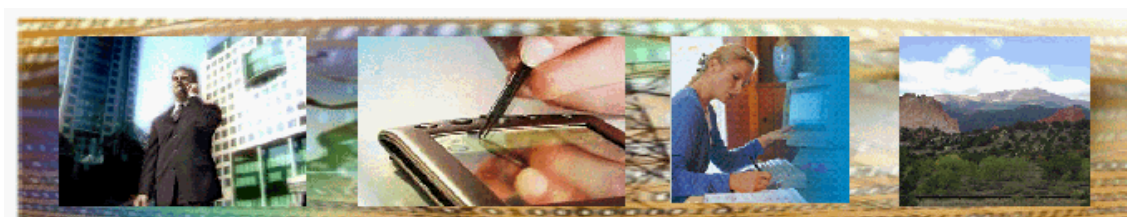


TPAC Green Paper



“Creating a Collaborative Communications Community” Building a Broadband Beltway for Colorado Springs

**A Public Document to Solicit Interest and Support
For The Colorado Springs Community Connectivity Initiative (CCI)**



**Prepared For:
The Mayor of Colorado Springs, Colorado Springs City Council, the City Manager
and the Citizens of Colorado Springs by TPAC**

The Colorado Springs Telecommunications Policy Advisory Committee

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1.0 Executive Summary

The 21st century brings prosperity spurred on by broadband electronic connectivity and electronic commerce. Connectivity has been the backbone of commerce. The delivery of people, goods and services has been enabled by the pony express, railroads and the interstate highway system. The last decade has seen an explosion in electronic connectivity and commerce. The next catalyst is ubiquitous broadband connectivity for community, citizens, business and government. Broadband community connectivity, delivering communication speeds an order or two faster than just yesterday, will propel Colorado Springs into the forefront of the most connected community for the benefit of all.

The "Community Connectivity Initiative" (CCI) established by the Mayor and City Council is central to the resolution passed on 05/112004 to create a broadband telecommunications strategy that will meet the growing demands. The Telecommunications Policy Advisory Committee (TPAC) has been chartered to work with the local government, business, education, healthcare institutions and the general public to develop telecommunications policy recommendations. TPAC believes that communities in which members are all interconnected together, sharing and accessing a high-speed internet network will enable a variety of successful alliances that will transform our community in significant and positive ways. If we are successful, the community will be able to leverage communications resources and benefit from an advanced internet infrastructure and services much earlier than if left to develop without a community strategy. Instead of incremental change, we propose a paradigm shift to increases choice, convenience and control for the community as we work, travel, govern, shop, educate and entertain ourselves.

Goals and Objectives:

Building a telecommunications and broadband infrastructure to serve the entire city is an effort the city can lead and contribute significantly to, but it is not through a direct investment at this time. The City Council and the Mayor have already determined that Colorado Springs will not be a telecommunications and Broadband services provider. The financial resources needed, as well as the skills required in terms of staffing not to mention the legal hurdles and legislative barriers that are now in place in Colorado make it difficult for the city to be the primary provider of services.

However, TPAC believes, that the City will be able to accomplish its goals through creative partnerships with the private sector. Many commercial service providers and other private telecommunications and Broadband access organizations are now involved in various aspects of developing or providing wired and wireless telecommunications Broadband services throughout the community. It is the City's intention to work to develop and lead a coalition of public and private organizations in a collaborative effort to achieve the telecommunications and Broadband vision presented here.

Traditionally, many of the City's infrastructure investments have resulted from the collaboration of public and private entities for the long-term benefit of each party. Numerous examples of successful past efforts exist from health-care to utilities to the provision of community services have blazed a trail. We should keep up this tradition on behalf of the CCI effort.

Goals for the CCI can be summarized in Five Key Areas;

1. Research and publish information on existing Broadband service options for Colorado Springs.
2. Determine the relative strengths and weaknesses of these offerings from various service providers serving the Colorado Springs market among all appropriate technology offerings.

3. Solicit public feedback about these services and their providers, and identify areas of improvement or change.
4. Seek innovative ideas and solutions to broadband delivery challenges from the public, the vendors, and technology solution providers, locally owned city and utility professionals, academia, and other effected "stake-holders" who have an interest in seeing Colorado Springs develop a world class broadband infrastructure.
5. Generate public interest and support in the development of a community connectivity initiative or "broadband beltway" program for Colorado Springs and its surrounding communities.

The Process / Roadmap:

TPAC recommended to the Mayor, the City Council, and the City Manager, that the formulation and distribution of a strategic position statement or policy paper on the creation of a telecommunications and broadband program for Colorado Springs be developed and initiated for public comment. This "Green Paper" is the initial document and will allow TPAC and the City Council to formalize the planning process with city government, locally owned utilities, and the various IT support, and telecommunications agencies that oversee these areas to properly solicit and obtain feedback from the general public toward the creation of a comprehensive **Community Connectivity Initiative** or "**CCI**" plan for the entire community. TPAC is also considering the creation of an on-line web Blog or feedback website (patterned after Governor Owens' recently launched public Web-Site Blog) that will enable us to share our vision with the community and solicit direct and immediate feedback.

Once the Green Paper is completed, we will be able to move to the next two phases...

- **The White Paper** - Document(s) containing proposals for community action in a specific area, with proposed action steps and plans. In some cases this follows a Green Paper recommendation to launch a consultation or investigation process. When a White Paper has been favorably received by the City Council, it can become the action plan to address a specific series of goals and objectives.
- **The CCI Operating Plan** – This is the action plan to achieve the objectives set forth in the White Paper. The plan is executed by the city government with an oversight group representing community interests that will be made up of representatives from a variety of city agencies, planning bodies, utility representatives, private sector companies, non-profit and community oriented service groups, as well as healthcare, and educational representatives.

Implementation:

The current Broadband Landscape picture in Colorado Springs in terms of broadband deployment by service providers and the reach and range of services to end users can best be described as an oasis in the middle of a desert. The core metropolitan area of Colorado Springs has abundant choices for broadband, but when you drive 5-10 minutes outside of town going east past Powers, or north past Briargate or into the Black Forest the options for broadband connectivity are somewhat scarce.

Some broadband providers have tried to erect large expansive networks, but the integration of these far-flung networks requires a significant investment of time and a large staff to maintain.

Unfortunately, most service providers do not make large infrastructure investments all at once, normally they are staged or spaced-out over many years or decades to sustain a more gradual impact on capital budgets, operating expenses, etc. This is not necessarily a bad thing, it just means that a community's broadband delivery needs tend to be met over a longer period of time.

Therefore, TPAC believes, that the goal for the City of Colorado Springs is to enable multiple "smaller" infrastructure investments to be made by a variety of suppliers and providers so that we can achieve a "multiplier effect" sooner, rather than later.

So, to be able to develop a future roadmap, we need to know where we are today. Therefore, the four areas of information that need to be gathered to help develop our short and long range strategy are:

- Evaluate Demand in the community for broadband services by conducting surveys, focus groups, and other such information gathering means.
- Evaluate legal barriers to government involvement by reviewing pertinent federal, state and local laws and regulations.
- Evaluate land development policies and other local ordinances to ascertain their relationship to broadband services and to identify opportunities to enable broadband services in the community by revisions to policies and ordinances.
- Evaluate municipal opportunities for financially-sound market entry as an "enabler" or "wholesale" provider of broadband services (i.e. towers, buildings, infrastructure, conduit and dark fiber)

Action Steps:

Specifically, TPAC believes that Colorado Springs needs to invest time and energy in the creation of a new telecommunications and broadband infrastructure for the entire city, working with a variety of wired and wireless providers, create an innovative public/private non-profit consortium for the construction, operation and maintenance of the broadband network. Parts of the network might be based on:

- Existing fiber networks that are already in place in the City, (like the I-NET network as a result of investments made by Adelphia as a part of their cable franchise agreement with the city to expand services to schools)
- Colorado Springs Utilities Fiber network,
- Last mile Ethernet networks that might be based on existing telco networks from Qwest or ICG,
- A wireless model using the current Wi-Fi 802.11b standard
- Emerging developments on the WiMax 802.16 standard that are just around the corner and starting to be deployed in key cities in the US and overseas.

Once a citywide network has been deployed, (using a mix of wired and wireless solutions), the goal will be to provide a level of service of telecommunications and Broadband for Internet access for people working or visiting in the city.

Over time it is anticipated that a form of tiered service levels will be created for higher levels of service and individuals and organizations will pay a fee for these faster levels of service. How these levels of service are defined and the fees associated with them will be part of a much larger effort to create a public/private partnership to move this initiative forward.

Conclusion:

Just like the development of a major city road works or freeway project, (like Cosmix), the need to treat the development and deployment of a community broadband strategy for Colorado Springs is just as important. As a city grows and develops, it creates the need for a more responsive community road and interconnecting freeway system to handle the metro-suburban-rural growth patterns. Likewise, the need to create a scaleable roadmap for telecommunications and broadband service providers to provide and provision the best telecommunications infrastructure for the community is just as important.

Colorado Springs **MUST** capitalize on this potential by leading an effort to create a series of collaborative wired and wireless broadband networks that will interconnect together and provide high-speed, broadband connectivity to all points within the city. Extending the backbone into a county-wide communications model will enable smaller communities and towns to benefit as well.

Fiber to the Curb Technology and Wide Area Wireless Access technologies are rapidly changing how individuals and organizations connect to the Internet and are becoming a rapidly changing technology that will deliver benefits across all segments of Colorado Springs economy and civic life. We must find a harmonious middle ground where we can benefit and leverage from the best and most appropriate technology for the job, whether it is fiber, wireless or both.

The goal of Colorado Springs therefore, should be to strive to become the number one broadband high-speed access city in Colorado. As a result, it should be the goal of the city and key stakeholders to help facilitate the creative alliances and partnerships with interested public and private parties to provide broadband access for the entire city.

Sooner rather than Later !

TPAC Committee Members
The Colorado Springs Telecommunications Policy Advisory Committee
August 2005

2.0 Goals and Objectives:

Building a telecommunications and broadband infrastructure to serve the entire city is an effort the city can lead and contribute significantly to, but it is not through a direct investment at this time. The City Council and the Mayor have already determined that Colorado Springs will not be a telecommunications and Broadband services provider. The financial amounts needed, as well as the skills required in terms of staffing not to mention the legal hurdles and legislative barriers that are now in place in Colorado make it difficult for the city to be the primary provider of services.

However, TPAC believes, that the City will be able to accomplish its goals through creative partnerships with the private sector. Many commercial service providers and other private telecommunications and Broadband access organizations are now involved in various aspects of developing or providing wired and wireless telecommunications and Broadband services throughout the community. It's the city's intention to work to develop and lead a coalition of public and private organizations in a collaborative effort to achieve the telecommunications and broadband vision presented here. Traditionally, many of the city's infrastructure investments have resulted from the collaboration of public and private entities for the long-term benefit of each party.

Numerous examples of successful past efforts exist from health-care to utilities to the provision of community services have blazed a trail. We should keep up this tradition on behalf of the CCI effort.

Goals for the CCI can be summarized in Five Key Areas;

1. Research and publish information on existing broadband service options for Colorado Springs.
2. Determine the relative strengths and weaknesses of these offerings from various service providers serving the Colorado Springs Market among all appropriate technology offerings.
3. Solicit public feedback about these services and their providers, and identify areas of improvement or change.
4. Seek innovative ideas and solutions to broadband delivery challenges from the public, the vendors, and technology solution providers, locally owned city and utility professionals, academia, and other effected "stake-holders" who have an interest in seeing Colorado Springs develop a world class broadband infrastructure.
5. Generate public interest and support in the development of a community connectivity initiative or "broadband beltway" program for Colorado Springs and its surrounding communities.

2.1 History

1. In 2004, the City Council tasked the TPAC with developing a long-range strategy for the creation of a telecommunications and broadband implementation plan and set of recommendations for the City of Colorado Springs.
2. In May of 2004 the City Council issued a Resolution (see Appendix A) stating its interest and support of such an activity.
3. TPAC was given the responsibility by the Mayor, City Council, and the City Manager to;

- 1. Evaluate Demand in the community for broadband services by conducting surveys, focus groups, and other such information gathering means.**
- 2. Evaluate legal barriers to government involvement by reviewing pertinent federal, state, and local law and regulations.**
- 3. Evaluate land development policies and other local ordinances to ascertain their relationship to broadband services and to identify opportunities to enable broadband services in the community by revisions to policies and ordinances.**
- 4. Evaluate municipal opportunities for financially-sound market entry as an "enabler" or "wholesale" provider of broadband services, (i.e. towers, buildings, infrastructure, conduit and dark fiber).**

In addition, the TPAC was tasked to develop a set of recommendations and strategies for the development of a comprehensive telecommunications and broadband strategy for Colorado Springs to guide and assist in the development of telecommunications and broadband solutions and options for the city.

Since then, TPAC has been researching a number of technologies, best-of-breed practices by other municipalities, and spoken with and interviewed a number of telecommunications, Internet and Wireless providers to come-up with a good base of knowledge, and an initial set of recommendations. The TPAC has also recently been approached by various city IT and utility departments to assist them in evaluating inquiries that have been made to the city from leading telecommunication and wireless providers to conduct tests of new emerging wireless solutions in Colorado Springs.

There are many aspects to consider in developing a telecommunications and broadband strategy for the city the size of Colorado Springs, and we want to be sure to cover all the appropriate bases. We are interested in adapting what we have learned and applying it appropriately to the special community needs and requirements of Colorado Springs.

We want to solve some of the ongoing problems that have plagued the city's opportunities in the past for executing and implementing telecommunications and broadband solutions. That's why we need community input to be successful. Everyone's participation, suggestions and ideas will help us make this a reality and incorporate the many community requirements in the overall plan.

2.2 Challenges

The Challenge in Developing a Broadband Beltway Strategy:

The reason TPAC and the City Council has dubbed our broadband project CCI or "Community Connectivity Initiative" is that we believe that a community in which members of local government, business, education, healthcare institutions and the general public are all interconnected together and can share and access a high-speed internet network will enable a variety of successful alliances to work together to use technology to transform our community in significant and positive ways.

If we are successful, the community will be able to leverage communications resources and benefit from an advanced internet infrastructure and services much earlier than it otherwise would.

Instead of incremental change, we propose a paradigm shift to increases choice, convenience and control for people in the community as they live, work, travel, govern, shop, educate and entertain themselves.

What does the Broadband Landscape look like in Colorado Springs Today?

The current broadband Landscape picture in Colorado Springs in terms of broadband deployment by service providers and the reach and range of services to end users can best be described as an oasis in the middle of a desert. The core metropolitan area of Colorado Springs has abundant choices for broadband, but when you drive 5-10 minutes outside of town going east past Powers, or north past Briargate or into the Black Forest the options for broadband connectivity are somewhat scarce like an Okalahoma prairie with an occasional "tumbleweed" blowing by. Some broadband providers have tried to erect large expansive networks, but the integration of these far-flung networks requires a significant investment of time and a large staff to maintain. Normally these types of "infrastructure investments" for telecom or cable companies require mutli-million dollar enterprises to capitalize and execute. Unfortunately, most service providers do not make large infrastructure investments all at once, normally they are staged or spaced-out over many years or decades to sustain a more gradual impact on capital budgets, operating expenses, etc.

This is not necessarily a bad thing, it just means that a communities broadband delivery needs tend to be met over a longer period of time. The goal for the City of Colorado Springs then is to enable multiple "smaller" infrastructure investments to be made by a variety of suppliers so that we can achieve a "multiplier effect".

What is a "Collaborative Community"?

Collaborative Communities are economically competitive allowing the community as a whole to promote new forms of physical as well as electronic commerce as a result of an advanced telecommunications infrastructure.

What Does A Collaborative Community Look Like?

Collaborative Communities exist because of the direct support of a coalition of business, education, government and individual citizens. A successful collaborative community is created using a grassroots effort where active involvement from every sector of the community is encouraged. The collaborative synergy enables individual broadband or telecom projects to build upon and leverage each other for quicker gains resulting in an informed user public that creates a critical mass for transforming how an entire community works and communicates among itself.

The Collaborative Community: Why Create it? Why Create it now?

Over the centuries, great cities throughout the world have been early adopters of new technology, and as a result of investing in and developing a wide range of new technologies, have created new mechanisms of commerce to enhance their cultures and society as a whole.

In the 19th century it was the development of locomotive and the interconnecting railway tracks and networks that started to close the distance gap between large metropolitan cities.

In the 20th century it was the creation of the automobile, and the resulting highway and freeway networks that pushed society forward and outward, and enabled the "last mile" delivery of products and services into smaller communities and towns.

And today, in the 21st century, it is obviously the creation of the computer and the continued development and expansion of the Internet and the electronic commerce and creativity that it delivers that will propel society farther and faster than ever before. In less than a decade, the personal computer and its attachment to the Internet is changing our daily lives from how we communicate, to how and where we work, to how business is conducted, (both national, and internationally), to how we deliver city services and information, and how we are educated and entertained.

We are at the beginning of a new age of commerce and communications. Just as in the past, the cities that will prosper in this new age will be those cities that embrace and invest in this new technology.

2.3 Possible Solutions:

Specifically, TPAC believes that Colorado Springs needs to invest time and energy in the creation of a new telecommunications and broadband infrastructure for the entire city working with a variety of wired and wireless providers to create an innovative public/private non-profit consortium for the creation and operation and maintenance of the network. Parts of the network might be based on the existing fiber networks that are already in place in the City, (like the I-NET network as a result of investments made by Adelphia as a part of their cable franchise agreement with the city to expand services to schools), or from the Colorado Springs Utilities Fiber network, to other last mile Ethernet networks that might be based on existing telco networks from Qwest or ICG, while others could be based on a wireless model using the current Wi-Fi 802.11b standards.

Wi-Max is also just around the corner 802.16 In fact, several companies have developed technology that extends the indoor wireless hotspots into an outdoor service that can provide wireless access over large areas and can be scaled to provide coverage for an entire city. By potentially deploying individual Wi-Fi cells on street lights and other traffic control devices, large areas of the city could be quickly served at low cost. The TPAC and the City Council are interested in exploring these various wired and wireless solutions in depth and encourage the citizens and interested volunteer professionals to assist the city in this evaluation.

Once a citywide network has been deployed, (using a mix of wired and wireless solutions), the goal will be to provide a level of service of telecommunications and broadband for Internet access for people working or visiting in the city. Over time it is anticipated that a form of tiered service levels will be created for higher levels of service and individuals and organizations will pay a fee for these faster levels of service. How these levels of service are defined and the fees associated with them will be part of a much larger effort to create a public/private partnership to move this initiative forward.

Colorado Springs MUST capitalize on this potential by leading an effort to create a series of collaborative wired and wireless broadband networks that will interconnect together and provide high-speed, broadband connectivity to all points within the city, as well as create linkages into a county wide communications model that will enable smaller communities and towns within the county to benefit as well.

Colorado Springs goal therefore, should be to become the number one broadband high-speed access city in Colorado. As a result, it should be the goal of the city to facilitate the creative alliances and partnerships with interested public and private parties to provide broadband access for the entire city.

3.0 The Process/Roadmap

In an attempt to identify and address the many community requirements, technologies, and service provider options, TPAC will address these issues using the following methodical series of tasks.

- **The Green Paper** – Document(s) intended to stimulate debate and launch a process of consultation on a particular topic. These consultations will lead to the publication of a White Paper, translating the conclusions of the debate into practical proposals for Community action.
- **The White Paper** - Document(s) containing proposals for Community action in a specific area. In some cases they follow a Green Paper published to launch a consultation process. When a White Paper has been favorably received by the Council, it can become the action plan to address a specific series of goals and objectives.
- **The CCI Operating Plan** – Is the action plan to achieve the objectives set forth from the White Paper. The plan is executed by the City Government with an oversight group or CCI Executive Committee representing various community interests.

3.1 The Green Paper

The Green Paper will attempt to share information regarding telecommunications and broadband options and solutions and collect feedback and ideas from city leaders, industry experts, service providers, and the general public that will form the basis for the creation of a formal White Paper which will be used to create an **CCI Operating Plan** for the city to pursue its broadband vision. Topics to be covered in the Green Paper include:

- What are the **Perceptions** of telecommunications and broadband by the General Public? How fast is fast? What does our current telecommunications and broadband situation look like? Who are the players? What have they done so far? Who should deliver the service(s) in the future? How much should it cost? Who pays for the network(s)? Who will build it?
- What **Philosophy** should drive the Goals and Objectives of a City's Community Connectivity Plan? Should the City drive the requirements planning? Should independent service providers step-up and propose solutions? Is a private/public partnership or collaborative approach possible? What does the city of Colorado Springs require in terms of telecommunications and broadband services? What are the areas needs? Do we work with other local cities and municipalities?
- What kind of telecommunications and broadband **Platform** or technology should the city consider? Does wireless technology hold a solution to our short and long term telecommunications and broadband deployment needs? Are the service providers going to invest in hybrid networks? Will the solution work in the Metro, as well as the Suburban and Rural parts of our expanding community?
- What are the legal and regulatory **Policies** that the City needs to consider for the development of its own community connectivity initiative? Are there franchises at stake? Do the city and its utilities take an active role in the process? Should it be an open commercial process? Should the city encourage providers to compete for service contracts or create a level playing field for providers to thrive?

- o What are the **Providers** considering? What are their current and future plans for delivering telecommunications and broadband services to the city and its outlying areas? Should the city create an RFI (request for inquiry) and issue it to all interested service providers to flesh-out various offerings, pricing, strategies?

This Green Paper is proposed to be distributed in both paper as well as electronic forms to facilitate the widest audience and therefore, inputs. Forums (physical and electronic) where appropriate will be held to facilitate the discussion of these topics so that a wide ranging number of public comments and suggestions can be solicited and acquired from the public, industry, and interested stake-holders as the Community Connectivity Initiative for Colorado Springs becomes a true community-wide activity.

3.2 The White Paper

Public comments and suggestions that are provided as a result of this "public communications outreach" effort will be compiled together into a more comprehensive "White Paper" that will be prepared and published by TPAC for final submission to the City Council using its team of multi-disciplinary telecom and communications professionals who are volunteering their time for this effort.

3.3 The CCI Operating Plan

The CCI Operating Plan outlines what tasks need to be executed to fulfill the White Paper's proposals. At this stage, after a vision and mission statement is created, an Executive Committee formed, and priorities established, a Strategic Plan must be put in place to implement the development of:

- a). The infrastructure needed to create a telecommunications and broadband system that has the potential to link every home, school, and institution within the community. This should include "best-of-breed" solutions such as wired & wireless technologies, fiber & cable, satellite & power line, etc.
- b). A Strategy to address any regulatory issues and their impact on the overall process. These are the laws, rules, regulations that must be changed or modified in order to facilitate the development of telecommunications and broadband infrastructure and information services.

4.0 Implementation

The four areas that need to be address are:

- Evaluate Demand in the community for broadband services by conducting surveys, focus groups, and other such information gathering means.
- Evaluate legal barriers to government involvement by reviewing pertinent federal, state and local laws and regulations.
- Evaluate land development policies and other local ordinances to ascertain their relationship to broadband services and to identify opportunities to enable broadband services in the community by revisions to policies and ordinances.

- Evaluate municipal opportunities for financially-sound market entry as an "enabler" or "wholesale" provider of broadband services (i.e. towers, buildings, infrastructure, conduit and dark fiber)

4.1 Evaluate Demand for Broadband Services

A telecommunications and broadband-enabled city will be a strategic investment in the community for building a prosperous future. As the global economy becomes more competitive, it will be equally important to invest in the citizens of Colorado Springs in their knowledge of technology through the deployment and promotion of a flexible and adaptable telecommunications and broadband infrastructure. These efforts will help to stimulate and motivate the citizens of our community to contribute, collaborate and grow in their careers which will lead to an improvement in their lifestyles, which will grow both commerce and leisure activities, which drives economic expansion and development.

By developing and utilizing a comprehensive telecommunications and broadband strategy the city can begin to leverage its existing infrastructure and assist in bridging the digital divide that now exists in the city that prevents individuals and families from obtaining the full measure of the opportunities generated by the Internet because they can't afford the cost of traditional wired telecommunications and broadband Internet access, or the quality of service from existing providers is driving them to seek other alternatives. For final publication in the White Paper, TPAC will be assembling together all the available research on Broadband Demand in Colorado Springs, and we will be seeking out communications with providers, and community leaders to obtain a better "snapshot of needs" so that we can assist providers in identifying where broadband is needed most.

4.2 Evaluate Legal Barriers

The legislative landscape for telecommunications is continually changing at the local and state level, with specific impacts being felt by the City of Colorado Springs, (with the recent passing of **Senate Bill 05-152** in Colorado restricting what Colorado municipalities can do in terms of the provision of broadband services to communities). In addition, at the National level, three recently introduced bills could change the future of the Internet. One would protect the right of local communities to offer high-speed broadband service, (taking precedent over state-led or passed anti-muni broadband bills); another would empower the private sector to block community Internet; and a third would completely ban cities and towns from offering service. All three bills have very different outcomes. **And the fight over Local Community Internet Provisioning has not stopped at the local level... it has already reached Capital Hill:**

A bill in the House (<http://www.freepress.net/congress/bills/2726.pdf>) would prevent cities and towns anywhere from providing high-speed Internet access. A similar measure **S 1504** (<http://www.freepress.net/congress/billinfo.php?id=160>) has been introduced in the Senate. Senators McCain and Lautenberg have recently introduced a bill in the Senate (<http://www.freepress.net/congress/bills/s1294.pdf>) that would protect the right of municipalities to offer Community Internet services.

TPAC believes that some of the most pressing media and telecom policies in coming years surround the Internet. Within a few years, all forms of information — voice telephony, television programming, and Internet access — will travel down similar electronic "pipes," all linked to broadband (or high-speed) Internet access. Telephone companies, using regular phone lines, DSL and new fiber optic wires, want to branch out of telephone and Internet service into video TV programming.



Likewise, cable companies, over their own cable and fiber lines, want to branch out of video TV programming and Internet access into voice "telephony" services using Voice Over Internet Protocol (VOIP). With such a competitive landscape it will be important for the City of Colorado Springs to stay on top of these legislative issues. TPAC plans on supporting this legislative tracking and reporting requirement as part of our continuing charter to support the City Council's telecom policy needs.

4.3 Evaluate Development Policies and Ordinances

The vision of the Collaborative Community should be coordinated with other aspects of the community that will be affected by this fundamental infrastructure change. A new approach to the process of zoning, land use and development; and the impact that the new telecommunications and broadband initiative will have on arts and culture should be considered. In addition, information systems being developed by other city IT groups and agencies must also be coordinated so that cost savings and efficiencies can be leveraged. TPAC believes that an organized CCI Executive Committee will help identify and coordinate the efforts of many different local government agencies, services, and utilities.

4.4 Evaluate Municipal Opportunities

Businesses evaluate many factors when deciding where to locate and do business. Colorado Springs must offer a competitive low cost environment for firms. Likewise, providing telecommunications and broadband Internet accessibility will be as important in the future as traditional utilities. Providing an environment that attracts and keeps the knowledge workers who drive the economy of today is very important. The EDC recognized this in their 2004 survey on the economic vitality of the city, and the need for expanding telecommunications and broadband services. TPAC wants to expand on this initial work and encourage the City to take steps now to achieve some of the goals and objectives as outlined by the EDC. The economic development benefits of this strategy are clear and compelling. Not only will it make Colorado Springs a better choice for firms to do business, but it will enhance the desirability of the city's neighborhoods as a place to live.

5.0 Conclusion

Communications and Internet technology is advancing at a breakneck pace and is in the process of transforming the world into a global information-based economy. Many local government and business leaders are concerned about losing control over their communities' economic destinies, as the continued movement of and relocation of business and populations begin to erode their economic bases. Local city institutions ranging from city hall to local schools are struggling with smaller budgets as their traditional practices are proving insufficient to the rapid technological and complex social and economic challenges of today's high-paced, high-tech world.

To provide a good example of why it is so important that the community of Colorado Springs develop a telecommunications and broadband strategy the following are some "**contexts of concern**" that will help frame the discussion from a variety of user perspectives:

- **If you are a citizen**, your interested in obtaining a broadband internet connection for your professional needs, for the educational needs of your children, and for pursuing a lifestyle that is full of choices, informed choices about products, services, companies, organizations, etc.
- **If you are a an elected official in Colorado Springs Government**, your budgets are getting smaller while the community is demanding more and more services. Meanwhile, your city departments are receiving complex requests and inquiries from various telecommunications providers, and you are concerned about being able to keep up with the pace of technology changes, as well as what the impact of new federal, state and state regulatory requirements might be on developing a municipal telecommunications and broadband strategy.
- **If you are engaged in economic development official or chamber representative**, your activities and efforts are focused on moving regional economic activity forward in the face of rapid changing economic and financial conditions. You want to see a comprehensive broadband strategy that will improve telecom services in rural areas or areas hard-hit by cutbacks in certain industries.
- **If you are a teacher in an elementary or middle school or a local school administrator**, you are probably struggling with how to prepare your students to thrive in a knowledge economy, which may demand skills that you might not have yourself.
- **If you are a director of a Chamber of Commerce, or an Economic Development Agency representative**, you are attempting to educate local business owners and managers with the benefits of telecommunications and technology, and how to help them incorporate its use, yet you feel like you are falling behind the technology curve.
- **If you are an owner of a computer, or telecommunications company**, you are most likely frustrated by changing markets and technology and by confusing government regulations. As a member of your community, you also want to help leverage the benefits of telecommunication technology for your local business and the community at large, but you don't know where to start, or how to contribute.
- **If you own a small or medium size business**, you are worrying about how your business can survive if the Internet continues to "disintermediate" your business or service through on-line ordering and out-of-state shipping services. Do you have access to telecommunications and broadband services which would allow you to improve your communications and logistics?

As a result of the proposals and initiatives contained in this Green Paper, TPAC strives to include in the upcoming White Paper an initial assessment of the existing telecommunications and broadband infrastructure in Colorado Springs as provided by the existing independent commercial companies. Our goal will be to identify where real connectivity exists, (and where it does not exist). Some of the providers may provide this information to TPAC, others will not citing commercial confidentialities). We will do the best we can to offer an overview of what's needed in the future to address the many areas of the city and into the outlying county that currently does not have broadband service.

Strategic and tactical steps are needed now in order for the City of Colorado Springs to realize the benefits of the creation and sustainability of a "telecommunications and broadband beltway" or high-speed internet and telecommunications architecture that can serve city, community, and commercial economic growth needs and requirements.

As such, TPAC envisions a telecommunications and broadband future for Colorado Springs that blends the best of breed of high speed data and voice communications technologies together with a creative and collaborative "alliance model" that can be forged between community and commercial interests.

The time is now for the City of Colorado Springs to take a leadership role in determining what its telecommunications and broadband options will be

Community input is encouraged. Comments and questions can be addressed to the following:

TPAC, c/o City of Colorado Springs
PO Box 1575, mc 710
Colorado Springs, CO 80901-1575

E-mail: TPAC@ci.colospgs.co.us

6.0 Appendix A – CCI Resolution

Resolution

A Resolution Supporting a Community Connectivity Initiative to Facilitate the Availability of Broadband Telecommunications Services in Colorado Springs

Whereas, the availability of broadband telecommunications services is vital to economic development and quality of life in Colorado Springs, and

Whereas, broadband services presently are not available to all homes and businesses in Colorado Springs, and

Whereas, the Greater Colorado Springs Economic Development Corporation and the City Council's Telecommunications Policy Advisory Committee have both expressed interest in pursuing the issue of the availability of broadband services in the community, and

Whereas, the use of broadband telecommunications is of interest to Colorado Springs Utilities and the municipal government of Colorado Springs for internal applications purposes, and

Whereas, communities are well-served by a partnership between the public sector and private industry to facilitate the availability of broadband services,

Now, therefore, be it resolved by the City Council of the City of Colorado Springs:

That City Council declares the availability of broadband telecommunications services to be a matter of public interest in Colorado Springs, and

That City Council endorses and supports there being a Community Connectivity Initiative that brings together stakeholders and interested parties in an inclusive manner to pursue the issue of broadband services in the community, and

That City Council supports the focus of the Community Connectivity Initiative being an evaluation of: demand for broadband services, legal and market-related factors impacting the supply of broadband services, City policies and ordinances related to the availability of broadband services, and the potential for municipal partnerships with the private sector in the provision of broadband services, and

That City Council does not support or endorse the City of Colorado Springs becoming an independent provider of broadband telecommunications services in the community, and

That City Council is interested in receiving recommendations from the Community Connectivity Initiative regarding any and all areas of focus previously described.

Dated at Colorado Springs, Colorado this 11th day of May 2004.

7.0 Appendix – B Glossary and Technical Terminology

The below terms are useful navigating this Green Paper

Advances in Client-Server Technology: Thin-client technology and image preservation will allow organizations high-level control of software portfolios and desktop computer configurations.

Communications Convergence: The integration of telephone service, e-mail access, voice mail, pager contacts, and the like into singular service streams. This will be similar to personal communications service bundling offered by a number of telecommunications vendors, but will include Web-based communications to a much higher degree.

Data Warehousing or Datamart:

Data Warehousing is:

- 1) Housing and linking **all** corporate data.
- 2) Extracting and storing historical and current summary data for the express purpose of decision support.

The Data Mart concept is more appropriate for Colorado Springs. It differs in scope, focusing on department-level systems. Properly implemented (i.e., with integration considered) datamarts can provide the benefit expected from a data warehouse, but with lower costs.

GIS: This powerful technology will mature in its implementation. GIS will be the centerpiece application for any modern municipality. Add in global positioning technology, and it will be possible to locate your bus or the snowplow or the fire engine on the web.

Imaging: Storing digital images of documents instead of (or in addition to) paper copies.

Improved Voice / Speech Recognition: Voice recognition in interactions with computers will become prevalent because personal computers are increasingly able to handle the processing load. The increase in bandwidth for delivery of data and information over the Web will become a catalyst. In a relatively short amount of time, offices will use voice to control desktop computer activities.

Increased Bandwidth: Industry leaders are developing various means of increasing available bandwidth. These innovations will stem from the use of fiber, wireless, microwave, and optical-via-air technologies. This is the only point of this section that makes sense in the context of CCI.

Increased Usage/Reliance on the Web for the Delivery of Information, Software and Services:

- * Information and data distribution through the development and structuring of Web-based relational database technology (e-RDBMS)
- * Collaborative development and project work
- * E-Commerce
- * Internet telephony
- * Increased bundling of media-- cable, Internet access, telephony, cellular, et al
- * Streaming Media
- * New self-service paradigms and applications that allow users a high level of control in purchase of services and goods, and in the management of personal information
- * Business-to-Business extranets
- * Growth and coming prevalence of extensible mark-up language (XML)

Internet for the Small Screen: What will we offer Internet users with handheld PCs and wireless access? (In essence, users with tiny displays, also found on Palm Pilots and cell phones that access the Internet.) The amount of "clipped" material is rather limited right now, but will grow. Ubiquitous wireless broadband would help deliver information to the small display

IVR: Interactive Voice Response is another way to provide information to citizens 24 hours a day, but with an interface that is already everywhere (i.e. the telephone). Throw in speech recognition and imagine a caller to the switchboard at 3 a.m. being prompted for the name of the person they wish to leave a message for, or being asked to "Enter a document number" to have an item faxed to the citizen.

Net Appliances: Appliances in the office and home will soon have the ability to communicate over networks. This will allow organizations and users to coordinate the tasks and actions of their work and living spaces remotely. Communications between office and home appliances will increase control and communication. Broadband would improve the experience but is not required.

Personal Digital Assistants and Electronic Readers: The proliferation on PDAs and e-books will allow users to communicate and work anywhere, while better organizing and tracking information and work. Support standards, best-of-breed recommendations, security issues, and personal versus organization ownership issues will need to be resolved. Same as Small Screen Devices.

Voice-over-IP/Convergence: Much of the distinction between voice lines and data lines will be gone. Lucent and other PBX vendors, Cisco and other router vendors are providing product lines that will allow phone systems to operate over IP networks.

Ubiquitous High-Speed Internet: Fiber to every neighborhood, microwave and other wireless solutions to rural areas. As City employees become familiar with high speed access, it will put pressure on the City to provide VPN (virtual private network) service. VPN would facilitate users getting to the city network across the Internet. This relates to telecommuting, executive road warriors, and in some cases, elimination/replacement of more expensive lines. Gartner Group suggests that VPN products are immature I do not believe VPN is immature. Where is the report? What applications on top of VPN are needed that are not there Its likely the applications are not there without VPN access, i.e Directly connected on a secure, enterprise (or city) intranet- no one product does it all yet; approach with caution and a clear definition of requirements.

Wireless: Runs the gamut from cell phones to microwave links to Bluetooth technology that will allow computer components to talk to each other within a building. 30 feet is the Bluetooth spec, not building wide as inferred.

8.0 Appendix C - City IT Dept 2000 Strategic Plan & Identified Need for the CCI

In 2000 the city's IT department developed a series of strategic plans that forecasted what their strategic Information Technology needs were going to be over the next 5-10 years. It's surprising how interdependent they were on the creation and deployment of a broadband infrastructure. Five years later many of the desired solutions and capabilities are still not quite yet available, even though some progress has been made. Below is an excerpt of this report with some comments to follow on how this will impact the creation of a solid CCI plan of attack:

Excerpted from the City of Colorado Springs IT Departments Direction 2000 Report:

The world of information technology (IT) is fast-paced and ever-changing. Some would say that the need for strategic planning in IT is less because things change so fast. There certainly is a limit to the time horizon one may apply to an IT strategic planning project. However, there are several strong reasons to step back and look a Something may be missing. The primary purposes of this IT strategic planning effort are to:

- * Define priority programs and systems for existing IT resources.
- * Conduct a high-level needs assessment for future IT corporate-wide, including project cost requirements for future IT needs.
- * Identify hardware deployment and application areas that are disparate across departments and need to be coordinated; identify applications with multi-departmental usefulness.
- * Define the IT technical standards that are critical and need to be defined and enforced.
- * Establish a team structure and process for reviewing IT systems and enforcing standards.
- * Increase awareness of information as a corporate asset.

The plan that follows was developed with these purposes in mind.

Alignment to City Strategic Plan ("Direction 2000")

A quality information technology strategic plan is aligned with the strategic plan for the business or organization as a whole. Fortunately, the City has recently completed the development and adoption of a new City strategic plan ("Direction 2000"). Using the contents of the City's new strategic plan, one may identify some key points of alignment for a City IT strategic plan:

- * Use information technology to support improvement in the quality, convenience, and timeliness of the delivery of City services, particularly as related to growth management, transportation, downtown revitalization, and public safety.
- * Use information technology to improve cost effectiveness in the delivery of City services.
- * Use information technology to improve citizen access to City information and to support two-way communications between the City and its citizens.
- * Use information technology to improve the personal productivity, professional development, and job satisfaction of City employees.
- * Use information technology to provide better information to City decision-makers. All of the issues addressed in this IT strategic plan must be related to one or more of these key points of alignment. It is useful to make these alignment goals more practical by compiling a list of strategic objectives that support these goals:
 - * Improve citizen access to City information using the Internet
 - * Shift citizen/customer transactions to the Internet (self-service, eGovernment)
 - * Improve communications to citizens using IT
 - * Improve employee access to information via Intranet
 - * Shift employee transactions to Intranet (self-service, eGov)
 - * Improve communications to employees using IT

- * Leverage functionality of the City's enterprise financial and human resources/payroll systems (PeopleSoft)
- * Improve access to information through document management/imaging
- * Facilitate the sharing of information and best practices using IT
- * Use IT to facilitate citizen participation in democratic processes
- * Improve efficiency in interactions with external organizations – ("business to business")
- * Improve coordination of IT systems development through an IT leadership committee
- * Improve efficiency in database administration
- * Improve functionality and cost effectiveness in IT through standards development and enforcement
- * Employee education and training for IT – improve use of existing resources and capabilities.

The goals and objectives for alignment with the City strategic plan establish the starting point for developing the City IT strategic plan.

TPAC Observations and Recommendations on the Direction 2000 Plan :

Even though the city's IT department had a complete and comprehensive "wish list" of advanced technologies that it wanted to pursue five years ago, and it appears that in the last five years it has become evident that some of these technologies and services have been provided or are close to deployment in Colorado Springs, the fact remains that many of the forecasted broadband internet services and solutions have yet to be deployed for use by the City, much less expanded for use by the citizens at large.

Because the city's IT department has limited resources and staff it is obvious that they are doing the best they can with the resources they have available. They have achieved a lot in 5 years, however, more is needed. It now becomes vitally important to apply some "focus" on what the near term priorities are for the creation and deployment of a broadband beltway for Colorado Springs and who will participate and why, and how a broadband solution can be deployed. It will be up to the City Council, the Mayor, and the City Manager to take some bold steps and initiatives to move the process forward. This is going to be a multi-departmental, and multi-agency effort in order for it to be successful overall so the need to expand the participation to include both public and private entities is critical for its success.

Therefore it will be important that an expanded "Collaborative Community Executive Committee" be formed that can provide additional support, and resources to the IT department to enable this task. This will be more formally explained in the White Paper has to how to set-up this committee and what its marching orders are.

9.0 Appendix D – TPAC Action Steps for a Broadband Beltway

In this section we will outline the ten steps we believe that Colorado Springs needs to take to prepare itself for the creation of a Broadband Beltway. Many of these steps can be developed by the City of Colorado Springs and are within our capabilities today. These areas will be further expanded in the White Paper.

1. Defining and Developing a "Collaborative Community"

How do you develop a Collaborative Community? This activity introduces four methods of creating a Collaborative Community: (1) Identifying key stakeholders, (2) Information Gathering and Dissemination Tools, (3) Technical Infrastructure and (4) Institutional Interfaces. In this context, a checklist of questions is developed to use in assessing a community's readiness to become "Collaborative"

2. Organizing Key Stakeholders

Who should be involved, and why? When you know who is interested, how do you get them involved and engaged? The four areas here describe how to develop an effective (1) Community Outreach Program, (2) create strategic partnerships, (3) work with community leaders, and (4) manage volunteers.

3. Determining Community Connectivity Needs

Collaborative Communities are designed to use technology to solve community problems and meet community needs. How does Colorado Springs determine what its citizens wants and needs in the way of broadband services? This activity revolves around two different approaches that we can take for discovery, and will explore how we creating a "Broadband Services Bench Mark" (BSBM) and Community Communications Needs Assessment, (CCNA).

4. Seeking out Resources and Funding for Creating Collaborative Communities:

Identifying resources to create a Collaborative Community is going to be difficult and require focus, especially since the recent legislative activities by some of the cities key telecommunications companies in Colorado to pass bills that restrict what Cities can do in the area of creating broadband infrastructures. Where the city will obtain these resources and how they can be managed is going to be difficult and take time and focus to achieve. This activity will recommend various budgeting approaches that address cash and resource budgeting, and describe successful methods that have been used by existing broadband community projects to identify and acquire resources and funding.

5. Translating and Adapting Technology for Collaborative Community Development:

Technology is only a tool or a means for achieving a Collaborative Community. However, some basic understanding of various technical design and deployment issues is required. For example, what networking model should we use, (star and hub, ring topologies, etc)? What are some of the methods for providing wide area community access? This effort will help to define these in more detail

6. Planning for Sustainability of a Collaborative Community:

After engaging in the initial PR and initiative start-up activities for the creation of a Collaborative Community and Broadband Beltway, the next challenge will be to engage the ongoing operations of the Community Connectivity Initiative (CCI) Executive Committee to determine how they work with the various public and private sectors to achieve common goals.

7. Implementing the CCI Program Through Collaborative Communications:

How do you ensure that all key stakeholders can successfully carry out their roles and responsibilities? This activity will explore ways of implementing a Collaborative Community, including mission/vision statements, statements of principles and values, strategies, strategic policies, goals and objectives, and most importantly, evaluation programs. This activity will explore some of the public policy issues that will be required when deploying a Collaborative Community.

Three categories of policies are included: (1) how collaborative community planning and development can be integrated into the development of General Plans, (like the Direction 2000 Plan for the City of Colorado Springs); (2) the development of telecommunications policies and related legislation and their impact on local city operators; and (3) internal policies for operation of the collaborative community.

8. Responsibilities must be clearly defined and Timelines established.

This will be the most difficult task to complete because an individual or a city agency or a volunteer committee or a third party organization must be assigned the task of implementing the recommendations. The expectations must be clear and set against a firm project milestone or timeline.

9. Financing is Key

It's also very important to determine how this plan will be financed. Private/public partnerships and outsourcing may be the best methods for accelerating implementation of the plan. This is the opportunity to bring together private and public interests, to seek collaboration among and between industry, government at several levels, and the community at large.

10. Metrics must be established and progress constantly monitored.

Coordination with the city to integrate existing IT and GIS systems, linking into existing networks at the schools and library levels, or even issuing Request for Proposals to begin to solicit third party companies to bid on developing a broadband architecture, will not take place in a day or a week or even a month. Indeed, the business of creating a Collaborative Community is truly a multi-year process. It will be important to keep energy and focus and commitment alive. Small successes need to be amplified along side major achievements, and the recognition of key volunteers and participants is key.

10. Appendix E - "TPAC's Top 5 Strategies to Becoming a Collaborative Community"

The local city government and its citizens become a "Collaborative Community" when it makes a conscious effort to use advanced internet and broadband technologies to transform the communications and commerce activities within its area of influence in a significant and fundamental fashion, rather than through a traditional or incremental approach. After reviewing a number of successful municipal wireless projects in Colorado as well as across the country, and specifically referencing the work that Muniwireless.com has done and published in their March 2005 MuniWireless.com Report), TPAC has adapted its Top-Five Strategies of what it takes to become a Collaborative Community from some of the best-of-breed practices being used in the marketplace today by many local muni-wireless deployments.

1. A Collaborative Community is a "goal to be obtained", not a set of "technologies to be deployed".

Becoming a collaborative community is not so much about technology as it is about understanding the changes that are underway in terms of the globalization of economies and the velocity of information where technology plays a vital role as a catalyst in transforming life and work in the digitally-assisted economy. As a result of this rapid change, the community needs to know this is really a process of "reinventing" the community for a new age of information.

2. The Collaborative Community must be well understood:

Broadband Service Policies and programs, whether they have been developed at the local, state or federal level, must be communicated broadly to the community and well-understood in terms of features, advantages and benefits by all stakeholders in order for them to be successful.

3. Public Participation and Education is not just recommended, it's a Prescription for Success:

The Community should be persuaded to participate in the process. The initiative must be well-understood (as outlined above) but individuals and individual stakeholders throughout the communities must understand that they are being asked to actively participate in the process. These stakeholders include businesses large and small, academe at every level from K-12 through the university, non-profit organizations throughout the community and local government representatives.

4. The Broadband "Reach Potential" of the Community must be defined, and User Needs Assessed:

As a first step to launching a Collaborative Community, the need to determining the size and geographic limits of the broadband "reach potential" of the community is key. Is the focus area a local neighborhood? A city? A larger region of several municipalities? Does current telecom or broadband providers have the ability to serve these areas? Second, but most important, what are the broadband needs of both businesses and consumers in the focus area as the various stakeholders perceive them? By understanding the overall needs, and then developing service priorities, a well-rounded collaborative community initiative can be developed.

5. A Vision and Mission Statement is developed:

Once the broadband interests and needs of the community have been acquired and understood, the preparation of a Vision and Mission Statement is key. Often, this can be done in one to two days through a facilitation of key stakeholders and then summarized into a one-page vision and mission statement. It is important that after the vision and mission statement is drafted, it be submitted to the city or county and/or other political bodies in the community for ratification. Individual groups such as the Chamber of Commerce, the Economic Development Corporation, and other governing bodies, should be encouraged to comment on and support the vision and mission statement.