White Paper:

Utah's Public-Private Fiber-to-the-Premises Initiative

November 26, 2003

White Paper:

Utah's Public-Private Fiber-to-the-Premises Initiative

November 26, 2003

Contents

Tables and Charts

White Paper:

Utah's Public-Private Fiber-to-the-Premises Initiative

November 26, 2003

"Broadband networks will be as critical to this new century as roads, canals, and transcontinental railroads were to the Nineteenth Century and the Interstate Highway System and basic telecommunications networks were to the Twentieth."
–FCC Commissioner Michael Copps, August 2003

Executive Summary

UTOPIA's purpose is to build, maintain and operate a telecommunications infrastructure that gives each home and business the opportunity to have reasonably-priced access to an ultra-high-speed network offering a variety of private-sector services including Internet, voice, television, video-on-demand, home security and other innovative services.

The network will be built with fiber-optic technology which provides transmission of voice, data and video many times faster than existing copper , cable, or satellite systems. Fiber is currently used for the backbone of the Internet and other high-demand applications but has not been widely implemented over "the last mile" into homes and businesses.

UTOPIA is an interlocal-governmental agency formed by 18 Utah cities comprising a third of Utah's population. Since it was formed in 2002, all UTOPIA decisions have been made in routine open public meetings. UTOPIA's member cities are Brigham City, Cedar City, Cedar Hills, Centerville, Layton, Lindon, Midvale, Murray, Orem, Payson, Perry, Riverton, Roy, Salt Lake City, South Jordan, Taylorsville, Tremonton, and West Valley City. Additional cities will be able to apply for membership after the network is up and operating successfully.

The UTOPIA network will be funded by the revenues it earns from the private service providers that use it to serve their customers. In many ways, it will be similar to a public airport. The government owns, operates, and maintains the infrastructure but it does not fly the airplanes

or run the gift shops. And, like an airport, proceeds from bond sales are used to pay for the construction of UTOPIA's network, which will take fiber-optic cable "the last mile" to the boundary of every property in each member city. Service providers will use this network to deliver digital services to homes and businesses, paying UTOPIA a fee for access to their customers. These proceeds will be used to pay normal operating expenses and to pay off the bonds.

The basic fiber-optic technology has been available for years. Indeed, thousands of miles of fiber backbone cable has been laid by the private sector, much of it now unused because the private sector has not made the investment to take fiber "the last mile" into homes and businesses. This was because no single service provider could consolidate the fractured market sufficiently to justify the investment to shareholders fixated on short-term profitability.

Cities, by contrast, have the long-term needs of their constituents as their first priority. By forming UTOPIA, the 18 Utah cities have created an entity that can build and maintain the infrastructure, providing the "pipe" through which private companies can provide the latest, most competitive services to consumers. Revenues earned from private-sector service providers over the next 20 years will pay off the cost of building the infrastructure.

The business model is based on typical consumer behavior. That is, it logically assumes that a portion of existing Internet users will take advantage of opportunities to buy significantly faster Internet access for the same price they are now paying for slower Internet access, or to buy a broadened and improved range of communications and video entertainment services for what they may now be paying for basic dial tone or cable TV. From the sales of these superior services, the private service providers will pay an access fee to UTOPIA, who will use those proceeds to run the network and retire the bonds.

Market research and exhaustive, independent feasibility studies indicate that consumers will adopt the UTOPIA network at sufficient rates to make the undertaking economically viable. These methodical results bear out the common-sense deduction that consumers will act in their own best interest by subscribing to competitively priced, enhanced services offered by private companies across the UTOPIA network. For instance, it is projected that the fiber-optic network will allow Internet access approximately 10 times faster than cable or T-1 to be offered at a price point similar to current cable Internet access.

Another major consumer benefit resulting from opening the network to multiple service providers will be greater consumer choice, competitive pricing, and enhanced services to the

public—all the benefits of competitive private sector activity, enabled by public-sector infrastructure.

Leaders of member cities foresee other advantages for their citizens. First, private contractors will construct the network, employing hundreds of Utahns during the estimated 3-year build-out period. Longer-term economic benefits will result from the effect of innovative minds converging to create new applications and products to take advantage of an aggregated mass consumer market interconnected by the ultra-high-speed UTOPIA network.

Whether it be always-on video security and medical monitoring, online games, video-on-demand serving niche markets, or full-motion video phones enabling hearing-impaired customers to hold fluid conversations in American Sign Language, the UTOPIA network will unleash a new wave of Utah's entrepreneurship and technological creativity.

UTOPIA has awarded contracts to companies who will supply materials or construction services, contingent upon funding of the network. They include Tetra Tech Construction Services, Inc. for major construction; Communications Technology Services, Inc. for premises network deployment; Riverstone Networks, Inc. for core electronics; Allied Telesyn for access portals; Amino Communications Ltd. for video gateway devices.

UTOPIA's feasibility and implementation has been facilitated by DynamicCity Metronet Advisors who have also been selected as asset manager. The financing team is comprised of Lewis Young Robertson & Burningham as financial advisors, George K. Baum & Associates as bond underwriter, and Ballard Spahr Andrews & Ingersoll as bond counsel. Parsons Behle & Latimer and Miller & Van Eaton serve as outside legal counsel; Pinnock Robbins Posey & Richins CPAs as outside auditors; and Morris & Dredge CPAs provide financial management and accounting. Dean & Company independently verified the feasibility study and The Exoro Group provides marketing and public relations services.

Contact

For more information, please contact:

Roger Black	Hugh Matheson
Chief Operating Officer	Managing Partner
UTOPIA	The Exoro Group
Murray, UT	Salt Lake City, UT
(801) 290-4101 or (801) 661-1838	(801) 537-0900 or (801) 918-1581
rblack@UTOPIAnet.org	hm@exoro.com

"Broadband networks will be as critical to this new century as roads, canals, and transcontinental railroads were to the Nineteenth Century and the Interstate Highway System and basic telecommunications networks were to the Twentieth."
–FCC Commissioner Michael Copps, August 2003

Introduction

Eighteen Utah cities are working to make certain their citizens and businesses remain successful and competitive in the new century by ensuring access to advanced telecommunications services that have the power to transform the way people work, learn, play and communicate.

The cities of Brigham City, Cedar City, Cedar Hills, Centerville, Layton, Lindon, Midvale, Murray, Orem, Payson, Perry, Riverton, Roy, Salt Lake City, South Jordan, Taylorsville, Tremonton, and West Valley City have formed the **Utah Telecommunication Open Infrastructure Agency**. UTOPIA is an interlocal agency whose mission is to build and maintain a "fiber-to-the-premises" open infrastructure network, giving every home and business access to a variety of ultra high-tech telecommunications services provided by private-sector businesses.

Fiber-optics provide transmission of voice, data and video many times faster than existing copper, cable or wireless systems. Just as municipal airports accommodate several airlines, the UTOPIA network will be open to a range of private sector providers of advanced voice, Internet, data and video services. The result will be greater consumer choice, competitive pricing, and enhanced services to the public.

UTOPIA cities will be attractive places to live and to locate businesses because of the enormous speed and capabilities of the system. The large number of homes and businesses connected will create a significant market for advanced communications applications and services not possible with current networks.

The opportunities for businesses are limitless, with full-motion video readily delivered to desktop computers for telecommuting, video conferencing, security applications, telemedicine, and easy transmission of large graphics files. Innovation will flourish as entrepreneurs develop new ways to take advantage of the immense capacity of the network. Competition, resulting in lower prices, will also flourish as service providers offer a variety of communications.

UTOPIA Services

Current technologies, such as DSL, cable modem, broadcast and satellite, provide many options for information, communications and entertainment options. But truly advanced services require high-speed, reliable, bidirectional transmission of digital information that's not possible with the capacity limitations of current systems. These advanced applications, along with faster and more advanced Internet, phone, and cable television services, will add convenience, productivity and improved quality of life, along with the ability to better compete economically. Here are some of the new services that will be possible under UTOPIA's fiber optics network:

- **Ultra high-speed Internet access.** Speeds will be many times faster than DSL, cable or even business T1 lines. (Fiber has one million times the capacity of copper wire, coax or wireless systems.)

- **Entertainment**. Subscribers will be able to receive high-definition television programming with such features as pause, replay, skip ahead, and interactive feedback. A wide range of channels will be available, including school and community channels. Movies and other programming will be available on demand. Users will be able to rent a movie right from their TV, watch it as many times as they'd like during the rental period (with pause, fast-forward, etc.), after which it automatically "returns" itself (no late fees).

- **Community programming.** Schools, local governments and non-profit groups will be able to record sports, cultural and civic events, and school programs. They can store them on a server to be viewed on-demand, by anyone on the system, at any time. A parent who misses a school music program or a soccer game could view it later. Important hearings and other government programming also could be available online. Interactive distance learning will be enabled.

Cities will be able to better manage traffic flow, read meters remotely, provide advanced communications services to police and fire departments, and will be more attractive to new businesses.

- **Medical services**. Always-on medical monitoring could add protection for those who otherwise might not be able to live alone. Doctors could transmit and receive MRIs, CAT scans and other medical images and information. Often these files are so large that Internet transmission is impractical with current technology. The fiber system can make it routine.

- **Telework and videoconferencing**. Remote members of a work team could see and hear each other with broadcast-quality images over the Internet. They could share information in real time and contribute to computer-aided design and financial modeling.

- **Services for the handicapped**. Hearing-impaired individuals will be able to "sign" to each other over a broadcast-quality video connection. This is impractical with most Internet connections because the video signal is too choppy.

- **Phone services**. Telephone service can be included in the package, offering billing simplicity and convenience. Videophone and other advanced telephone services are possible. Businesses could plug in a phone anywhere on the UTOPIA network and it would be recognized as their phone with their phone number.

- **Family friendliness**. Any family protections available under current entertainment and Internet services, such as filtering and parental controls, will be available.
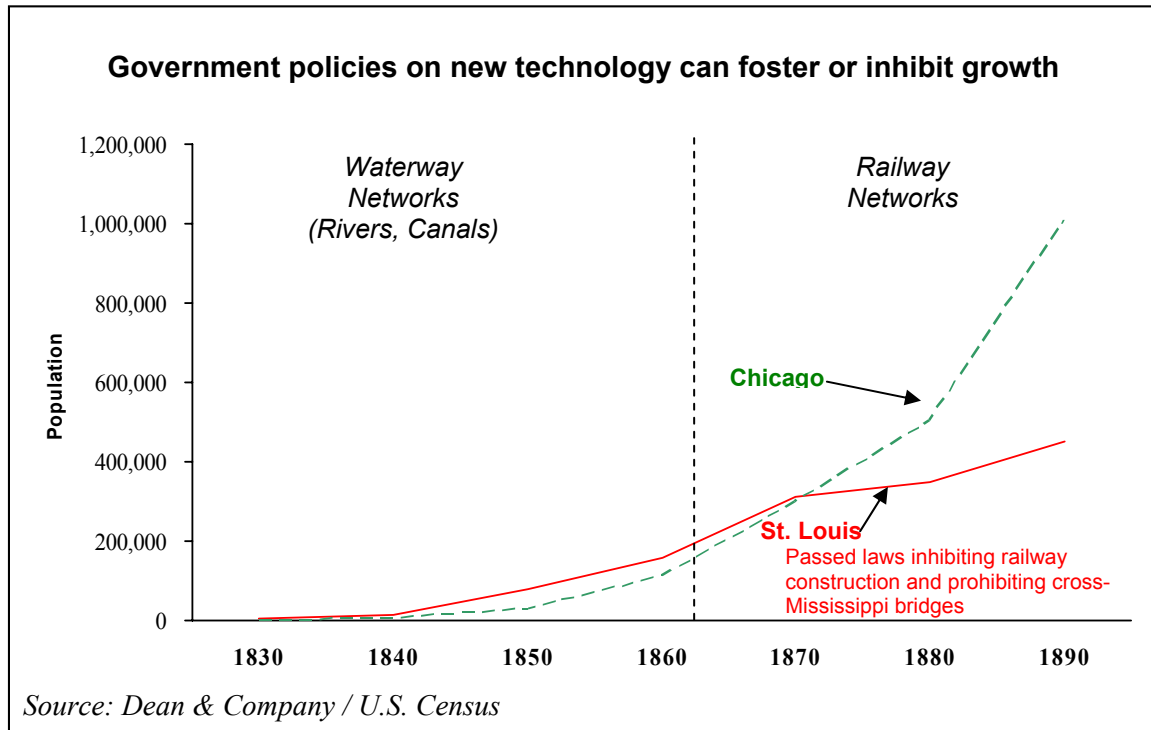
Economic Development

In addition to improved quality of life, UTOPIA's system can contribute significantly to economic development within the 18 member cities.

> *"Providing meaningful access to advanced telecommunications for all our citizens may also spell the difference between stagnation and economic revitalization. Building this infrastructure is important for all communities in this country."* (FCC Commissioner Michael J. Copps, August 2003)

Telecommunications infrastructure today is just as vital to economic growth as transportations systems were in the past. Communities and industry benefited by proximity to major waterways and railroads. Consider how the Erie Canal opened up western New York and Ohio to settlement and progress. But failure to promote new technology can slow economic

growth. The Mississippi River was so important to the growth of St. Louis in the first half of the Nineteenth Century that the city passed laws inhibiting railway construction and prohibited bridges across the river to protect the water right of way. As a result, St. Louis's growth stagnated while Chicago prospered as shown in the following chart:

Government policies on new technology can foster or inhibit growth

Waterway Networks (Rivers, Canals)

Railway Networks

Chicago

St. Louis
Passed laws inhibiting railway construction and prohibiting cross-Mississippi bridges

Population: 1,200,000 / 1,000,000 / 800,000 / 600,000 / 400,000 / 200,000 / 0

1830 1840 1850 1860 1870 1880 1890

Source: Dean & Company / U.S. Census

Because of its importance in the Twentyfirst Century, many cities are making telecommunications central to their economic plans. More than 100 cities are building new access communications networks, many of them fiber-based, to serve residents and businesses. These include Tacoma, Jacksonville, Palo Alto (Calif.), Pittsburgh, Bristol (Virginia), Nashville, Provo and Spanish Fork.

Why Cities are Taking the Lead

Cities have always been in the infrastructure business—building streets, bridges, airports, water works and electrical power systems. They're good at solving the collective problems of their citizens. When the city builds these systems all residents and businesses have equal access. They provide convenience and opportunity to everyone.

Governments have sound reasons for stimulating broadband initiatives (Gartner Group June 24, 2002):

- To narrow the digital divide between the haves and the have-nots.

- To provide what the marketplace has failed to deliver.

- To attract industry and enhance jurisdictional competitiveness.

- To stimulate economic growth.

Nobody questions a city's role in operating an airport. Airlines couldn't justify building their own airports and cities don't try to operate airlines. The city provides the infrastructure and each airline pays its share through operating fees. That's the way UTOPIA's member cities are approaching fiber technology. UTOPIA would develop the infrastructure, making fiber connections available to every home and business. Of course, private contractors would actually build the system for UTOPIA and participate in its operation.

All major elements of infrastructure development have been sponsored by government efforts in one form or another, including:

Financing (railways, power plants, highways…)

Granting franchises (power, telephone, cable TV…)

Construction (airports, roads, interstate highway systems…)

Operating (sewer, water, roadways, airports…)

Private enterprise has not deployed true broadband to homes and small businesses in any widespread way. Fewer than 20 percent of American homes and small businesses have had *access* to bandwidth of 200 Kbps or better (that's slower than DSL service), and only a tiny percentage have access to the bandwidth possible with fiber connections.

It is not fair to blame the phone and cable companies for this. The industry could replace its copper wire and coaxial cable networks with a virtually unlimited-capacity fiber optic infrastructure but business imperatives keep them from doing so. The long-term return on investment wouldn't meet investors' short-term profit demands. It is not cost-effective for each company to implement fiber in every area, and forced infrastructure sharing has not gone well among providers forced to use competitors' systems. Also, many sparsely-populated areas that are expensive to serve likely would be left out because serving them simply doesn't make financial sense.

> *"The local exchange carriers, cable companies and new competitors have promised but have failed to deliver, primarily because it is not in their interest nor business model to*

provide ubiquitous broadband services. The bottom line is that the profits are just not there…." (Gartner Group June 24, 2002)

While advanced communications networks are important to the competitiveness of cities, providing these systems throughout the community just isn't in the business plans of cable TV, phone and Internet companies. Clearly a different business model is required, both to make the system feasible and to foster greater competition. This can lead to more choices for consumers and businesses along with the potential for lower prices.

> *"Carrier-owned [telecommunications] infrastructure has had the effect of limiting or eliminating choice of carriers for customers. It is also very difficult for other providers to compete...If the optical network leads to a carrier-neutral facility, companies have more choice of carriers than ever before, fostering true competition."* (Debra Cameron, President, Cameron Consulting)

> *"The MVS [Multiple Value Stream—one network, many service providers] approach...not only increases the addressable market for broadband access providers, but also spreads the risk in terms of technology penetration and achieved market share over multiple segments. The net effect will be a significant increase in the revenue side of a broadband access business case and a dilution of the risk."* (Gartner Group, November 25, 2002)

The reason a consortium of municipalities can make the ecnomics of the network successful is that they can build the system with low-interest bonds paid back over many years. They do not face the demand of quick profits as do private companies. It's the same reason municipalities and other governments provide airports, roads and highways, sewage facilities and other basic infrastructure. An ultra-broadband fiber optics network can be viewed in the same manner of other infrastructure. UTOPIA will provide only infrastructure services (which private contractors will build). As with an airport, capacity will be leased to private providers who will offer the services directly to consumers and businesses. The agency won't compete with commercial content providers. UTOPIA operates within the provisions of the Utah Municipal Cable Television and Public Telecommunications Services Act (H.B. 149), which the Utah Legislature enacted in 2001.

> *"There [is] a wide class of municipalities for which a municipal broadband network is not only viable but is essential if the deployment of broadband is ever to be achieved."*

"By developing an open-access broadband infrastructure, the Town can unbundle the network and provide wholesale network access...This assures a level playing field and creates a competitive environment which in turn will likely manifest in low prices, high quality of service, and a diversity of broadband products and services to customers."

"The service providers need scale and efficiency in local distribution and they cannot each deploy such distribution. A municipal network is...the very most efficient and economically viable alternative to get service providers to homes and local businesses." (Terrence P. McGarty, Ph.D, "Municipal Broadband Networks: A Revised Paradigm of Ownership" prepared as a working paper for the MIT Internet and Telephony consortium group by Terrence P. McGarty, Ph.D 2002)

UTOPIA will make the network open and available to many service providers. These companies will offer advanced telecommunications services directly to residents and businesses. The cities would collect fees from the service operators to repay the bonds used to build the system. No tax dollars are anticipated to be used in either building or operating the network. UTOPIA contacted current telecommunications services providers early in the process and has kept the companies apprised of developments. UTOPIA has invited them to become providers over the network.

By facilitating a fiber optic network throughout their geographic areas, UTOPIA's 18 cities can promote economic growth, support their business communities, improve residents' quality of life, and foster competition among service providers.

Why Fiber Optics?

The value of broadband is well established. Where it's available many are finding it an important business and personal tool.

"Broadband is an incredible enabling technology. It allows businesses that are willing to embrace Internet business solutions to transform business processes and realize significant returns on investment. It offers consumers new opportunities to work or learn more productively (at their desks or from home), publish multimedia, switch from viewers of entertainment to participants, and – most importantly – dramatically expand their communication possibilities." ("Understanding Broadband Demand: A Review of Critical Issues," Office of Technology Policy, U.S. Department of Commerce, September 23, 2002.)

Nevertheless, broadband is not available to many. And the broadband technology that *is* available, in most cases has insufficient capacity to meet growing needs and demands. Two primary reasons for building a fiber-to-the-premises network are fiber's existing capacity and reliability, and fiber's future expandability. None of the alternative modes—DSL, cable modem, satellite or wireless—in their current and foreseeable state of development can provide the bandwidth fiber networks offer.

Minimum communication needs:

Voice (1 line)	64 Kbps
Data	1 Mbps
Video (2 TV sets)	<u>10 Mbps</u>
	11 Mbps

Reasonable near future needs:

Voice (2 lines)	128 Kbps
Data	5 Mbps
Video (2 TV sets)	<u>54 Mbps</u>
	60 Mbps

While fiber networks are enormously scalable using currently available technology, the other media would require major technological breakthroughs before they could provide the bandwidth fiber already offers. UTOPIA's system will utilize complementary technologies, including wireless, to handle specific needs and circumstances.

> *"One of the great urban myths is that satellite or wireless technologies are equal to fiber. These technologies are complementary but not competitive to fiber...One strand of fiber has more bandwidth capability than all the satellite and wireless systems combined in Canada."* (Bill St. Arnaud, CANARIE—Canadian network research group)

The following chart shows how vast the difference can be between typical broadband (such as DSL, cable and fixed wireless) and fiber optics (comparable to Ethernet, Fast Ethernet and Gigabit Ethernet). DSL and cable Internet connections seem super fast compared to dialup services (although they are much slower sending data than receiving it). But they just can't handle large quantities of information. Fiber, on the other hand, provides speeds comparable to the office Ethernet networks:

How Fast Is Fiber?
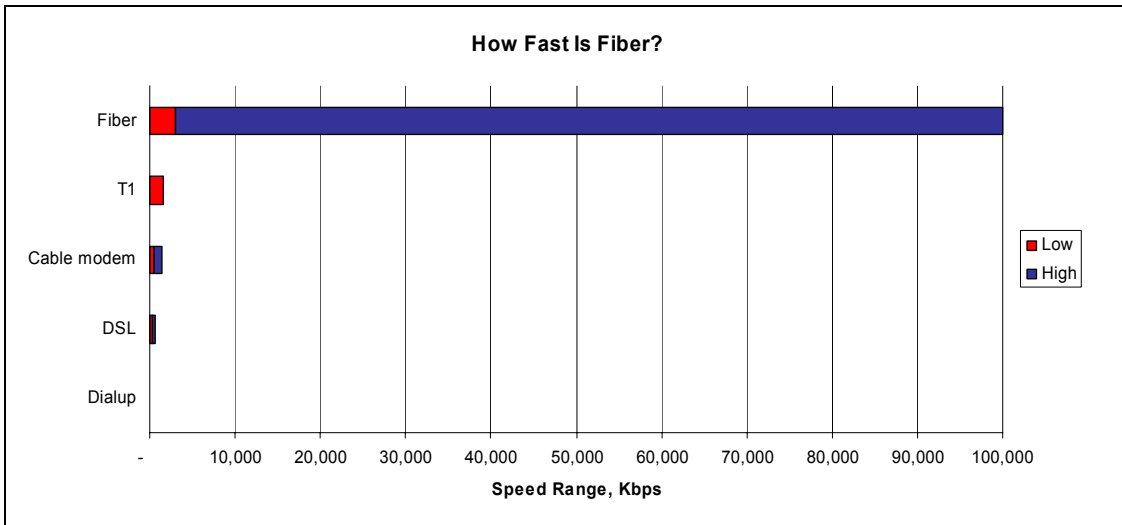
The speed of fiber optics compared to other technologies. Compared to dialup (which doesn't even show up on this chart), broadband services such as DSL and cable modem seem very fast. But fiber is in a different league and is capable of much faster speeds than shown in this chart. Actual speeds are determined by the service pacakage an individual subscriber chooses.

This has implications far beyond Internet use. As more of our information and entertainment services become digital, the infrastructure capacity must grow substantially.

> *"It is important to note here that the current generation of broadband technologies (cable and DSL) may prove woefully insufficient to carry many of the advanced applications driving future demand. Today's broadband will be tomorrow's traffic jam, and the need for speed will persist as new applications and services gobble up existing bandwidth."* ("Understanding Broadband Demand: A Review of Critical Issues," Office of Technology Policy, U.S. Department of Commerce, September 23, 2002.)

Total Internet traffic in the United States (the Internet "backbone") is doubling every 15 to 18 months. Without fiber, the nation's communications would have collapsed in the 1980s. It's only a matter of time until local traffic hits the same bottleneck. Fiber optics is the only known technology that will be able to meet the projected demands.

There is no evidence to suggest that any technology will surpass fiber optics within the life of the bonds. UTOPIA has reached this conclusion after examining the needs of the network, the capacities of existing products as well as products under development, the economics of the existing and projected projects, and the laws of physics and theoretical capacities. Fiber absolutely is state of the art and will remain so for the life of the bonds.

Feasiblility

UTOPIA's feasibility has been thoroughly studied by independent consultants. The most important finding is that the project's 10-year cash flow is positive, without tax money. It is 84.7 percent probable that revenue will cover operations and debt service in the critical year seven.

Since private providers will be offering all services over UTOPIA's network, it was important to ensure that the project was practical under their requirements. National service providers need more than 26,000 homes *connected* to the network to operate profitably. The total population of UTOPIA's 18 cities is 723,933, with 248,791 households and 34,580 businesses. So approximately 10.5 percent of the homes would need to connect in order to satisfy a provider. A public survey conducted by SRI reported that 76 percent of residents would switch to the new service even without a price savings, and 71 percent of residents support a public-private fiber optics network. Several providers have shown significant interest. UTOPIA has negotiated with several and is in serious discussions with a premier provider of national significance.

UTOPIA has projected a minimum *take rate* of 40 percent after two years based on the SRI survey. This is consisten with national benchmarks. ("Take rate" is the percentage of homes and businesses passed by the system that subscribe.) UTOPIA's projections are conservative compared to actual results for other municipal networks:

Provo's and Spanish Fork's take rates are far above UTOPIA's projections
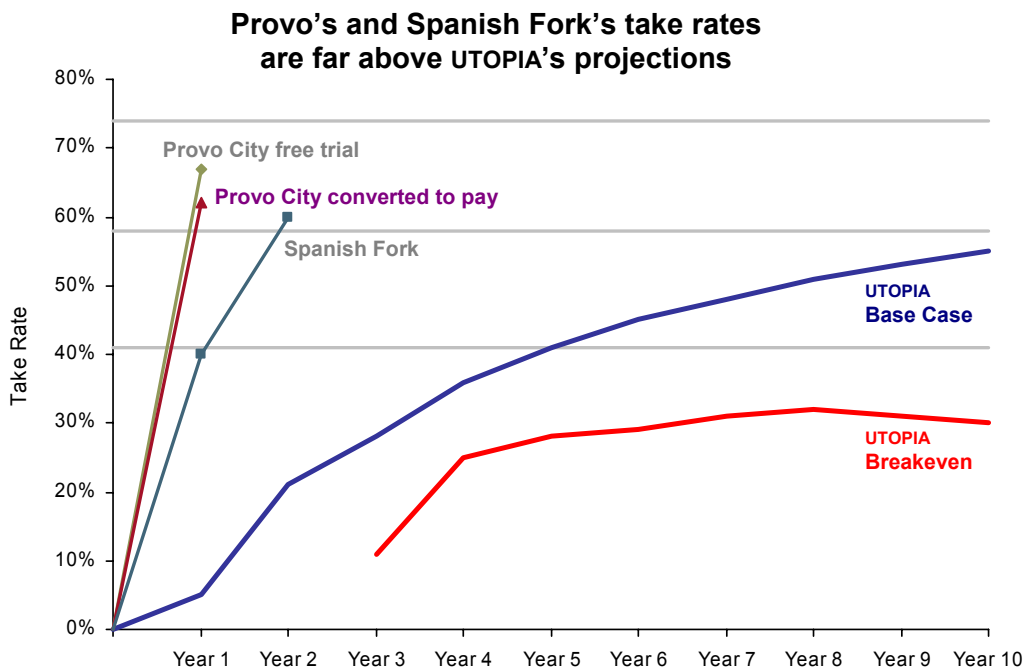
Source: Provo City, SRI Survey

The chart above shows the results for two small systems in Utah. Provo City has implemented a fiber network in a test area involving approximately 300 homes. The chart shows the percentage of residents in the study area who subscribed during a free trial period and who continued to subscribe after they were required to pay. Spanish Fork's system is not fiber but it is a municipal broadband network. UTOPIA's projections are far below those two cities' actual experience, and its breakeven point is 31 percent to 61 percent below its base case.

The next chart shows the take rates for other municipal systems, some of which are fiber. The preponderance of results are far more positive than UTOPIA is projecting.

UTOPIA's breakeven threshold is below other municipal projects
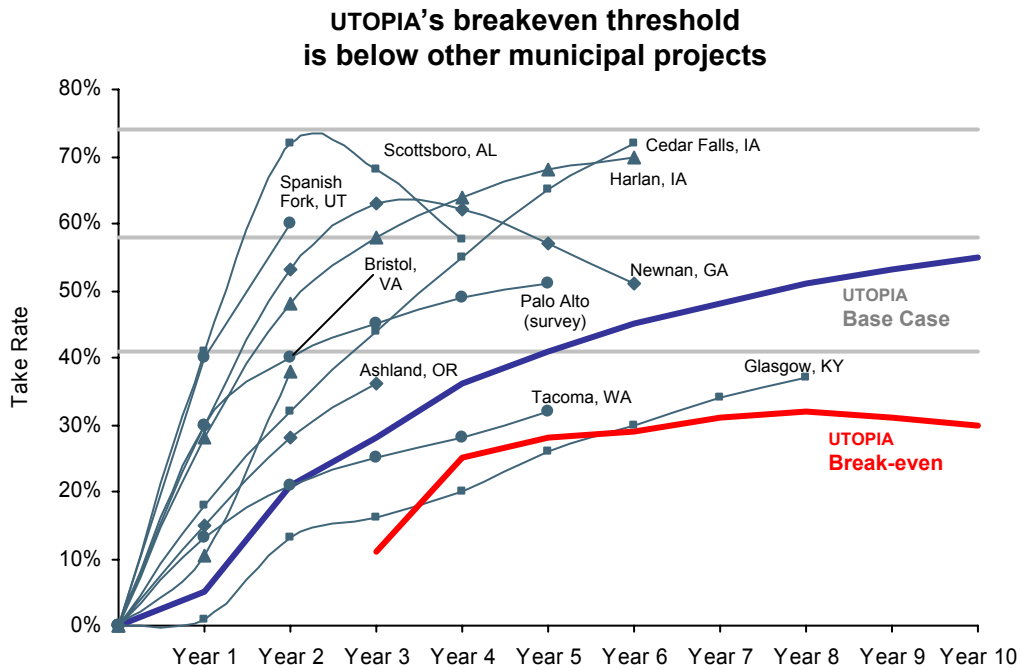
Source: Dean & Company, SRI Survey

The project also is feasible from a construction standpoint. UTOPIA will use private contractors to build the system, most of which have already been selected through a competitive process. Of course, the contracts are subject to the project receiving funding. The cost per household passed by the fiber system is approximately $1,200, which is consistent with national benchmarks. This fits well within the financial model.

UTOPIA's business case is sound. It has been subjected to rigorous scrutiny, including a market survey, technology validation, potential service provider review, and vendor and contractor evaluation. The agency has used conservative financial assumptions and has relied on a base case that includes only existing services (voice, video and data). The risks in the early stage

(years 1 through 3) are take rates, service provider performance, competitive response and unforeseen costs. In later years the risks would be technological obsolescence and catastrophic economic collapse. UTOPIA is confident its conservative business model and projections overwhelmingly mitigate these risks.

Private Provider

As indicated, UTOPIA has been successful in attracting the interest of strong, capable service providers that are considering offering services to residents and businesses over the network. The qualities UTOPIA has sought in an initial provider include:

- Financially strong with a proven, successful record
- Experienced track record with consumer and business services
- Capable of delivering competitive services including voice, video and data services
- Measurable high rate of customer satisfaction
- Shares the vision for UTOPIA's network and business model
  - Committed to offering services that take advantage of the bandwidth capacity
  - Committed to competing with other providers on an open, wholesale network

UTOPIA is in serious discussions with a service provide that meets all of these requirements. Because negotiations are ongoing, the participant cannot yet be disclosed.

Funding

The project will be funded by the sale of bonds. The proceeds from the bond sales will be used to pay for the construction of the network, which will take fiber-optic cable "the last mile" to the boundary of every property in each member city. When a property owner or tenant subscribes to one or more of the services provided by private sector service providers over the network, fiber will be brought from the boundary into the house or office.

UTOPIA will collect a wholesale fee from the service provider based on the type of services the customer takes. These proceeds will be used to pay off the bonds.

UTOPIA is negotiating with a bond insurance company. The bond insurer will cover part of the obligation to bond holders in the unlikely event the project's revenues are insufficient to service the debt. Bond insurance helps give the bonds 'investment-grade' status, making them significantly more attractive to private-sector investors. Highly rated municipal bonds are highly sought after on Wall Street because of their safety.

One priority has been to obtain favorable interest rates on the bonds used to finance the project. UTOPIA member cities had the choice of paying higher interest rates on the bonds, or achieving substantial savings in bonding costs by agreeing to back a portion of the bonds to satisfy the bond insurers. The UTOPIA board decided to recommend that their cities back a portion of the bonds. The agency will be discussing this with with the mayor and city council of each member city, who will hold a public hearing and then decide whether to back their city's portion of the bonds.

The cities' pledge would require funding only if the actual system revenues did not cover operational and debt service obligations. In such a case the cities would cover their proportional share of annual debt service in each year that the need existed. The likelihood of this happening is small. There is a greater likelihood that the cities would be able to share positive earnings to help cover some of their other infrastructure needs.

The 18 fiscally conservative city governments will be playing a positive role in meeting the long-term interests of their constituents and their local economies. This public-private approach to funding, building and operating the fiber network will benefit:

- UTOPIA's member cities

- Their current citizens and business community

- The new business opportunities generated by the network

- Utah employees of the expanded and new businesses

- The contractors who will build, help operate, and provide services over the network

- Utah residents who will fill the jobs provided by these contractors

Appendix

What the Experts Say

In terms of global competitiveness, the U.S. ranks 11th in deployment of broadband.

"The metro area is basically strangled because of lack of infrastructure. There are a lot of customers that are being left in the dust because there's no access to higher broadband." (Marian Stansey, Yankee Group)

"One of the great urban myths is that satellite or wireless technologies are equal to fiber. These technologies are complementary but not competitive to fiber…One strand of fiber has more bandwidth capability than all of the satellite and wireless systems combined in Canada." (Bill St. Arnaud, CANARIE, Canadian network research group)

"Carrier-owned [telecommunications] infrastructure has had the effect of limiting or eliminating choice of carriers for customers. It is also very difficult for other providers to compete…If the optical network leads to a carrier-neutral facility, companies have more choice of carriers than ever before, fostering true competition." (Debra Cameron, President Cameron Consulting)

"The local exchange carriers, cable companies and new competitors have promised but have failed to deliver, primarily because it is not in their interest nor business model to provide ubiquitous broadband services. The bottom line is that the profits are just not there…" (Gartner Group, June 24, 2002)

"It is important to note here that the current generation of broadband technologies (cable and DSL) may prove woefully insufficient to carry many of the advanced applications driving future demand. Today's broadband will be tomorrow's traffic jam, and the need for speed will persist as new applications and services gobble up existing bandwidth." ("Understanding Broadband Demand, A Review of Critical –"Issues" Office of Technology Policy, U.S. Dept of Commerce, Sept. 23, 2002)

"There are a wide class of municipalities for which a municipal broadband network is not only viable but is essential if the deployment of broadband is ever to be achieved."

"By developing an open-access broadband infrastructure, the Town can unbundle the network and provide wholesale network access . . . This assures a level playing field and creates a competitive environment which in turn will likely manifest in low prices, high quality of service, and a diversity of broadband products and services to customers."

"The service providers need scale and efficiency in local distribution and they cannot each deploy such distribution. A municipal network is . . . the very most efficient and economically viable alternative to get service providers to homes and local businesses." ("Municipal Broadband Networks: A Revised Paradigm of Ownership", prepared as a working paper for the MIT Internet and Telephony consortium group by Terrence P. McGarty, Ph.D 2002)

"The MVS [Multiple Value Stream—one network, many service providers] approach…not only increases the addressable market for broadband access providers, but also spreads the risk in terms of technology penetration and achieved market share over multiple segments. The net effect will be a significant increase in the revenue side of a broadband access business case and a dilution of the risk." (Gartner Group, November 25, 2002)

"The last-mile optical bottleneck—especially in America's cities—is a major obstacle in reaping the benefits of [the] era, which is rich in information and communications. It will take creative solutions, massive investment and sound decisions by business and government leaders to open up that bottleneck."

"If we're going to have an Internet economy, we're not going to do it through DSL lines." (John Mazur, Gartner Analyst)

UTOPIA Organization and Procedures

UTOPIA is an interlocal government agency formed in 2002 under Utah law. Each UTOPIA member city is represented on the agency's board of directors. UTOPIA, as a governmental

agency, abides by open meetings laws and other applicable laws governing decision-making. City Council actions regarding UTOPIA are made in regular council public meetings.

The project will be funded by the sale of bonds. The proceeds from the bond sales will be used to pay for the construction of the network, which will take fiber-optic cable "the last mile" to the boundary of every property in each member city. Once the property owner or tenant subscribes to one or more of the services provided by private sector service providers over the network, fiber will be brought from the boundary into the house or office.

UTOPIA will collect a wholesale fee from the service provider based on the type of services the customer takes. These proceeds will be used to pay off the bonds.

Under contract with UTOPIA, private contractors will build the network and install it in each home or business that chooses to subscribe. Development will create jobs for hundreds of Utahns over the three- to five-year build-out period.

Feasibility Testing

Before cities are asked to formally support bonding for the project, its feasiblity will have been reviewed on several levels:

- UTOPIA's consultant **DynamicCity** conducted a thorough feasibility study. DynamicCity has been a key player in the agency's efforts from the beginning.

- UTOPIA brought in **Dean & Company**, a respected strategy consultant from Vienna, Virginia. This company has both technology and financial expertise and focuses on large corporations (typically Fortune 500) and small, but high potential, businesses. They reviewed the work of DynamicCity and independently confirmed the project's feasibility.

- Key to UTOPIA's success is signing on with an **initial service provider**, which will provide services and content to residents and businesses over the fiber network. This primary service provider must be of national prominence to satisfy potential investors that the project is real. Potential providers, in turn, have scrutinized UTOPIA's financial and technical feasibility before beginning negotiations. UTOPIA is finalizing negotiations with a very prominent and respected provider, which is satisfied the project is economically viable.

- UTOPIA has awarded **contracts** (subject to financing) for the major work of developing the fiber network within the 18 member cities. These major contractors do business nationally and internationally. Before submitting proposals they assured themselves of the project's viability.

- Perhaps the most stringent examination is by the **financial markets**, which would invest in the bonds to fund UTOPIA. Anyone who has been involved in municipal financing on Wall Street knows how rigorous the process is to obtain investment-grade funding. Investment-grade bonds are highly sought by the top institutional investors because of their high degree of safety. The market must be satisfied with the project before it can move forward.

- The 18 **member cities** are represented on UTOPIA's board. These cities created UTOPIA and will continue to scrutinize its activities. They also must pledge their support for the financing before it can proceed.

- UTOPIA was established under and operates within the provisions of **Utah law**. The Legislature enacted the Utah Municipal Cable Television and Public Telecommunications Services Act, §10-18-105 (2), UCA 1953 (H.B. 149), in 2001.

Study and Implementation Team

UTOPIA has carefully chosen a **highly qualified team** with the requisite expertise to study, design, finance and construct a carrier class, all-fiber optic network:

Feasibility and Implementation
DynamicCity—feasibility, design, implementation, asset management
Dean & Company—verification of economic model
Kevin Taylor—business planning assistance

Financial
Lewis & Young—financial consultants
George K. Baum—underwriter
Ballard Spahr Andrews & Ingersoll—bond counsel

Legal
Parsons Behle & Latimer—Salt Lake City
Miller & Van Eaton—Washington, DC

Political
R&R Partners—Salt Lake City
Roger Tew—Salt Lake City
Summit Ventures—Washington, DC

Marketing and Public Relations
The Exoro Group—Salt Lake City