Arizona Telecom Summit 2007
Advanced Telecom and Broadband Deployment In Arizona
May 17, 2007 - Mesa Convention Center
Four Online Pre-Summit Briefing Sessions

Middle Mile * State Telecom Plan * Funding * Local Community Initiatives * Rights-of-Way

Presented by:

Arizona Telecommunications and Information Council (ATIC)

and the

Communications Infrastructure Advisory Committee (CIAC) of the Governor's Council on Innovation and Technology (GCIT)

In cooperation with the:

Arizona Consumers Council

Arizona Association for Economic Development

Arizona Department of Commerce

Arizona Government Information Technology Agency

Arizona Small Business Association

eLearning System For Arizona Teachers and Students

Greater Arizona eLearning Association

League of Arizona Cities and Towns

County Supervisor's Association of Arizona

Arizona Technology Council

Arizona Telemedicine Program

Navajo Nation Telecommunications Regulatory Commission

Tucson's Community Information and Telecommunications Alliance

Arizona Telecom Summit
May 17, 2007

Background Document

Advanced Telecom and Broadband Deployment in Arizona

Living In a Networked World

Wired or wireless, with the proliferation of the Internet, mobile phones, communication devices, and wireless networks we are rapidly moving from a world of simple voice communication and isolated desktop computing to an interconnected world of networked communities and anytime/anywhere connectedness where everyone and everything is connected. The Network will operate everywhere, connecting people and devices seamlessly.

Living in a Networked World-Computer Systems Policy Project

www.arizonatele.com/atic/

ARIZONA TELECOMMUNICATIONS AND INFORMATION COUNCIL

Summit Info
520-321-1309
stevepeters@tucsonlink.org

Arizona Telecom Summit 2007
Advanced Telecom and Broadband Deployment In Arizona
May 17, 2007 - Mesa Convention Center
Four Online Pre-Summit Briefing Sessions

Middle Mile * State Telecom Plan * Funding * Local Community Initiatives * Rights-of-Way

Arizona Telecom Summit 2007

Purpose

In our "Networked World" advanced telecommunications and broadband Internet services are critical for community development and the health, safety, welfare, educational advancement, and economic prosperity in Arizona communities. Unfortunately many rural and other underserved communities lack the telecommunications infrastructure to support deployment of these services. On May 17, 2007 ATIC, the Arizona Telecommunications and Information Council, and CIAC, the Communications Infrastructure Advisory Committee of GCIT, the Governor's Council on Innovation and Technology will convene *Arizona Telecom Summit* **2007** *- Advanced Telecom And Broadband Deployment In Arizona*. The purpose of the Summit is to explore options and reach consensus on policies and strategies to accelerate deployment of affordable broadband Internet and advanced telecommunications services to all Arizona communities.

We expect federal, state, local, and tribal elected officials, policy advisors and CIOs, telecom service provider executives, and other key stakeholder representatives (economic development, education, government, health services, public safety, libraries, homeland security, CIOs, etc) will participate in these deliberations. They will engage in planning, policy, and decision making sessions to develop policies and implementation plans to remove barriers to the deployment of this critical infrastructure.

ATIC and CIAC have been developing initiatives to address these barriers. The Summit will be your opportunity to get an update on these and other Arizona initiatives and to participate in addressing the following priorities:

➢ State Strategic Telecom Plan

➢ Funding mechanisms and strategies

➢ Rights-of-Way access

➢ Local community/Tribal planning and policies

➢ Telecom provider requirements

The primary focus of the Summit will be on the middle mile There are two primary telecom services required to deploy broadband into a community – **Last Mile** and **Middle Mile**. **The Last Mile** is the Internet connection between the Internet service provider (ISP) and businesses, homes, schools, etc. The Middle Mile is the high capacity trunk lines and associated infrastructure that connect communities to the Internet backbone points-of-presence generally in major metropolitan areas. If a common middle mile infrastructure is not available, at reasonable rates, communities, or last mile providers, must construct their own middle mile infrastructure. This increases the last mile costs that can significantly increase the end users monthly rates**.**

The Summit Events

The Summit will include:

- ➤ Pre and Post Briefing Documents on the Summit Web Site
- ➤ Four Statewide Online Briefing Sessions prior to the May 17 event
- ➤ Keynote Presentations
- ➤ Planning and Policy Development Workshops
- ➤ Technology Expo
- ➤ Arizona Technology Council After5 Networking Event and Summit Tech Expo

Pre-Summit Online Briefing Sessions

The Summit will include a series of **four statewide online briefing sessions** prior to the May 17 event. You will have access to these sessions from the convenience of your office or community by statewide audio and web conferencing. In order to keep the Summit event to a single day we will utilize the online meetings to provide an overview of the issues and technologies, and an update on current Arizona initiatives. This will enable us to focus on policy and strategy deliberations on May 17.

Invited Parties

Policy Makers and Advisors

- ➤ Federal, State, Local and Tribal elected officials, policy advisors/legislative analysts (City Councils, County Supervisors, Tribal Councils, the Congressional Delegation, Arizona Legislators)
- ➤ Key Arizona State Agency Directors and policy advisors (Governor's Office, Government Information Technology Agency, Commerce, Transportation, Education, Libraries, School Facilities Board, Land Department, others)
- ➤ City and County Managers, planners, policy advisors and CIOs
- ➤ Product and Service providers (telecom, technology, Internet service providers, consultants)
- ➤ State and local School Superintendents
- ➤ Application Solution leaders (eGovernment, eLearning, telemedicine, libraries, public safety)
- ➤ Regulators and staff (Arizona Corporation Commission, Federal Communications Commission, Navajo Nation Telecommunications Regulatory Commission, Bureau of Indian Affairs, others)
- ➤ Key Experts (government, private, other states)
- ➤ ATIC/ CIAC Members
- ➤ Federal Government Agencies (Bureau of Indian Affairs, the Indian Health Service, USDA/RUS, US Forest service, Bureau of Land management
- ➤ Economic Development Professionals
- ➤ Lobbyists
- ➤ Organizations (Arizona Technology Council, AEA, Health-e Arizona, Telemedicine, Arizona Small Business Associations Arizona Association of Economic Development)

Background

Advanced Telecom and Broadband Deployment In Arizona

ATIC, the Arizona Telecommunications and Information Council and CIAC, the Communications Infrastructure Advisory Committee (CIAC), a committee of the Governor's Council on Innovation & Technology (GCIT), has been developing policies and strategies to accelerate deployment of advanced telecommunications services and affordable broadband Internet access throughout the State.

ATIC's report **Connecting Arizona: Ensuring Broadband Access for All** identified barriers to deployment of advanced telecommunications services and broadband Internet access to rural and under-served communities. The subsequent document **Advanced Telecom and Broadband Deployment in Arizona** contains eleven strategy and policy recommendations to overcome these barriers.

In 2005 the Governor's Council on Innovation and Technology, the County Supervisor's Association of Arizona and the League of Arizona Cities and Towns issued a Statewide Network Request For Information (RFI) to better understand the requirements of telecom providers. The responses from the providers included a discussion of barriers, issues, cost, and solutions.

Based upon the input from ATIC and the RFI as well as lengthy study and public discussion by industry leaders, economic development groups, and various telecom stakeholders from all parts of Arizona, CIAC adopted the recommendations contained in this document. Based upon these recommendations CIAC identified three priorities and created the following Task Groups:

➢ Statewide Strategic Planning

➢ Arizona Broadband Authority (ABDA)

➢ Rights-of-Way

Communications Infrastructure Advisory Committee (CIAC)

The Communications Infrastructure Advisory Committee (CIAC) is a committee of the Governor's Council on Innovation & Technology (GCIT). Their mission is to advise the Governor's Council on methods, processes and policies which will enable Arizona to close the Digital Divide in Arizona. CIAC, in cooperation with ATIC, is charting a long-range roadmap and strategic plan for state-wide telecommunications to assist in overcoming barriers to broadband deployment, especially in the rural areas of the State.

Arizona Telecommunications and Information Council

ATIC is Arizona's recognized and authoritative organization guiding technology policy development, serving as a leading source of information and expertise on telecommunications and information technology matters. ATIC is working to insure that Arizona's citizens, businesses, and organizations will have access to advanced telecommunications services and information technologies enabling them to participate in the global economy.

ATIC develops, promotes and supports initiatives and guides adoption of effective public policies that encourages wide-scale deployment and availability of telecommunications services and information technologies to insure economic prosperity for the Arizona community, expand the region's global competitive advantage, enable continued educational advancement, and support an enhanced quality of life.

ATIC's public and private partners include large and small businesses, economic development organizations, libraries, consumer organizations, local and state government agencies, educational institutions, health care, the Arizona Corporation Commission, the Arizona legislature, and information technology and telecommunications companies.

Status of Advanced Telecom and Broadband Deployment In Arizona

Over the last 15 years, multiple studies have described the public benefits of broadband and advanced telecommunications services. Like water and roads, these services have become critical infrastructure for the businesses that drive the local economies, community development, and for the health, safety, welfare, and educational advancement in Arizona communities. It is essential for communities in need of economic development and revitalization that want to grow existing businesses and start or attract new businesses. It is essential to support critical services such as police and fire, health care institutions, schools and government offices. The increasing reliance on electronic communication and transactions for these services makes this infrastructure increasingly important to ensure that the benefits of the information age are widely available across the State. .

In the past three years Arizona has seen improvement in its broadband landscape. While broadband has become increasingly available and affordable in many larger communities, many smaller and rural communities are under-served or have no broadband access.

The greater metropolitan areas have an increasing number of both **basic (200 Kb)** and **advanced (1 Mbps +)** broadband options. The majority of rural communities now have access to **basic** broadband last-mile services such as cable modem, DSL, or wireless. **In the *Networked World,* however, basic broadband service is no longer adequate. Today services such as eHealth, eGovernment, and eLearning require a minimum of 1 Mbps.** Unfortunately, many rural communities still lack consistent coverage of **basic** broadband services and they do not have the infrastructure to support **advanced** (1mps+) broadband deployment. Of the rural communities that have services, many still face middle and last-mile deficits, experiencing higher service costs, making it unaffordable to end users.

It is estimated that as many as **50% of Arizona citizens living in rural settings (about 10% of the State's population) do not have access to advanced broadband connections**. Many rural communities also experience a **lack of redundancy** to and from their community in order to maintain connectivity in the event of network casualties. Unfortunately, Arizona is not alone in this digital divide. In 2005, the United States fell from 13th to 16th amongst the industrialized countries of the world in Broadband deployment, dropping behind Norway, Finland and Israel.

Unlike other critical infrastructures such as water, power and roads, the private sector, not government, provides the majority of broadband infrastructure. The private sector has shown a continuing reluctance to invest in rural broadband where the ROI (Return on Investment) is inadequate. Further, per federal law, most broadband issues are unregulated by he traditional telecommunication regulators (Arizona Corporation Commission and FCC), so that we are neither constrained nor instructed by those institutions.

Because Arizona's exponential growth is projected to continue over the decade, it is vital that broadband infrastructure catch up and keep up with that growth, especially in Arizona's rural areas, where an increasing percentage of that growth is projected to take place.

Primary Goals for this Effort

➢ To accelerate deployment of a statewide advanced telecommunications infrastructure that will insure availability of advanced telecommunications services and affordable, high quality, high-speed Internet access throughout the State.

➢ Develop voice, video and data applications that ride over the infrastructure that will link the Arizona community and support education, economic and community development.

➢ Develop strategies to Bridge the Digital Divide

What is Broadband

The FCC defines broadband as an Internet connection at a speed of 200 kilobits per second (kbps) in either direction. The defined speed is the subject of much debate, and projected to increase over time. Some believe the best definition to be: The speed necessary to deliver content without testing the attention span of a 10-year old! Today the definition should be a minimum of 1 Mbps.

Infrastructure Development Deficits

1. **Middle Mile:** There are two primary telecom services required to deploy broadband into a community – **Last Mile** and **Middle Mile**. **The Last Mile** is the Internet connection between the Internet service provider (ISP) and businesses, homes, schools, etc. The Middle Mile is the high capacity trunk lines and associated infrastructure that connect communities to the Internet backbone points-of-presence generally in Phoenix and Tucson, and, in some cases, Albuquerque or Los Angeles. Due to recent advancements in wireless, and other technologies, last mile deployment of broadband is becoming more cost-effective, even in rural and underserved areas of the state with distributed populations. **A number of companies have expressed interest in providing last mile service in these areas. In order to deploy their networks, and charge reasonable rates, they must have access to sufficient and reasonably priced middle-mile connections**. There is an estimated $80-$150M requirement to address the middle-mile infrastructure deficiencies in Arizona. If a common middle mile infrastructure is not available, at reasonable rates, communities, or last mile providers, must construct their own middle mile infrastructure. This increases the last mile costs that can significantly increase the end users monthly rates**.**

2. **Interoperability:** There is a lack interoperability (interconnection) between and among public and private providers of broadband services.

3. **Redundancy:** An additional problem is the **lack of redundancy** (more than one path for telecommunications transport) to/from a community in order to maintain connectivity in the event of network casualties. Many of Arizona's rural communities are "fed" by a single route of fiber or microwave radio systems. Repeatedly, communities and even regions of the State have been "cut off" from the rest of the world due to damage inflicted on these single-point-of-failure routes. In the event of an emergency or disaster, most communities would have no backup system, unless cell/wireless phone companies had built their own parallel network into the community.

Barriers to Resolving Broadband Deployment

There are a number of barriers to resolve the broadband deployment issue:

1. **Leadership, Planning and Coordination:** While there are a number telecom related initiatives underway in Arizona, there is no coordinated statewide strategy. Through coordination and planning Arizona would more effectively leverage existing resources and be eligible for millions of grant dollars to benefit community development.

2. **Lack of cooperation:** There is a lack of cooperation among the telecom providers and lack of public and private cooperation.

3. **Return on Investment:** Broadband deployment requires a balance between deployment costs, "affordable" monthly end user rates, and the length of time for the provider's ROI, or Return on Investment. Today telecom providers are looking at an ROI requirement of 18 months - two years. Considering the cost of middle investment, this is often not a feasible model in rural and under served areas. Public and private organizations need some form of long term, low cost financing.

4. **Access to Rights-of-Way:** Federal, tribal, state and local Rights-of-Way issues such as multiple jurisdiction permitting, delayed application approvals, and unequal and prohibitive fees have been significant barriers and disincentives for deployment of services.

5. **Funding:** There is a lack of funding mechanisms and strategies such as a Broadband Universal Service Fund, earmarked for broadband development in Arizona

Recommendations

Arizona needs to remove barriers and develop public policies and market-driven strategies that will encourage competition, private-sector investment in, and rapid deployment of advanced telecommunications services and affordable broadband Internet access throughout the State. Therefore, ATIC and CIAC recommend the following policies and strategies:

Leadership

1. **Establish a Telecommunications Infrastructure Advisory Group** under the Governor's Council on Innovation and Technology, led by GITA, to enable greater leadership, planning and coordination.

2. **Consider establishing a Broadband Authority or Commission**. Develop a detailed strategy and recommended structure, based on best practices, to establish an Authority or Commission The responsibilities of this new Authority or Commission may include the following: provide incentives and low cost, long term financing to encourage private sector development of redundant, middle-mile and last-mile telecom solutions in the state; issue bonds and notes; make loans and provide joint venture and partnership arrangements to broadband developers and broadband operators for financing or refinancing; enter into contracts for the lease or management of the infrastructure; and enter into joint venture and partnership arrangements with persons that will acquire, construct, develop, create, maintain, own, and operate the infrastructure. Owners of the network may be private, public or public/private partnerships. Any funding for public or public/private networks using state or federal funds must be open on an equal basis to all.

   The plan should recognize existing financing mechanisms such as the Commerce and Economic Development Commission and the Greater Arizona Development Authority. Evaluation should include the possibility of expanding an existing mandate to include broadband. Additionally, funding from sources such as the Arizona Universal Service Fund, tax incentives, bonding, tribal gambling, E-rate, and other Federal programs including homeland security should be considered.

3. **Provide support for the development of a Statewide Telecom Strategic Plan** that will enable the vision, framework and strategies for the deployment of a statewide telecom infrastructure.

4. **Convene a series of Telecom Roundtable** discussions regionally and statewide, to facilitate awareness, collaboration and cooperation regarding the many statewide telecom infrastructure initiatives, including TOPAZ related initiatives, the Arizona Telemedicine Program, National Lambda Rail, the CANAMEX Corridor, etc. Based on these discussions, develop a database of current telecom plans and initiatives in Arizona that provide an ongoing view of status, goals, geographic boundaries, etc.

Investment

1. Develop a dedicated broadband infrastructure funding mechanism that may include encouraging the Arizona Corporation Commission to modify the current Arizona Universal Service Fund or establish an Arizona Broadband Universal Service Fund.

2. Provide state support to identify potential funding sources and grant writing assistance to help fund telecom infrastructure projects.

3. Implement a strategy to facilitate increased use of the federal E-rate subsidies in the state.

4. Provide ongoing funding for Community Telecommunications Assessments to identify community telecom assets, assess their needs, and develop and implement telecom infrastructure strategies and initiatives.

Policy Development

1. **Adopt an Arizona definition of Broadband to be 1Mbps**: Although the FCC defines broadband as an Internet connection at a speed of 200 kilobits per second (kbps), 200 K is already inadequate for applications such as telemedicine and e-Learning, which have ever increasing bandwidth requirements.

2. **Encourage access to local, state, federal and tribal rights-of-way:** Facilitate coordination and development of recommendations for legislation and Executive directives to enable one-stop-shopping, consistent fees, and expedited right-of-way permitting processes for last mile and middle mile inter-city/town transport.

3. **Monitor legislative actions to ensure that explicit or de facto barriers to municipal participation in Broadband deployment are eliminated:** Municipalities must be allowed to pursue broadband network solutions, and private sector firms must not be foreclosed from choosing to invest in and partner with municipalities. A framework of open processes and reasonable competitive neutrality allows all stakeholders to be heard. Reasonable examples are already being demonstrated in the marketplace voluntarily and without statutory mandates. It is believed that such a framework can encourage public-private partnerships and advance the goal of making affordable, high quality broadband available to all Arizonans.

Arizona Broadband Initiative Framework Report

In 2007 the Arizona Government Information Technology Agency and the Commerce and Economic Development Commission (CEDC - Arizona Department Of Commerce) commissioned the Center for Digital Government to research the Arizona Broadband Initiative Framework Report. The purpose of the report was to: review public sector legal, policy and economic programs and incentives utilized in other states that are designed to promote broadband deployment; focus on program components that support extension of broadband to rural Arizona, and; make recommendations.

The premises of the report are that Broadband is a fundamental utility, and other states are establishing broadband capability in rural areas. The Objective is to identify programmatic components with high potential for benefit to Arizona

The report reviewed fourteen state programs (NC, ME, MI, IL, UT, WA, CO, VT, SC, MN, MO, KS, CA, NE, and OK, and six community deployments (Tempe AZ, Moorhead MN, Chelan County WA, Nelson County VA, Philadelphia PA, Tribal Digital Village Consortium, San Diego County, CA.)

Recommendations

➢ Engage government as a catalyst

➢ Identify, encourage and promote local initiatives and preserve local government's authority to deploy broadband networks

➢ Hire a professional grant writer to create and coordinate broadband telecommunications grant applications

➢ Inventory broadband infrastructure and identify priority deployment areas

➢ Actively seek public-private partnership proposals to maximize existing public infrastructure and public assets

➢ Streamline regulation and fee structures for access to public rights-of-way, either through executive order or legislation

➢ Create a broadband deployment coordinating authority or nonprofit corporation with the ability to fund and manage specific projects

➢ Create a statewide broadband "Champion"

Four Models Defined

The report identified three general models for statewide development (a fourth model could be a Hybrid Model incorporating elements from each of these models).

➢ The state encourages private sector investment, creates a statewide public service network connecting all levels of government, education and healthcare, and aggregates public sector demand and becomes the anchor tenant creating the demand for private sector investment. (Washington and Colorado)

➢ Creation of a public-private partnership coordinating organization that is a state-chartered nonprofit corporation to coordinate infrastructure expansion efforts, and draws on both public and private resources. (Kentucky, North Carolina, Utah)

➢ Strong executive leadership and the creation of a Broadband Authority by executive order from the Governor or by legislation. The Authority provides planning, coordination and leadership, creates a dedicated funding mechanism such as a state Broadband Universal Service Fund, makes grants or loans to commercial providers or communities, and reforms the processes governing access to public rights-of-way (Michigan, California, Vermont and Maine).