

Colorado's Multi-Use Network – Bridging the Rural and Urban Digital Divide

Executive Summary

The Multi-Use Network program is a public/private partnership to build a state-of-the-art, high-speed fiber-optic network for use by state agencies, counties, cities, towns, schools, libraries and non-profit health care organizations located in all geographic regions of the State of Colorado. The new network is capable of delivering advanced services to each of Colorado's 64 counties, both rural and urban, effectively achieving the ultimate goal of the program - **bridging the state's rural and urban digital divide.**

The Multi-Use Network public/private partnership is also designed to:

- promote rural economic development by extending telecommunications infrastructure to all corners of the state through the encouragement of private investment.
- support education at the K-12 and college levels through the establishment of the infrastructure for interactive distance learning, and
- streamline State government by avoiding additional expenditures for duplicative networks and providing the base infrastructure for electronic transactions with government.

The State serves as anchor tenant on the Multi-Use Network by requiring the private partner, Qwest, to reserve bandwidth for public use. Twenty megabits of capacity is reserved for sole use by state and local governments, schools, libraries, and non-profit health care organizations. The rest of the network capacity is marketed and sold to private business and citizens by the private partner, Qwest. With the State serving as anchor tenant, the private partner has a business case for expanding services offered to all of Colorado's counties.

The Multi-Use Network program is high on Governor Bill Owens' agenda for encouraging technology investment and bridging the digital divide in Colorado. The program also fits closely with the Governor's plans for improving education and for streamlining state government. Most states have either public sector or private sector network infrastructure. **Colorado is the first state to create a public/private partnership to deliver a state-of-the-art telecommunications network to all of its citizens regardless of geographic location.**

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2001 Outstanding Program Award Nomination

Program Description

Overview of the Program

The Multi-Use Network (MNT) program is a public/private partnership to build a high-speed fiber-optic telecommunications network connecting all of Colorado's 64 counties and delivering advanced data, video and voice telecommunication services to State and local government agencies, schools, libraries and non-profit health providers. This innovative program is the centerpiece of Governor Bill Owens' plan to bridge the digital divide that has separated rural and urban areas of the state by providing services that enable distance learning, telemedicine, videoconferencing, electronic commerce, and Internet access.

Innovative Components of the Program Design

The program incorporates four innovative components in its approach. First, the program utilizes a public/private partnership in the telecommunications arena for the first time. Under this program, the private sector constructs, owns and operates the infrastructure and the state, serving as anchor tenant, purchases services and bandwidth. Though other states and local governments have fiber optic networks, Colorado is the first to utilize a public/private partnership to encourage private sector telecommunication investment in rural and economically underdeveloped areas.

Second, the MNT program elevates the level of understanding among legislators and other policymakers by emphasizing that telecommunications infrastructure is no less important than highways, water or power. Sponsorship and commitment are essential to success of the program.

The third innovative component concerns applying the concept of "demand aggregation". The State has begun to combine its demand for advanced telecommunications services in order to avoid additional costs and achieve economies of scale in procurement of services.

A fourth innovation is the use of community incentive funding to develop last mile access to the network in the local communities. Authorization for community based access grants was provided in a companion piece of legislation to the Multi-Use Network known as the "Beanpole" bill. This grant program bears this

name because of the resemblance of the network to the vines and stalks of a beanpole. The legislation helps communities build out their local infrastructure, aggregate demand locally, then connect to the nearest access point on the Multi-Use Network.

Achievements and Current Status of the Program

In its first year, the private partner has built out its fiber optic network to all regions of the state and installed equipment that operates on state-of-the-art ATM (asynchronous transfer mode) technology. The State has initiated the process of aggregating circuits from its numerous agencies, converting the circuits to the new network, and decommissioning the legacy networks. The private partner also has initiated its marketing and sales efforts to the private sector. The State is working with various local governments, schools, libraries and non-profit health care organizations to place existing and new traffic on the network.

Calculation of Actual Savings

Strategic Design for Realization of Savings

State government intentionally did not build a costly government-owned telecommunications network, choosing instead to aggregate its demand so that we could more efficiently purchase services directly from a private sector partner. By using a single private sector-owned network for all State agency traffic, the State also expects to significantly reduce administrative and maintenance costs for network services. Further, estimates for the cost of a government-owned network range from \$150 to \$300 million, a cost that has been avoided by this approach.

State government, in the anchor tenant role, is leveraging its aggregated telecommunications demand to create the business case for the build-out of infrastructure in rural counties. The cost for an individual county to build its own network has been considered to be cost prohibitive for many years and would likely remain so without the leveraged investment of the State. A significant expected outcome of the project was to encourage the private sector to offer advanced services in Colorado's rural areas thus bridging the rural and urban digital divide. Comparison between previous network capability in the counties and the new network is not meaningful because of the great difference in bandwidth and services offered.

As part of the proposal, the private partner eliminated backhaul charges fifteen miles within a county network access point for ATM service and thirty miles within

a county network access point for frame relay service. This is a significant savings not only for State government, but also for any user of the Multi-Use Network.

Effective Funding and Staffing Mechanisms

Deployment of network access points in all counties was initially funded by the private partner. Qwest's costs will be recouped through monthly access fees charged to the State as anchor tenant. In addition, the program received an appropriation of \$13.5 million capital construction appropriation for the costs of aggregating State traffic including the purchase of State agency equipment, installation and site preparation. After initial infrastructure build-out, the program is expected to cost \$13 million annually for telecommunication access costs, and local loop costs.

Staff who had been working on the state's legacy telecommunication networks were reassigned to the program while other staff have remained to decommission the legacy networks as the Multi-Use Network is implemented. The exact number of staff on the program varies during implementation however an average of twelve FTE from technical, business, and management functions are working at least half-time with this program.

Quantitative Benefits

Consolidation and Centralization in State Government

Previously, networks were installed, operated and maintained by individual State departments, including Higher Education. Consolidation of state-owned networks and centralization of operation and maintenance makes prioritization of funding more effective as critical need can be more accurately assessed by the Governor's office and the Legislature. This approach also makes management and monitoring of the network more efficient as these functions can be centrally managed.

Economic Development in Rural Colorado

Rural Coloradoans have been slighted for years as private sector telecommunications providers refused to provide high-speed services in our rural and economically disadvantaged areas. The Multi-Use Network program specifically addresses this problem by forcing the build out of the statewide fiber optic network to all counties of the state. The availability of infrastructure and high-speed services statewide brings a capacity for economic development that cannot as yet be quantified.

E-Commerce Readiness

Colorado is now well prepared for a statewide e-commerce initiative to be built upon a robust state-of-the-art network infrastructure. The stage is set for transactions between State and local government and Colorado citizens. A single statewide network that carries data, video, and voice traffic is significantly more conducive for e-commerce than a multitude of diverse networks.

Use by Other State, Local and Federal Governments

The State of Colorado has received numerous requests from policymakers in our nation's cities, counties and states on how to re-create a similar network in their communities. The benefits and advantages of the Multi-Use Network and the innovative components of the program design are relevant to any public entity desiring to find improvements to the operation and efficiency of a program.

Benefits and Advantages Specific to the Multi-Use Network Program

State agencies, schools, libraries, and institutions of higher education will no longer need to purchase telecommunication services in a piecemeal fashion. An aggregated network approach streamlines government by avoiding additional expenditures for duplicative networks and by achieving economies of scale in procurement of services. This approach also allows all public agencies in the State to receive services through a common infrastructure with consistent service quality.

The public/private partnership model promotes rural economic development by extending telecommunications infrastructure to all corners of the state through the encouragement of private investment.

Use of a Public/Private Partnership Concept for Large Technology Programs

The State of Colorado has demonstrated that the public/private partnership concept works well for large technology programs by fostering competition among private sector vendors for State government business.

Use of the Concept of "Demand Aggregation"

The State of Colorado has also demonstrated that the "demand aggregation" concept works well for large technology expenditures by helping to avoid additional costs and achieve economies of scale in procurement of services.

Conclusion

The Multi-Use Network Program is proving to be the most innovative change in Colorado State government communication services in many years. The program will improve the way in which telecommunication services are both managed and procured. By re-engineering these processes, the State of Colorado placed itself in the position of being able to demand more for the taxpayer's money; in this case, achieving the delivery of advanced telecommunication services to our rural counties, and effectively bridging Colorado's rural and urban digital divide.