any service. Bandwidth should be defined in terms of the lower acceptable capacity, not the

upper limit on capacity. Limits on network capacity and use simply tell some businesses, "Don't put your business in our community."

Time is of the Essence: Communities can't wait any longer. Virtually all businesses, large and small, now use the Internet. Affordable access to telecom services is now a business essential, and many kinds of new job opportunities

Appendix C: 10 Principles of Telecommunications from Action 22, Club 20, Progressive 15

#1 Affordable, quality, widely available access to advanced telecommunications services and broadband service is important to the present and future viability of Colorado communities, businesses and residents.
#2 The proper role for local government is to serve as demand aggregator and facilitator forthe deployment of advanced broadband networks in partnership with the private sectorin partnership with the private sector.
#3 Competition in the free market is generally recognized as beneficial for consumers, butthere are markets that – due to factors of distance, density and terrain – may not lendthemselves to the development of competition. In those areas, it is a proper role for local interests to work together to generate creative solutions to broadband access needs and encourage future competitive alternatives.
#4 Policies that create options for local solutions to advanced service and broadband technology needs should be supported, as long as those policies provide for local determination and encourages private sector involvement. This may include legislative action for the creation of rural information technology authorities, complete with bonding capacity.
#5 Establish a funding mechanism to provide hard-to-find capital investment in the advanced infrastructure that broadband access often requires in rural areas.
#6 Any community approach to providing incentives to the private sector for infrastructure development should ensure that access is available to all sectors of the community – government, schools, libraries, hospitals/medical clinics, non-profits, main street businesses and residents, alike.
#7 The State should explore potential funding options and roles for encouraging the provision of seamless, statewide coverage of wireless services to ensure public safety and homeland security.
#8 If necessary, the State should explore the use of incentives as an inducement to the private sector to provide advanced services, including broadband service, and upgraded infrastructure for all areas of Colorado, not just the densely populated metropolitan areas.
#9 Local state and federal governments should be encouraged to have rights-of-way access policies that do not present a barrier to cost effective infrastructure deployment by the private sector.
#10 Competitive fairness is important to continue the long-standing goal to provide for equal opportunity for any and all would-be local exchange carriers to be able to effectively compete in the market place. Therefore, any legislative, regulatory or incentive-based policies should provide an open and equitable process for all private sector interests to participate.

Appendix D: By-Laws, San Luis Valley Cooperative

ARTICLES OF INCORPORATION OF

SAN LUIS VALLEY COOPERATIVE, INC.

(A Colorado Non-Profit Corporation)

Pursuant to 7-122-102 and part 3 of Article 90 of Title 7, Colorado Revised Statutes, these Articles of Incorporation are delivered to the Secretary of State for filing.

ARTICLE I

NAME

The name of the Corporation is San Luis Valley Cooperative, Inc.

ARTICLE II

PERIOD OF DURATION

The period of its duration is perpetual.

ARTICLE III

PURPOSES

The purposes for which the Corporation is organized are: (a) To engage in activities which are exclusively for charitable, scientific, and educational purposes, including, for such purposes, the making of distributions to organizations that qualify as exempt organizations under section 501(c)(3) of the Internal Revenue Code (or the corresponding provision of any future United States Internal Revenue Law).

All other purposes of the Corporation listed in this Article are subject to the limitations contained in this subsection (a) and in section 501(c)(3) of the Internal Revenue Code (or the corresponding provision of any future United States Internal Revenue Code);

(b) [Specific activities of organization]

(c) To do any and all things necessary or convenient for the accomplishment of the foregoing purposes; to carry on any lawful business whatsoever which the Corporation may deem proper or convenient in connection with any of the foregoing purposes, or which may be calculated, directly or indirectly, to promote the interests of the Corporation; and to have, enjoy and exercise all the rights, powers and privileges which are now or which may hereafter be conferred by the laws of the State of Colorado upon non-profit corporations organized under the laws of Colorado, to the extent permissible in order to achieve the purposes of the Corporation as stated in subsections (a) and (b).

(d) To conduct its business in any or all of its branches in the State of Colorado and in any or all other states, territories, possessions, colonies and dependencies of the United States of America, and in the District of Columbia, and in any or all foreign countries, and to have one or more offices within and outside the State of Colorado;

(e) To make and alter Bylaws, not inconsistent with these Articles of Incorporation or with the laws of Colorado, for the administration and regulation of the affairs of the Corporation;

(f) To make donations for the public welfare or for charitable, scientific or educational purposes;

(g) To cease its corporate activities and surrender its corporate franchise; and,

(h) To have and exercise all powers necessary or convenient to achieve the purposes for which the Corporation is organized as stated in subsections (a) and (b).

ARTICLE IV

LIMITATIONS

This Corporation is a non-profit Corporation organized solely for charitable, scientific and educational purposes and is without capital stock, and no part of its property, whether income or principal shall ever inure to the benefit of any officer, Director, or employee of the Corporation, or of any individual having a personal or private interest in the activities of the Corporation, nor shall any such officer, Director, employee or individual receive or be lawfully

entitled to receive any pecuniary profit from the operations of the Corporation except reasonable compensation for services rendered in carrying out one or more of its said purposes. No substantial part of the activities of the Corporation shall be the carrying on of propaganda or otherwise attempting to influence legislation, and the Corporation shall not participate in or intervene in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office. Notwithstanding any other provision of these articles, the Corporation shall not carry on any other activities not permitted to be carried on (a) by a Corporation exempt from Federal income tax under section 501(c)(3) of the Internal Revenue Code (or the corresponding provision of any future United States Internal Revenue Law) or (b) by a Corporation, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code (or the corresponding provision of any future United States Internal Revenue Law).

ARTICLE V

The address of the initial principal office of the Corporation is: 425 4th Street, Alamosa, Colorado 81101.

The name, and the business address, of the initial registered agent for service of process on the nonprofit corporation are:

Name _____

Business Address (*must be a street or other physical address in Colorado*)

_____

If mail is undeliverable to this address, ALSO include a post office box address:

_____

ARTICLE VI
OFFICERS

The officers of the Corporation shall consist of a President, a Vice-President, a Secretary, and a Treasurer, each of whom shall be elected or appointed annually by a majority vote of the Board of Directors. Any two or more offices may be held by the same person, except the offices of president and secretary.

ARTICLE VII

BYLAWS

The Board of Directors shall have the power to make such prudent Bylaws as they may deem necessary and proper for the management of the affairs of this Corporation according to the statute in such case made and provided, together with the power, upon a majority vote, at any time to alter, amend or repeal such Bylaws to the extent permissible in order to achieve the purposes of the Corporation as stated in subsections (a) and (b) of Article III.

ARTICLE VIII

MEMBERS

The Corporation's Directors named in this Certificate of Incorporation, or their successors in office, shall elect to membership in the Corporation such voting Members as they deem proper, based upon such requirements as may be provided for in the Bylaws.

[MUST HAVE A STATEMENT AS TO WHETHER THE CORPORATION SHALL HAVE VOTING MEMBERS.]

The nonprofit corporation (/check appropriate box)

9 will have voting Members 9 will **not** have voting Members

ARTICLE IX

DISSOLUTION

This Corporation shall be dissolved only at a meeting called for the specific purpose of dissolution, held after notice to the Members or, if there are no Members, the Directors as provided in the Bylaws, and upon three-fourths vote of all Members or, if there are no Members, the Directors present at said meeting. Upon the dissolution of the Corporation, the Board of Directors shall, after paying or making provision for the payment of all of the liabilities of the Corporation, dispose of all of the assets of the Corporation exclusively for the purposes of the Corporation in such manner, or to such organization or organizations organized and operated exclusively for charitable, educational, or scientific purposes as shall at the time qualify as an

exempt organization or organizations under section 501(c)(3) of the Internal Revenue Code (or the corresponding provision of any future United States Internal Revenue Law), as the Board of Directors shall determine. Any such assets not so disposed of shall be disposed of by the District Court of the county in which the principal office of the Corporation is then located, exclusively for such purposes or to such organization (or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

In no event shall any funds or property of any sort, real, personal or mixed be transferred to private ownership, nor to the benefit of any officer, Director, employee, Member or individual, but instead shall be used for charitable, educational or scientific purposes only.

ARTICLE X

DIRECTOR RESTRICTIONS

Anything to the contrary herein notwithstanding, the Directors shall not:

(1) Lend any part of the Corporation assets to;

(2) Pay any compensation, other than that sat forth in Article IV, to;

(3) Make any services, benefits or facilities of the Corporation available on a preferential basis, to;

(4) Purchase any securities or other property for other than adequate consideration in money or money's worth from;

(5) Sell any securities or other property for other than adequate consideration in money or money's worth to;

(6) Engage in any other transaction which diverts any part of the Corporation assets, to any person, association or Corporation who has contributed property or money to the Corporation; nor shall the Directors ever engage, participate, or intervene in any activity or transaction which would cause the Corporation to lose its status as a tax exempt organization under the provisions of the United States Internal Revenue Code; and the use, directly or indirectly, of any part of the Corporation's funds or properties in any such activity or transaction is hereby expressly prohibited.

ARTICLE XI

LIMITATION OF DIRECTOR LIABILITY

The personal liability of a Director to the Corporation or its Members for monetary damages for breach of fiduciary duty is limited to the full extent provided by Colorado law.

ARTICLE XII

PRINCIPAL OFFICE

The address of the initial Principal Office of the Corporation shall be at _____ _____, Alamosa, Colorado 81101.

ARTICLE XIII

REGISTERED OFFICE AND AGENT

The address of the initial Registered Office of the Corporation is: _____ _____and the name of its initial registered agent at such address is: _____.

ARTICLE XIV

AMENDMENTS

These Articles of Incorporation may be amended by a majority vote of the Members or, if there are no Members, the Directors present at a regular or special meeting, provided that a written notice stating the proposed amendment(s) shall be sent to each Member or, if there are no Members, the Directors at least ten (10) days prior to said meeting. However, no amendment shall be adopted which does not conform to the purposes of the Corporation as stated in Article III, as limited by Articles IV and X.

The (a) name or names, and (b) mailing address or addresses, of any one or more of the individuals who cause this document to be delivered for filing, and to whom the Secretary of State may deliver notice if filing of this document is refused, are:

_____

_____

_____

Appendix E Senate Bill 05-152

CHAPTER 289

GOVERNMENT - LOCAL

SENATE BILL 05-152 [Digest]

BY SENATOR(S) Veiga, and Mitchell;

also REPRESENTATIVE(S) Jahn, Crane, Harvey, Kerr, and Sullivan.

AN ACT

CONCERNING LOCAL GOVERNMENT COMPETITION IN THE PROVISION OF SPECIFIED COMMUNICATIONS SERVICES.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. Title 29, Colorado Revised Statutes, is amended BY THE ADDITION OF A NEW ARTICLE to read:

ARTICLE 27

Competition in Utility and Entertainment Services

PART 1

COMPETITION IN UTILITY AND ENTERTAINMENT SERVICES

29-27-101. Legislative declaration. (1) THE GENERAL ASSEMBLY HEREBY FINDS AND DECLARES THAT IT IS THE POLICY OF THIS STATE TO ENSURE THAT CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, AND HIGH SPEED INTERNET ACCESS, OTHERWISE KNOWN AS ADVANCED SERVICE, ARE EACH PROVIDED WITHIN A CONSISTENT, COMPREHENSIVE, AND NONDISCRIMINATORY FEDERAL, STATE, AND LOCAL GOVERNMENT FRAMEWORK.

(2) THE GENERAL ASSEMBLY FURTHER FINDS AND DECLARES THAT:

(a) THERE IS A NEED FOR STATEWIDE UNIFORMITY IN THE REGULATION OF ALL PUBLIC AND PRIVATE ENTITIES THAT PROVIDE CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, AND ADVANCED SERVICE.

(b) MUNICIPAL ORDINANCES, RULES, AND OTHER REGULATIONS GOVERNING THE PROVISION OF CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, AND ADVANCED SERVICE BY A LOCAL GOVERNMENT IMPACT PERSONS LIVING OUTSIDE THE MUNICIPALITY.

(c) REGULATING THE PROVISION OF CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, AND ADVANCED SERVICE BY A LOCAL GOVERNMENT IS A MATTER OF STATEWIDE CONCERN.

29-27-102. Definitions. AS USED IN THIS ARTICLE, UNLESS THE CONTEXT OTHERWISE REQUIRES:

(1) "ADVANCED SERVICE" MEANS HIGH-SPEED INTERNET ACCESS CAPABILITY IN EXCESS OF TWO HUNDRED FIFTY-SIX KILOBITS PER SECOND BOTH UPSTREAM AND DOWNSTREAM.

(2) "CABLE TELEVISION SERVICE" MEANS THE ONE-WAY TRANSMISSION TO SUBSCRIBERS OF VIDEO PROGRAMMING OR OTHER PROGRAMMING SERVICE, AS WELL AS SUBSCRIBER INTERACTION, IF ANY, THAT IS REQUIRED FOR THE SELECTION OR USE OF THE VIDEO PROGRAMMING OR OTHER PROGRAMMING SERVICE.

(3) "LOCAL GOVERNMENT" MEANS ANY CITY, COUNTY, CITY AND COUNTY, SPECIAL DISTRICT, OR OTHER POLITICAL SUBDIVISION OF THIS STATE.

(4) "PRIVATE PROVIDER" MEANS A PRIVATE ENTITY THAT PROVIDES CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE.

(5) "SUBSCRIBER" MEANS A PERSON THAT LAWFULLY RECEIVES CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE. A PERSON THAT UTILIZES CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE PROVIDED BY A LOCAL GOVERNMENT FOR LOCAL GOVERNMENTAL OR INTERGOVERNMENTAL PURPOSES AND IS USED BY PERSONS ACCESSING GOVERNMENT SERVICES IS NOT A SUBSCRIBER FOR PURPOSES OF THIS ARTICLE.

(6) "TELECOMMUNICATIONS SERVICE" HAS THE SAME MEANING AS SET FORTH IN SECTION 40-15-102 (29), C.R.S.

29-27-103. Limitations on providing cable television, telecommunications, and advanced services. (1) EXCEPT AS PROVIDED IN THIS ARTICLE, A LOCAL GOVERNMENT SHALL NOT:

(a) PROVIDE TO ONE OR MORE SUBSCRIBERS CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE; OR

(b) PURCHASE, LEASE, CONSTRUCT, MAINTAIN, OR OPERATE ANY FACILITY FOR THE PURPOSE OF PROVIDING CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE TO ONE OR MORE SUBSCRIBERS.

(2) FOR PURPOSES OF THIS ARTICLE, A LOCAL GOVERNMENT PROVIDES CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE IF THE LOCAL GOVERNMENT PROVIDES THE CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE TO ONE OR MORE SUBSCRIBERS:

(a) DIRECTLY;

(b) INDIRECTLY BY MEANS THAT INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

(I) THROUGH AN AUTHORITY OR INSTRUMENTALITY ACTING ON BEHALF OF THE LOCAL GOVERNMENT OR FOR THE BENEFIT OF THE LOCAL GOVERNMENT BY ITSELF;

(II) THROUGH A PARTNERSHIP OR JOINT VENTURE;

(III) THROUGH A SALE AND LEASEBACK ARRANGEMENT;

(c) BY CONTRACT, INCLUDING A CONTRACT WHEREBY THE LOCAL GOVERNMENT LEASES, SELLS CAPACITY IN, OR GRANTS OTHER SIMILAR RIGHTS TO A PRIVATE PROVIDER TO USE LOCAL GOVERNMENTAL FACILITIES DESIGNED OR CONSTRUCTED TO PROVIDE CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE FOR INTERNAL LOCAL GOVERNMENT PURPOSES IN CONNECTION WITH A PRIVATE PROVIDER'S OFFERING OF CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE; OR

(d) THROUGH SALE OR PURCHASE OF RESALE OR WHOLESALE CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE FOR THE PURPOSE OF PROVIDING CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE TO ONE OR MORE SUBSCRIBERS.

(3) NOTHING IN THIS ARTICLE SHALL BE CONSTRUED TO LIMIT THE AUTHORITY OF A LOCAL GOVERNMENT TO LEASE TO A PRIVATE PROVIDER PHYSICAL SPACE IN OR ON ITS PROPERTY FOR THE PLACEMENT OF EQUIPMENT OR FACILITIES THE PRIVATE PROVIDER USES TO PROVIDE CABLE TELEVISION, TELECOMMUNICATIONS, OR ADVANCED SERVICES.

PART 2

CONDITIONS FOR PROVIDING SERVICES

29-27-201. Vote - referendum. (1) BEFORE A LOCAL GOVERNMENT MAY ENGAGE OR OFFER TO ENGAGE IN PROVIDING CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE, AN ELECTION SHALL BE CALLED ON WHETHER OR NOT THE LOCAL GOVERNMENT SHALL PROVIDE THE PROPOSED CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE.

(2) THE BALLOT AT AN ELECTION CONDUCTED PURSUANT TO THIS SECTION SHALL POSE THE QUESTION AS A SINGLE SUBJECT AND SHALL INCLUDE A DESCRIPTION OF THE

NATURE OF THE PROPOSED SERVICE, THE ROLE THAT THE LOCAL GOVERNMENT WILL HAVE IN PROVISION OF THE SERVICE, AND THE INTENDED SUBSCRIBERS OF SUCH SERVICE. THE BALLOT PROPOSITION SHALL NOT TAKE EFFECT UNTIL SUBMITTED TO THE ELECTORS AND APPROVED BY THE MAJORITY OF THOSE VOTING ON THE BALLOT.

29-27-202. Exemption for unserved areas. (1) A LOCAL GOVERNMENT SHALL BE EXEMPT FROM THE REQUIREMENTS OF THIS PART 2 AND MAY ENGAGE OR OFFER TO ENGAGE IN PROVIDING CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCE SERVICE IF:

(a) NO PRIVATE PROVIDER OF CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE PROVIDES THE SERVICE ANYWHERE WITHIN THE BOUNDARIES OF THE LOCAL GOVERNMENT;

(b) THE GOVERNING BODY OF THE LOCAL GOVERNMENT HAS SUBMITTED A WRITTEN REQUEST TO PROVIDE THE SERVICE TO ANY INCUMBENT PROVIDER OF CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE WITHIN THE BOUNDARIES OF THE LOCAL GOVERNMENT; AND

(c) THE INCUMBENT PROVIDER HAS NOT AGREED WITHIN SIXTY DAYS OF THE RECEIPT OF A REQUEST SUBMITTED PURSUANT TO PARAGRAPH (b) OF THIS SUBSECTION (1) TO PROVIDE THE SERVICE OR, IF THE PROVIDER HAS AGREED, IT HAS NOT COMMENCED PROVIDING THE SERVICE WITHIN FOURTEEN MONTHS OF THE RECEIPT OF THE REQUEST.

PART 3
COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS

29-27-301. General operating limitations. (1) A LOCAL GOVERNMENT THAT PROVIDES CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE UNDER THIS ARTICLE SHALL COMPLY WITH ALL STATE AND FEDERAL LAWS, RULES, AND REGULATIONS GOVERNING PROVISION OF SUCH SERVICE BY A PRIVATE PROVIDER; EXCEPT THAT NOTHING HEREIN SHALL BE CONSTRUED TO AFFECT THE JURISDICTION OF THE PUBLIC UTILITIES COMMISSION WITH RESPECT TO MUNICIPAL UTILITIES.

(2) (a) A LOCAL GOVERNMENT SHALL NOT MAKE OR GRANT ANY UNDUE OR UNREASONABLE PREFERENCE OR ADVANTAGE TO ITSELF OR TO ANY PRIVATE PROVIDER

OF CABLE TELEVISION SERVICES, TELECOMMUNICATIONS SERVICES, OR ADVANCED SERVICES.

(b) A LOCAL GOVERNMENT SHALL APPLY WITHOUT DISCRIMINATION AS TO ITSELF AND TO ANY PRIVATE PROVIDER THE LOCAL GOVERNMENT'S ORDINANCES, RULES, AND POLICIES, INCLUDING THOSE RELATING TO:

(I) OBLIGATION TO SERVE;

(II) ACCESS TO PUBLIC RIGHTS-OF-WAY;

(III) PERMITTING;

(IV) PERFORMANCE BONDING WHERE AN ENTITY OTHER THAN THE LOCAL GOVERNMENT IS PERFORMING THE WORK;

(V) REPORTING; AND

(VI) QUALITY OF SERVICE.

29-27-302. Scope of article. (1) NOTHING IN THIS ARTICLE SHALL BE CONSTRUED TO AUTHORIZE ANY LOCAL GOVERNMENT TO:

(a) PROVIDE, DIRECTLY OR INDIRECTLY, CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE; OR

(b) PURCHASE, LEASE, CONSTRUCT, MAINTAIN, OR OPERATE A FACILITY FOR THE PURPOSE OF PROVIDING, DIRECTLY OR INDIRECTLY, CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE.

(2) NOTHING IN THIS ARTICLE SHALL BE CONSTRUED TO APPLY TO A LOCAL GOVERNMENT PURCHASING, LEASING, CONSTRUCTING, MAINTAINING, OR OPERATING FACILITIES THAT ARE DESIGNED TO PROVIDE CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, OR ADVANCED SERVICE THAT THE LOCAL GOVERNMENT USES FOR INTERNAL OR INTERGOVERNMENTAL PURPOSES.

(3) NOTHING IN THIS ARTICLE SHALL BE CONSTRUED TO APPLY TO THE SALE OR LEASE BY A LOCAL GOVERNMENT TO PRIVATE PROVIDERS OF EXCESS CAPACITY, PROVIDED:

(a) SUCH EXCESS CAPACITY IS INSUBSTANTIAL IN RELATION TO THE CAPACITY UTILIZED BY THE LOCAL GOVERNMENT FOR ITS OWN PURPOSES; AND

(b) THE OPPORTUNITY TO PURCHASE AND THE OPPORTUNITY TO USE SUCH EXCESS CAPACITY IS MADE AVAILABLE TO ANY PRIVATE PROVIDER IN A NONDISCRIMINATORY, NONEXCLUSIVE, AND COMPETITIVELY NEUTRAL MANNER.

(4) NOTHING IN THIS ARTICLE SHALL BE CONSTRUED TO LIMIT EITHER THE AUTHORITY OF THE STATEWIDE INTERNET PORTAL AUTHORITY CREATED IN SECTION 24-37.7-102, C.R.S., TO CARRY OUT ITS MISSION OR TO INTEGRATE THE ELECTRONIC INFORMATION DELIVERY SYSTEMS OF LOCAL GOVERNMENTS INTO THE STATEWIDE INTERNET PORTAL AS DEFINED IN ARTICLE 37.7 OF TITLE 24, C.R.S.

29-27-303. Enforcement and appeal. (1) BEFORE AN INDIVIDUAL SUBSCRIBER OR A PRIVATE PROVIDER THAT COMPETES WITH A LOCAL GOVERNMENT IN THE GEOGRAPHIC BOUNDARIES OF THE LOCAL GOVERNMENT MAY FILE AN ACTION IN DISTRICT COURT FOR VIOLATION OF THIS ARTICLE, THAT PERSON SHALL FILE A WRITTEN COMPLAINT WITH THE LOCAL GOVERNMENT. THE FAILURE BY THE LOCAL GOVERNMENT TO ISSUE A FINAL DECISION REGARDING THE COMPLAINT WITHIN FORTY-FIVE DAYS SHALL BE TREATED AS AN ADVERSE DECISION FOR PURPOSES OF APPEAL.

(2) AN APPEAL OF AN ADVERSE DECISION FROM THE LOCAL GOVERNMENT MAY BE TAKEN TO THE DISTRICT COURT FOR A DE NOVO PROCEEDING.

29-27-304. Applicability. THIS ARTICLE SHALL APPLY TO CABLE TELEVISION SERVICE, TELECOMMUNICATIONS SERVICE, AND ADVANCED SERVICE AND TO THE PURCHASE, LEASE, CONSTRUCTION, MAINTENANCE, OR OPERATION OF ANY FACILITY FOR THE PURPOSE OF PROVIDING SUCH SERVICE, FOR WHICH A LOCAL GOVERNMENT HAS NOT ENTERED INTO AN AGREEMENT OR OTHERWISE TAKEN ANY SUBSTANTIAL ACTION PRIOR TO MARCH 1, 2005, TO PROVIDE SUCH SERVICE OR PURCHASE, LEASE, CONSTRUCT, MAINTAIN, OR OPERATE SUCH FACILITIES.

SECTION 2. Safety clause. The general assembly hereby finds, determines, and declares that this act is necessary for the immediate preservation of the public peace, health, and safety.