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**DESIGN, CONSTRUCTION, AND OPERATION OF A PUBLIC
WIRELESS INTERNET ACCESS SERVICE**



PROPOSER:
FOUNDATION TELECOMMUNICATIONS INC.
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INTRODUCTION

The proposed Foundation Telecommunications, Inc. wireless high-speed broadband solution is capable of providing service to any or all unserved areas in West Virginia.

With over thirty years of experience in the development and provision of leading edge telecommunications technologies to geographically challenged clients, Foundation Telecommunications, Inc. is uniquely qualified to provide low-cost reliable high-speed Internet services ANYWHERE ANYTIME. Moreover, the high-speed services may be provided to the Rural and Remote areas within West Virginia immediately without the requirement to construct additional costly and maintenance intensive towers while using proven commercial grade technologies capable of providing reliable high-speed Internet services.

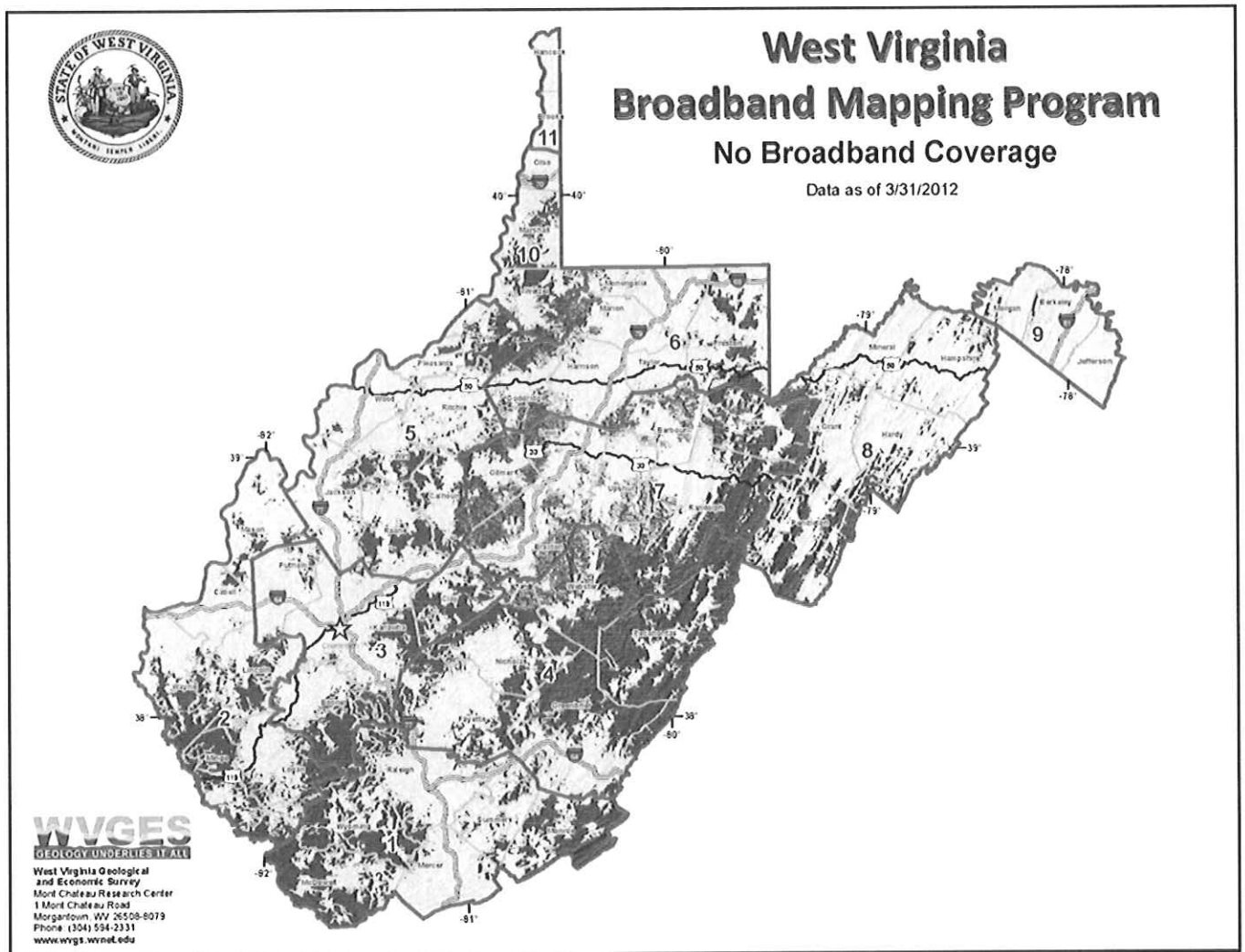
Features of the network designed by FTI for the Rural and Remote areas within West Virginia include the following:

- Lowest Capital Cost
- Lowest Operating Costs
- Highest Maximum Information Rate
- Highest Reliability
- Immediate Construction/Shortest Construction Period
- Greatest Flexibility

PURPOSE

It is the intention of this proposal for Foundation Telecommunications, Inc. to provide solutions for installation, service, and maintenance of wireless broadband access to unserved communities within the state of West Virginia. FTI recognizes that fiber and DSL solutions will extend broadband access deeper into the current unserved areas where economically feasible while leaving the more remote and geographically isolated communities without critically important broadband access especially important to rural schools and community buildings.

The FTI solution is available for immediate implementation until such time that future fiber or DSL broadband is made available to these communities or "pockets" of homes and schools. As a point of reference, FTI has been providing the proposed "interim technology" high-speed broadband access to areas of the State of Wyoming unable to access broadband services since 1992 and has recently received an extension of that agreement through the year 2017.



EXPERIENCE

ADMINISTRATION AND MANAGEMENT

GEORGE LIVERGOOD, PRESIDENT/CEO

Telecommunications Experience	1967 – Present (40 years)
Telecommunications Technologies	Cable Television, Microwave, Satellite, WiFi, Fiber Optics
Telecommunications Education	BSEE, MBA, PhD
Time w/FTI	1979 – Present (30 years)
Time dedicated to this project	Up to 50% of available time or as required

LAMAR BOSTIC, IT MANAGER

Telecommunications Experience	1971 – Present (36 years)
Telecommunications Technologies	Television and Film Production, IT Program development, Network Management, WiFi, Satellite
Telecommunications Education	BS – Radio & Television Production
	MA – Television & Film Production
Time w/FTI	1997 – Present (10 years)
Time dedicated to this project	Up to 50% of available time or as required

MIKE DURGIN, RF/SATELLITE ENGINEERING MANAGER

Telecommunications Experience	1993 – Present (14 years)
Telecommunications Technologies	Cable Television, Satellite, WiFi, Network Management
Telecommunications Education	High School, Vendor Training, FCC Uplink Certification
Time w/FTI	1998 – Present (9 years)
Time dedicated to this project	Up to 50% of available time or as required

LISA TOLAN, SUPPORT STAFF

Telecommunications Experience	1999 – Present (8 Years)
Telecommunications Technologies	Web design, Graphic Design, Office Administration, PC Repair, Network Technologies
Telecommunications Education	AAS Graphic Design,
Time w/FTI	2007-Present
Time dedicated to this project	Up to 50% of available time or as required

QUALIFICATIONS

FOUNDATION TELECOMMUNICATIONS INC.

The company currently known as Foundation Telecommunications, Inc. was originally founded in 1979 as Lambda Communications, Inc. in the State of California.

Its principle business was the development of high technology telecommunications solutions for the educational institutions, businesses and the cable television industry. The rapid development of statewide and regional distance education requirements resulted in a successful consulting and design business based upon this business segment.

Statewide distance education networks were developed for the states of Oregon, Nebraska, South Dakota and Montana. Smaller regional network designs were also created for areas of Montana and Wyoming. Eventually, all of the statewide projects were funded and constructed. The first decade of the company's growth also resulted in establishing two new divisions; 1) Local Area Network Division and 2) Cable Television Systems Operations.

The Local Area Network Division soon gained a reputation through the design and construction of LANs for numerous Los Angeles area Department of Defense companies while concurrently developing a strong following in the initial construction of the most difficult of those networks. At its peak, the LAN division was responsible for approximately \$1 million in annual company revenues.

The Cable Television Operations Division secured three franchises in the Los Angeles area and constructed a single high technology cable system using a "zero fault tolerance" design approach interconnecting all three franchised areas. This design approach was established on the premise that a cable system could be designed in a manner that resulted in the absolute minimum of active devices including amplifiers and power supplies.

This approach was further conditioned upon the premise that sufficient signal had to be available at each subscriber's location to provide as many cable outlets in the home as the subscriber desired without the requirement of a house amplifier to boost the signal level. Finally, a no compromise philosophy was assumed with respect to both audio and video quality on all channels. The result was an extraordinarily reliable cable television system operated with a total staff of two people; one cable technician and one customer service representative in the office.

After several years of successful operations, the LAN Division was dissolved and the Cable Television Operations Division was sold. Lambda Communications, Inc. immediately relocated its corporate offices to Northwest Arkansas in 1992 continuing its development of the distance education business segment. Significant projects in distance education included proposed designs for: American Indian Higher Education Consortium ("AIHEC"), Hispanic Educational Telecommunications System ("HETS"); Northern New Mexico Rural Educational Telecommunications Network ("RETN"); Distance education networks for the states of Oregon, Nebraska, South Dakota Wyoming, and Montana. Eventually, all of these projects were funded and constructed.

In May 1998 Lambda Communications, Inc. submitted a name change application to "FOUNDATION TELECOMMUNICATIONS, INC" which was immediately submitted with all Federal, IRS and State required approvals received in November 1998.

Foundation Telecommunications Inc. (FTI) is the leading provider in wholesale and retail satellite delivered broadband internet service to rural markets. FTI is headquartered in beautiful Rogers, Arkansas near Beaver Lake at 9379 Technology Drive. Its founder and CEO is George Livergood, a veteran technologist and telecommunications entrepreneur.

FTI provides a unique option for high availability, high bandwidth internet access to parts of the world that is underserved. FTI has made the digital divide obsolete. It is a service oriented company and its sales are focused on the internet service and its unique delivery to an underserved market, and not the product that delivers the service. Its core revenue is generated by the recurring use of its service thus providing FTI with high margin, sticky, recurring income. The difference making FTI unique and ideal for its markets is the hybrid C/Ku band Satellite internet service.

Markets: FTI serves broadcast, cable, business, government, and education clients on a worldwide basis, employing a customer intimacy strategy with a full-service integrated systems approach. The markets are broken down based on their sales cycle and the process in which each group formalizes a decision and provides payment. This is important to understand as it affects the sales process due to several factors: Lead times, Reasons to purchase, Number of decision makers, Value of sale to FTI, Influence to a certain market, ROI for client, Cash flow impact to FTI, and Competition. The following is a breakdown of those markets.

Resellers: Rural Cable Operators, Trailer Parks, RV Parks, Resorts, ISPs, and motel/hotel Value Add Small Town Airports, Senior Care Centers, Rest Areas, and Truck Stops

Government: Government VPN and Internet, Rural Telecomm Initiatives, Emergency Initiatives, Disaster, Health, Rural Hospitals, Non-U.S. Governments Schools/Education Rural School Districts, Interactive Distance Learning, Prisons, and Libraries

Business: Businesses who have rural facilities, SCADA monitoring, Internet Café's in rural areas, Ranchers and Farmers, rural mining facilities, and offshore oil platforms

Other: Islands, rural homes/cabins, and communities wanting their own Internet

FTI is a rapidly growing telecommunications service provider specializing in state-of-the art network design, tailored to the specific needs of each client. FTI offers the architectural design of the network, digital satellite equipment, network implementation, space segment capacity, and network control support for its clients. FTI has over twenty years experience in delivering telecommunication systems to the Business Television, Distance Education, Government, and Broadcast & Cable industries.

FTI delivers custom solutions for their clients, provides more reliability, faster speeds, and plenty of security. They are the only provider offering a C/Ku band service. This gives FTI an advantage as it improves performance and lessens the impact rain or storms can have on its service.

FTI is a Value Added Reseller for Level 3 Communications, who is the world leader in the provision of Internet services. FTI can provide Level 3's services anywhere anytime if the infrastructure can support the speeds required.

Level 3 Communications® is an international communications company, headquartered in Broomfield, CO. One of only six Tier 1 Internet providers in the world. Ranked as one of the most connected Internet Service Providers (ISPs), Level 3's expanding assets have solidified their position as one of the largest IP transit networks in North America and Europe.

SKYLINE COMMUNICATIONS (SUB-CONTRACTOR)

Skyline Communications began in 1991 as a nationwide satellite uplink and downlink installer for data applications. As more companies began using satellite for business television and video conferencing applications, Skyline expanded into the multimedia transmission business.

In 1998, Skyline diversified into the data integration business, focusing on data security issues.

Skyline's Network Consulting group works to solve business problems. We are not locked into specific products - we find the right solution for Skyline's customer's problems. Skyline's diversity allows us to tackle anything they may throw at us.

Skyline's latest projects include a 20+ mile 20MB/s microwave length for data backup, an isolated 100MB/s switched network for fire, panic, and access circuits for a large pharmaceutical company, and 10x multiplexing for a major provider of online weather, market, and agricultural data.

Skyline Communications, Inc began operations in 1991 as a national earth station integration company. To date, the company has installed over 15000 Ku and C-Band two way earth station systems, including analog and digital video uplink systems. Users include private corporations, universities, broadcast television stations and government entities. In 2006, the company began implementing a new two-way Ka band product, providing inexpensive business class internet service to areas not served by DSL or Cable, or other land based systems.

Skyline Communications, Inc.'s engineers can design and install a private digital satellite uplink system to suit your broadcast or distance learning needs. Systems include antenna sizes from 1.2M to 9.0M utilizing C or Ku band operation. MPEG-2 DVB Compliant 4:2:2 or 4:2:0 systems utilizing the latest technology can be used depending upon the customer's application.

Now schools, universities, medical facilities, and business can afford to have their own Ku-band digital video satellite uplink facility to broadcast live events such as training sessions, interviews, and corporate news.

PROPOSER EXPERIENCE

FTI has been offering high-speed two-way satellite Internet since 1994 and, as such, may well be the world's longest continuously operating two-way satellite Internet Company.

As stated earlier, FTI has been providing wireless high-speed Internet services to rural K-12 schools, cable television systems and their respective communities, the US Army Corps of Engineers and geographically isolated truck stop, rest areas and welcome centers.

GLENWOOD WIRELESS INTERNET

Foundation Telecommunications Inc. is serving an entire community with wireless Internet services. In 2008, FTI began the installation of the Glenwood Wireless Internet located in Glenwood, Indiana. Glenwood is a geographically isolated community, with a population of roughly 300 people. Like many small rural and remote towns, Glenwood previously had no other access to the Internet besides the age old dial-up.

FTI has a complete satellite earth station installed and wireless antennas atop the local water tower providing 2.4GHz coverage to the entire town. End users gain access to the wireless network via their existing WIFI enabled devices or for those who get insufficient signal due to obstructions such as trees or buildings, utilize an external wireless antenna, or customer premise equipment (CPE) with a built in amplifier to boost signal quality and assures a solid connection. FTI currently utilizes a simple method of pay-per-use on the wireless networks in Glenwood, Indiana, using our own Pay-Per-Use platform. Below is a screen-shot of the Welcome page portal for our site in Glenwood.

The screenshot shows the Glenwood high speed internet website. At the top is the logo for Glenwood high speed internet, featuring a satellite tower icon. Below the logo is a disclaimer: "This service is designed for email usage and web browsing. Downloading large files or excessive use of bandwidth will result in automatic limitation of access. If you are having trouble getting online or need assistance tech support is available 24/7! Call 1-800-833-3353. Internet access is supplied as a service to our customers. We are not responsible for your laptop security or data integrity. By choosing the options below, you agree to these conditions for access." Below the disclaimer is a row of ten service options, each with an "Order Now" button and a price:

Order Now	Order Now	Order Now	Order Now	Order Now	Order Now	Order Now	Order Now	Order Now	Order Now
Extreme Equipment Package & Installation 199.85	Self Install Extreme Equipment Package 149.95	Standard Equipment & Installation 149.95	Professional Installation 49.95	Extreme WiFi Signal Reflector 49.95	Standard Self Install Equipment Package 99.95	Glenwood 30 Days 28.95	Glenwood 1 Week 12.95	Glenwood 1 Day 4.55	Glenwood 6 months 173.70

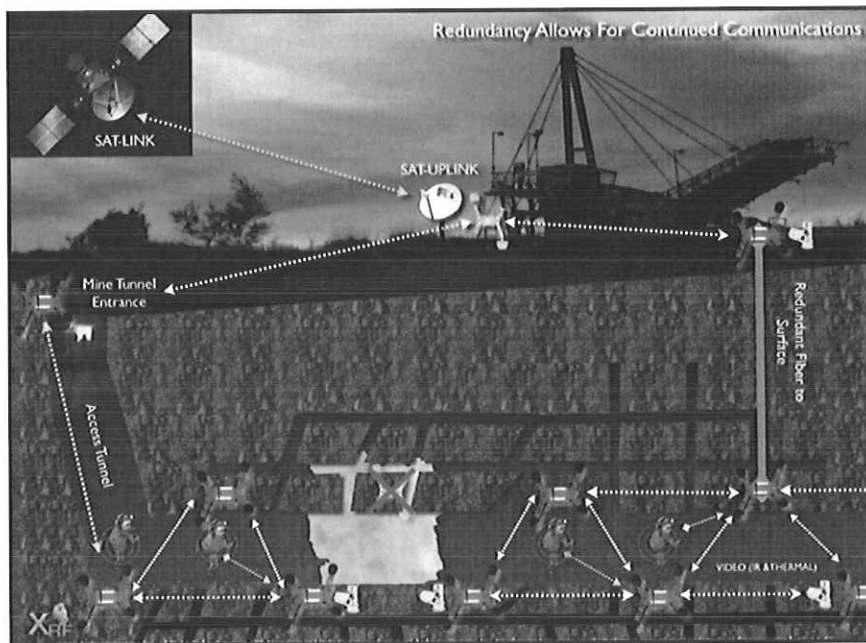
Below the service options is a login form with fields for Username and Password, and a Login button.

In the summer of 2012, the local telephone communications company finally rolled out DSL service to the residents within the community. FTI has taken advantage of this opportunity and currently utilizes

the telecom's DSL service in addition to FTI's satellite service to offer an increased user experience for our subscribers. The dual ISP framework allows FTI to provide a redundant infrastructure, reducing downtime due to weather or other unforeseeable circumstances and load balancing, proactively distributing traffic for end users and applications.

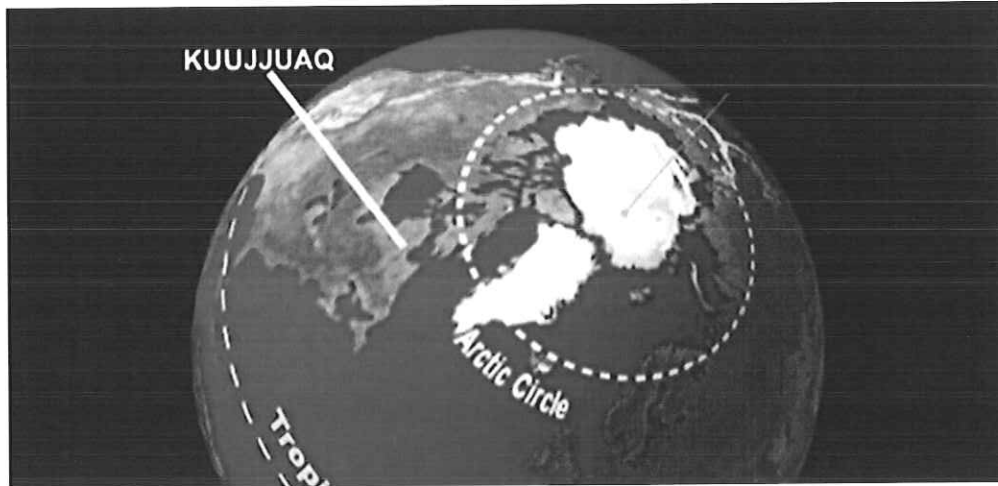
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

As a result of FTI's proven record of development of leading edge wireless technologies, the National Institute for Occupational Safety and Health (NIOSH), a division of the Center for Disease Control (CDC), had contracted with Foundation Telecommunications, Inc. to develop a totally wireless communications system for use deep underground in mine tunnel systems while maintaining connectivity to the Internet via the FTI satellite Internet service. This system was constructed in 2009 and is currently under evaluation testing at the NIOSH headquarters.



NUNAVIK COMMUNICATIONS, INC.

Nunavik Communications, Inc is a small cable system in Kuujjuaq, Quebec, Canada that uses the FTI satellite two-way data system to provide high-speed Internet to business and residential subscribers. The small, very rural, and very remote village located in the isolated town of Kuujjuaq.



With no railroad or road connections to the rest of the world, travel to Kuujuaq is limited to air or ships during a few months of the year only. For the past 4+ years, FTI Satellite Internet services have been provided to nearly 200 Internet subscribers by Nunavik Communications, Inc., despite average low temperatures of 13 degrees F and 29 degrees as the average high. The customers of this extraordinarily isolated village enjoy not only the traditional basic Internet services but also streaming video and VoIP telephone.

Date of Contract: 5/2/06 –Current through 2012

CENTURY LINK - QWEST COMMUNICATIONS

Century Link and FTI are providing high-speed Internet connectivity for small schools in rural Wyoming for the Wyoming Equality Network (WEN), a division of the Wyoming Department of Education. The Wyoming Equality Network provides firewall and educational programming delivery at Laramie, Wyoming, through VPNs established over the satellite to rural schools. The current technology utilized in the network is the result of nearly eight years of technological evolution of two-way satellite technology.

FTI was the only company that could provide high speed broadband to areas that were not economically feasible for the phone company to extend their broadband plant to service all the remote school locations. The FTI service was originally intended to be a temporary bridge technology in 1992 until the phone company could extend their plant economically. The first two-way satellite Internet system to serve the schools was installed before the use of satellites for Internet delivery was generally practiced in the industry; actually before there was a "satellite Internet industry". The first low speed TDMA system (92 kbps) was replaced with a higher speed DAMA system and, finally with a true high-speed Internet delivery system with speeds up to 11 mbps.

Twenty years later (2012) the telephone company could not still extend their plant to the remote school locations. July 2012 marked the twentieth anniversary of the original high-speed broadband agreement and the start of another five-year extension through June of 2017, with expansion of the agreement to include all Qwest/Century Link territories. Upon the end of the recent contract renewal through 2017, it

will be at least 25 years using FTI's temporary high speed broadband service until the phone company can economically extend their plant.

Dates of Contract: 2003 – 2017

US ARMY CORPS OF ENGINEERS

The US Corps of Army Engineers operates a two-way satellite data CSAT/VSAT network to provide control and monitoring of the systems that are used to maintain water flow on the Mississippi River. The USACE system also uses video cameras to provide visual real-time feedback from each pumping station in addition to remote control of all functions. The USACE network uses 3DES encryption to provide network security utilizing the high-speed two-way IP network interfaced with their existing SCADA monitoring and control data equipment.

Dates of Contract: 2003– Current through 2012

PATENT FOR PROPRIETARY HYBRID C/KU SATELLITE NETWORK

Following nearly a year of research on technologies utilized in the satellite industry, the FTI patent attorney firm filed a provisional application for United States Letters Patent Serial No. 61/595,536 on February 6, 2012. The patent is for the "Hybrid C/Ku Band Satellite Communications System."

The satellite-communications system approach utilizes C band frequencies from its network control hub to remote customer locations as a stable communications link relatively immune from weather such as thunderstorms or hurricanes. Unlike conventional Ku band VSAT networks. Traditional Ku band in-route transmissions are used from the remote site to the hub using Automatic Uplink Power Control (AUPC) for continuous uninterrupted communications in the worst of weather conditions. Typical "availability" of the C/Ku Hybrid link exceeds 99.95% with the small 2.4m satellite antenna.

The hybrid network has been hurricane tested with both hurricanes Katrina and Irene with total cumulative outages due to weather of 18 seconds compared with over 10 hours with nearby traditional Ku band VSAT installations.

The design goal was to develop a solution for C band levels of availability in times of inclement weather with Ku band levels of size and capital cost. The antenna solution is now available with a mobile auto-acquire option for the ultimate solution in reliable disaster recovery communications anytime, anywhere.

SATLINK™

FTI's Mobile Satellite Uplink Trailer, SatLink™, offers a wide variety of optional features including Two-way SCPC or TDMA Communications, High Speed Data Link, Moving Map with USGS Topographic Base linked with GPS and Satmaster Pro Software, pole mounted observation camera system and power systems of battery (up to 72 hours), propane generator, and commercial power cabling.



The addition of the generator option provides constant utilization of the SatLink™ in areas that may not have access to commercial power making the SatLink™ extremely versatile in disaster areas and rural locations.

Suggested applications for the SatLink™ include; Emergency Disaster Relief, Rural Economic Development, Private State LAN/WAN Communications, Rural Internet Communications, State Highway Department, Department of Education, State Parks and Recreation, Interstate and Intrastate Secured Communications. It also allows for a temporary communications backhaul until more permanent lines of communication can be established. The flexibility of SatLink™ allows the applications can change as quickly as the technology.

EMERGENCY COMMUNICATIONS RESPONSE VEHICLE (ECRV)

With the introduction of its new ECRV, FTI now provides services to design and produce custom mobile satellite communications systems incorporated into vehicles for disaster recovery and first responder organizations. The equipment can be connected to FTI's high-performance satellite service or to other private services. Emergency Communications Response Vehicle integrated with its high-performance satellite services is a valuable solution to support the mission-critical requirements for disaster recovery and first responder organizations. The vehicle represents a transportable 'command post' and provides converged data, voice, and video communications that can be deployed immediately.



Although most vehicles the size of an SUV or larger can be used for emergency response vehicles, FTI's current vehicle is based on a Ford E350 retrofitted medical van. FTI's ECRV can include a fully integrated high-performance satellite communications link; both wired and wireless telecommunications gear including a digital phone, GPS, laptops, and even video surveillance equipment; and multiple power interfaces for a generator or other standby power.

KEY PERSONNEL

GEORGE LIVERGOOD

George Livergood has been actively developing leading edge technologies throughout his forty-year career in telecommunications. Although a substantial portion of this work has been in the cable television field, its emphasis has been in RF technologies from 5MHz to 25GHz including all aspects of network design, engineering, and testing.

Graduating from Kansas State University in 1971 with a Bachelor of Science Degree in Electrical Engineering with a specialty in high-frequency communications, he continued his employment as an engineer for a large Midwest cable television company with regional RF network design and construction responsibilities for cable television system, motel leaky feeder, microwave network, and satellite network technologies.

He founded his own consulting company in 1979 and assisted clients in the application of leading edge technologies to problems associated with their respective industries. These projects included the design and implementation of the world's largest interactive distance learning network using two-way VSAT technologies for Oregon Ed-Net; design of some of the first interactive two-way MDS operations in Los Angeles; intercontinental Wide Area Networks for the Department of Defense using technologies including lasers, microwave, and satellites. The work with the Department of Defense eventually evolved into Top Secret and Project Clearance ONLY security clearances for "special" projects.

Today, Foundation Telecommunications, Inc. owns and operates a satellite and wireless IP based network with a service area of all of North and Central America. The network provides "specialized" "commercial" level services to Homeland Security, US Army Corps of Engineers, cable television companies, wireless Internet providers, telephone companies, colleges, and remote one-room school houses throughout the State of Wyoming.

Foundation Telecommunications, Inc. was founded on the principle of offering solutions to customer problems utilizing telecommunications technologies or "iterations" of those technologies. The proposed research is wholly consistent with the past 40 years of both his career and company development.

LAMAR BOSTIC

For the past ten years at Foundation Telecommunications, Inc., Lamar has been evaluating and developing wireless technologies for specialized customer applications. The evaluation has included every major vendor of wireless technologies in every licensed and unlicensed spectrum using conventional and un-conventional antenna technologies. It was his development program that first identified multi-path antennas as the ideal solution in a highly reflective mine environment.

His work in this field together with his extensive background in the development of IP based computer networks and the associated testing requirements for equitable evaluation of various vendor RF propagation claims makes him ideal for this project.

Present

IT Project Manager

Foundation Telecommunications, Inc.; 9379 Technology Drive; Rogers, Arkansas 72756

Responsible for administration, system design, and installation of satellite systems, for various applications, ranging from BTV systems for corporate business to Interactive Distance Learning for government and education applications.

Independent Contract Consultant and Producer, Director, Writer.

DBA – Sea Castle Media

Communication Systems Consulting; Satellite Communications Systems; Computer Networks; Internet and Intranet Presence Development; Interactive Multimedia Design and Production; Video Program Production.

Professional History

1987 - February, 1995

Director, Department of Media Services

Division of Continuing Education, University of Arkansas; Fayetteville, Arkansas 72701

Responsible for departmental administration, budgets, personnel, system design, production schedules and administration. This department was responsible for all audio and video production needs of the university, and various other state agencies, non-profit organizations, and corporate clients. The corporate client list includes: Wal-Mart, Tyson Foods, Hudson Foods, JB Hunt Trucking, Levi Strauss, Campbell Soup Company, Procter and Gamble, and others. Satellite uplinking and downlinking services were provided, including all production and administrative services for instant networks with live two-way, interactive audio and video. The department provided video and audio production services utilizing Betacam and Betacam SP video formats, digital non-linear video and audio editing systems, and SGI, PC, and Mac based computer graphics and animation.

1987 - February, 1995

Director, Department of Telecommunications

Division of Continuing Education, University of Arkansas; #2 University Center; Fayetteville, Arkansas 72701

Responsible for departmental administration, budgets, personnel, computer hardware and software selection, and computer network system design and administration. Under my administration this department established the first LAN system for the Division of Continuing Education. The department also developed and managed a fiber-optic based video and audio distribution network for the university campus and scheduled and delivered programming for The University Channel, on the city's cable television system. The department assisted in establishing a video and data delivery system for distance learning, linking 19 institutions of higher education across the state of Arkansas via T1 lines.

1981 – 1987

Assistant Director, Department of Media Services

Division of Continuing Education, University of Arkansas; Fayetteville, Arkansas 72701

Performed duties of department head in the Director's absence. Produced and directed video and other

visual media programs. Researched equipment and prepared bid specifications necessary for the purchase and installation of professional audio and video production and editing systems.

1980 – 1981

Part-time Staff Member, Department of Media Services

Division of Continuing Education, University of Arkansas; Fayetteville, Arkansas 72701

Repaired audio-visual and electronic equipment. Performed other duties as still photographer, photo lab technician, videographer, and other duties as assigned.

1975 – 1976|

Member of Creative Staff, News Program Development Unit

ABC News, Inc., 7 West 66th Street, New York, NY

A project to develop new programs for the News Division. During my tenure, I worked on 2 and 3 member teams. My teams were successful in developing two programs that made air: "The Reasoner Report." and "Good Morning America."

1974 – 1976

Associate Producer, News Film Documentary Unit

ABC News, Inc., 7 West 66th Street, New York, NY

Worked as Associate Producer on various documentary film productions when assigned to assist a freelance Producer contracted to produce a documentary film for the ABC Network.

1971 – 1976

Researcher, News Film Documentary Unit

ABC News, Inc., 7 West 66th Street, New York, NY

Worked with Producers, Directors, and Writers. Researched subject matter, discovered sources, and interviewed authorities. Co-wrote scripts with the writers of record. Managed film crews in the field. Worked on over 40 documentary films, 30-minutes to 1-hour in length.

Education

MA, Television and Film Production, 1978
Ball State University
Muncie, IN

BS, Radio and Television Production, 1971
Arkansas State University
State University, AR

MIKE DURGIN

Serving as the single responsible RF Engineer in the company for nearly ten years, Mike has had the responsibility of designing and spacing wireless transceivers as well as managing the entire satellite based IP network. The constantly changing vendor and equipment environment in which he works has necessitated that he develop a consistent testing and evaluation procedure in order to place all vendor claims within the same context and all vendor hardware performance on a "level playing field". This expertise and experience will be invaluable in the development of the Universal Signal Evaluation Package.

Dealing daily with RF amplifiers and antennas, Mike is always looking for ways to make them broadcast to a greater service area or, in the alternative, to use a smaller lower cost transmitter to serve the same area as a larger more powerful transceiver. His contribution to this project will be related to the assistance with the Universal Signal Evaluation Package and the Passive Amplifier for the antennas.

LISA TOLAN

Serving as the support staff of Foundation Telecommunications, Lisa answers all phones, responsible for central messaging, central communications, opens and distributes mail, primary shipping contact for Federal Express and UPS. She provides on-line and phone help for clients. Receives trouble reports, investigates, and advises clients of solutions. She maintains client database and maintenance records. Not only does she participate in system design process, including preparation of computerized CAD drawings, i.e. wiring diagrams for various projects (application designs for satellite uplinks and downlinks, monitoring equipment, cross-section diagrams of various degrees from site - to scale, diagrams of building on project site - to scale); she also assists the project manager in developing responses to Requests for Proposals and Quotations, and reviewing specification sheets and quotes for equipment from vendors.

WIRELESS PROPOSAL

SCOPE OF WORK

FTI has provided herein a project proposal for turnkey services engineering scope, schedule, and estimated pricing.

SCHEDULE OF INSTALLATION

It is estimated that the each project location should be completed in no more than four to six weeks following the authorization to proceed with construction and the activation of the utility power service at the satellite installation site.

ENGINEERING

FTI has completed a high-performance network design for the service area that can be constructed immediately at the lowest capital cost with the highest possible reliability and information rate for the rural and/or remote areas located within the State of West Virginia.

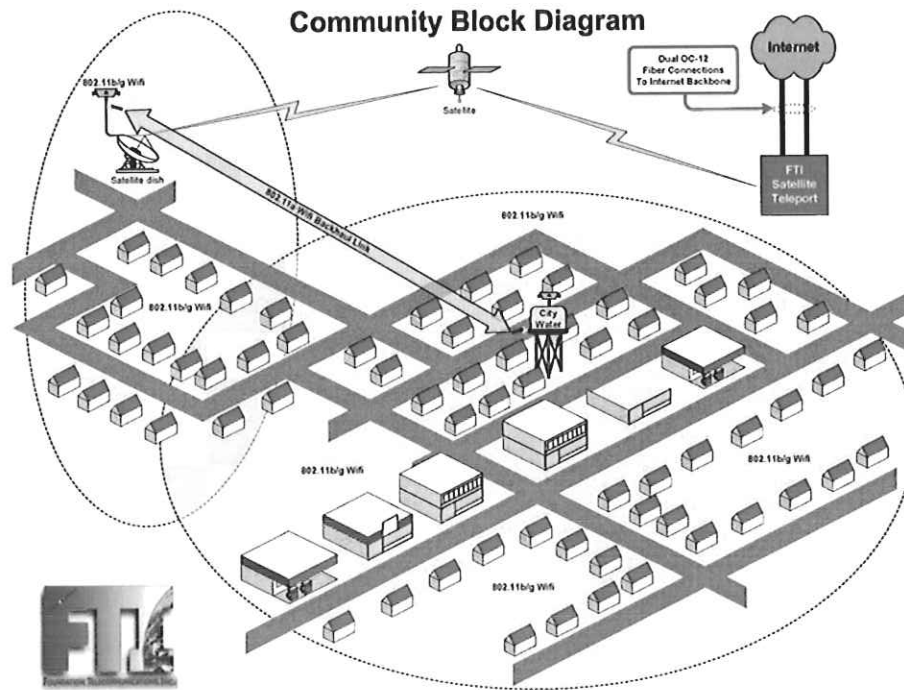
The basis for the engineering concept is to increase overall reliability through a simplistic approach to Internet access with the following components:

- ✓ Direct Access to Internet Backbone – The proposed network solution connects directly to the Internet backbone in Salt Lake City through a single router via a bi-directional reliable “two-hop microwave connection” (aka: satellite link);
- ✓ Local Satellite VSAT – A local remote controlled and status monitored commercial grade two-way satellite link installed at the water tank site complete with a basic uninterrupted power supply, satellite router and related uplink electronics;
- ✓ Single Wireless Access Point – A single four radio wireless access point installed at the most advantageous vantage point in the community;
- ✓ Stacked Stealth WiFi Antennas – Three stacked high gain 120 degree sector antennas including pre-amplifiers to enhance signals from end user computers and other equipment; and
- ✓ Customer Premise Equipment (CPE) – If required, additional CPE to be installed by FTI to ensure connectivity from each specified building/residence to the Internet.

The proven simple approach to the provision of high-speed Internet services to the Rural and Remote areas within West Virginia will ensure the highest possible reliability and ease of maintenance.

A 2.4m C/Ku hybrid satellite uplink station will be located on the concrete pad located at a non-obtrusive point in the community or a building rooftop with a non-penetrating or “non-pen” mount. The satellite uplink station will provide the backhaul of the internet to a WIFI network, engineered for

the most effective coverage for the community. This wireless network point of presence can be located upon a rooftop, water tower, or existing communications tower providing proper signal range and coverage available. This approach also allows a wireless network to be built for the community and served high-speed internet via the satellite station until a more economical terrestrial line is available to provide backhaul services. Even then, this solution can still be utilized as a failover or backup of internet services in disaster related events or terrestrial downtime.



The 2.4m antenna will also have a pair of high-wind kit supports installed to ensure uninterrupted operations at wind levels up to 120 mph.

All of the satellite Internet equipment will be housed in a heated/air-conditioned Hoffman outdoor enclosure mounted on the concrete pad behind or under the satellite antenna. FTI will install two low voltage power cables to power the tower mounted electronics from the equipment cabinet and will include redundant cabling for all wiring.

BANDWIDTH

The equipment to be installed in the Rural and Remote areas within West Virginia will allow data rates to be delivered to the grounds up to 8 Mbps downstream and up to 512 Mbps on the upstream. The community earth station will be connected directly to the Internet backbone via the FTI satellite connection. All of the features not only result in increased throughput but also eliminates potential bottlenecks as typically experienced in a rural terrestrial Internet connection.

In 1994, FTI initiated a new advanced technology hub to be designed and constructed in Salt Lake City with dual redundant OC-12 fiber optic links to the Internet. The advanced technology included the integration of a Virus and SPAM filter used by the Federal Government for its secured offices, an

automated 10 Mbps Network Manager and a HTTP digital traffic 2:1 compression server. This is addition to the standard practice of optimizing the use of packetized IP data through “null filling” and “packet stuffing” for even greater transmission efficiencies.

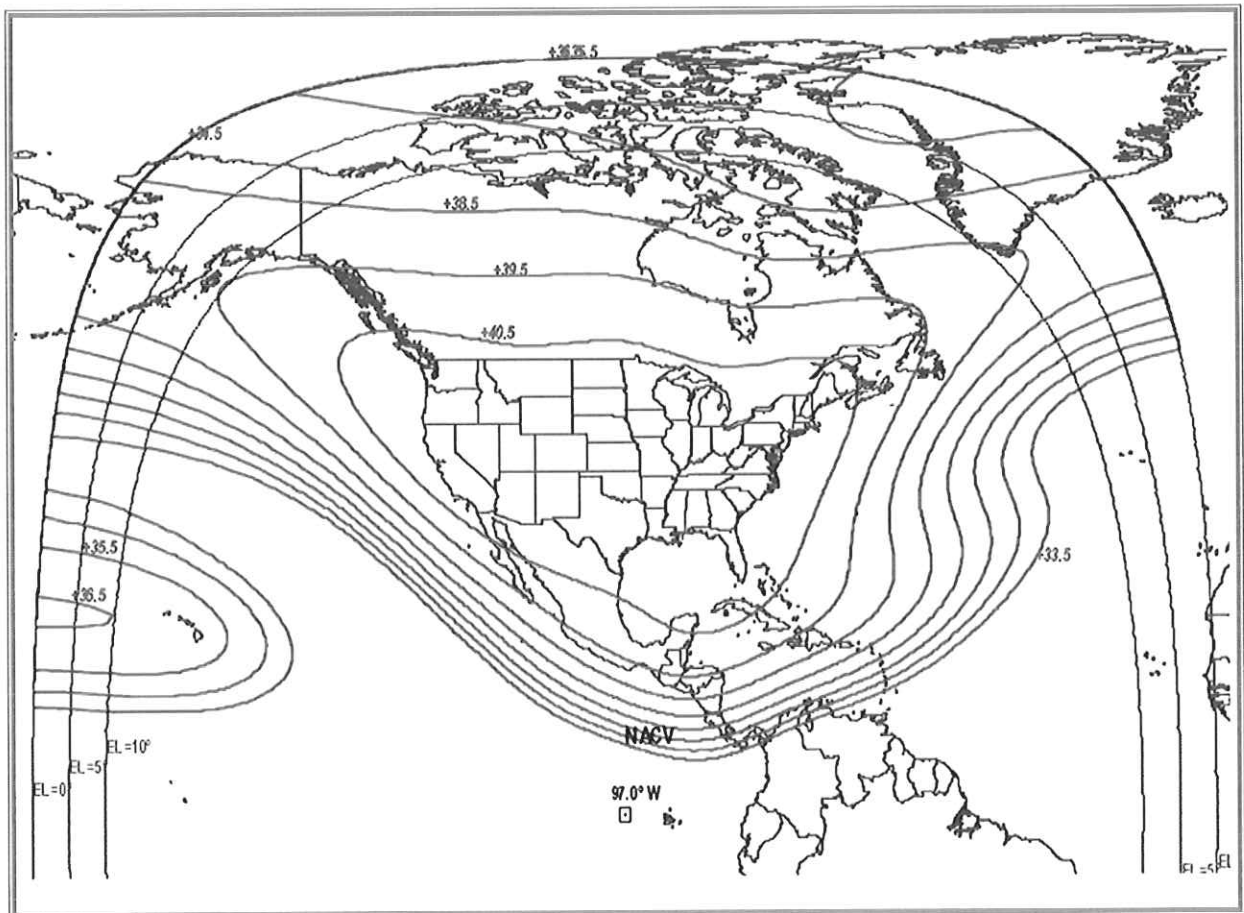
In all, this advanced Internet hub design represented the most efficient use of satellite bandwidth with the best possible controls of illegitimate traffic in the FTI satellite network.

It is also important to note that the information rate is measured AFTER the compression server has compacted and compressed the data so the actual information being downloaded is much greater than being measured.

SERVICE AVAILABILITY

In the telecommunications world, “availability” is defined as the percentage of total time that the network is available to be used. Broadband services being proposed are virtually always on and always connected. The use of the C/Ku FTI hybrid network results in a satellite network with fiber levels of availability. The minimum design criteria for this network is 99.95% with typical designed availability rates reaching 99.98% in most US locations.

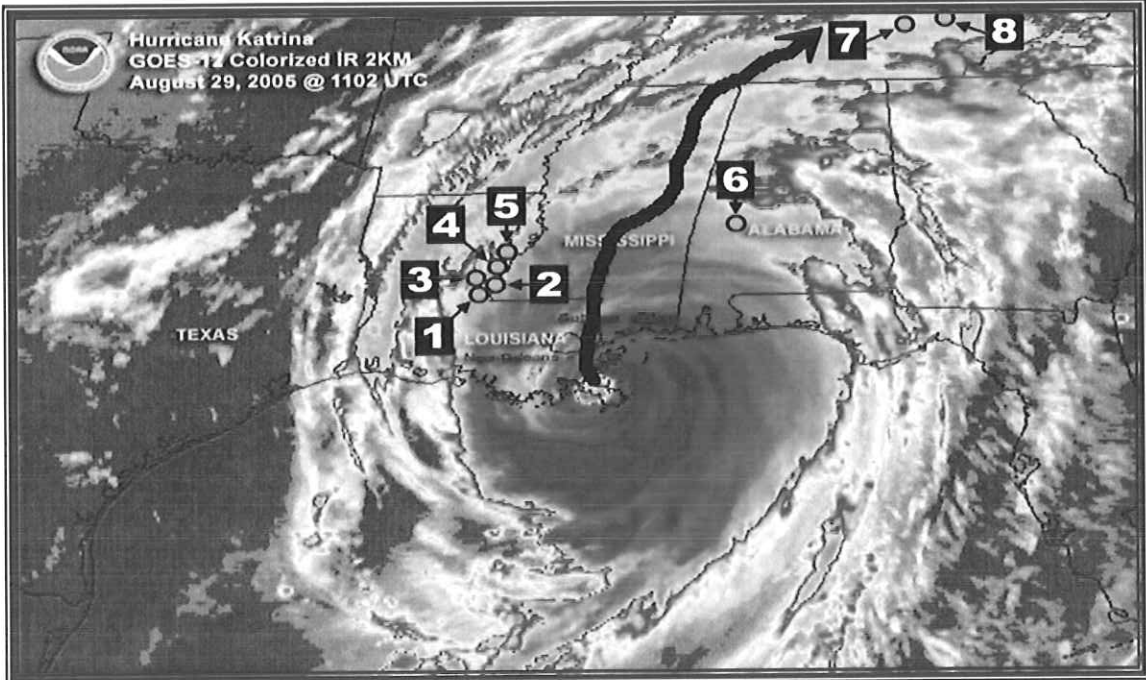
Please note that the Rural and Remote areas within West Virginia are located within the highest signal level contour of the satellite footprint below.



The FTI satellite network is unlike any other satellite Internet network in the world. Rather than design for a lowest cost residential solution for Internet delivery as HughesNet or WildBlue, the FTI network architecture is based upon maximum availability in the presence of even the most challenging of weather. Recently, the FTI solution was tested in locations that were pounded with over six inches of rain per hour and the 120 mph plus winds of Hurricane Katrina.

The computer log for the duration of the storm includes two small dish Ku band installations as well as the standard 3.1-meter FTI C/Ku hybrid satellite links. The computer log clearly shows the downtime of over ten hours from the beginning to the end of the hurricane while the FTI C/Ku installations as proposed for the Rural and Remote areas within Louisiana were down for durations of only 18 seconds. From a practical perspective, the client never knew that the FTI links were interrupted.

**WHEN COMMUNICATIONS ABSOLUTELY
POSITIVELY HAD TO BE THERE....
ONLY FTI HIGH-SPEED INTERNET WAS!**



Time Range 8/29/05 12:01 PM to 8/30/05 12:01 PM. 24 hours.

<u>Path of Hurricane "Katrina"</u> FTI Two-way High-Speed Internet Site Names	FTI Site Map #	Up [hrs]	Up [%]	Down [hrs]	Down [%]	No. of Outage Periods	Avg. Outage Period In SECONDS
USACE LA - Bayou Cocodrie [User Requested Ku/Ku Small Dish]	1	13.85	57.71	10.15	42.29	3	12,180
USACE LA - Tensas-Cocodrie (C/Ku)	2	23.99	99.98	0.01	0.02	2	18
USACE LA - Long Branch [User Requested Ku/Ku Small Dish]	3	13.56	56.50	10.44	43.50	3	12,528
USACE LA- HaHa Bayou (C/Ku)	4	23.99	99.98	0.01	0.02	2	18
USACE LA - Fool River (C/Ku)	5	23.99	99.98	0.01	0.02	2	18
Demopolis, AL – CATV (C/Ku) [Town Lost All Commercial Power]	6	17.92	74.65	6.08	25.35	7	3,126.9
USACE TN - Center Hill (C/Ku)	7	23.94	99.75	0.06	0.25	7	30.9
USACE TN - Cordell Hull (C/Ku)	8	23.99	99.95	0.01	0.04	3	18

FOUNDATION TELECOMMUNICATIONS, INC.

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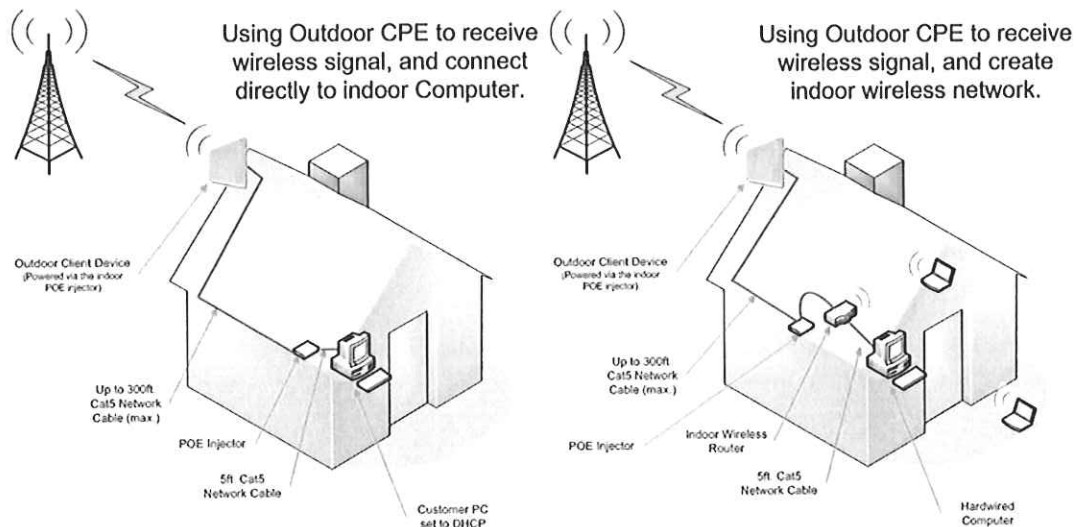
CUSTOMER PREMISE EQUIPMENT

“Customer Premise Equipment,” or CPE as it is more commonly called, is ancillary equipment other than a computer or the WiFi access point that will facilitate or improve the connections to WiFi. FTI plans to install the customer premise equipment for additional signal strength at all specified buildings that require connection to the internet.



Indoor signal propagation suffers because the exterior walls of the facilities offer significant attenuation. In addition, the transmit power of user devices operating inside the buildings may be relatively weak. In normal wireless designs, the transmit power of the access point is much higher and only affects the downlink communications path from the AP to the user device. This doesn't do much good when the user devices have much lower transmit power. In order to increase reliability and decrease the number of installed customer CPE packages, the Wireless design incorporates individual pre-amplifiers on each AP antenna (at the Water Tank Site) to increase the sensitivity of the antennas to the end user computer communications link.

The CPE can be installed either inside the facility near one of the exterior walls or on the exterior of the building, and associates via WiFi to the Satellite Earth Station site antennas. It also provides the Ethernet connection inside the facility.



MAINTENANCE AND MONITORING OF NETWORK

The network will be electronically monitored in its entirety on a 24/7 basis. The hub based monitoring programs detect any changes in the operation of the links between the hub and the remote sites and any changes in the links between the FTI satellite gateway to the nodes and access points. In most instances, changes in trends can be remedied remotely from the FTI Transponder Operations Center.

During the installation process, FTI will train one or more local personnel that may be assigned to support this network in all of the basic maintenance and trouble-shooting that may be required to support the network. FTI will provide toll free telephone support throughout term of the service contract.

In the event that technical difficulties cannot be remedied through these means, a local designated maintenance company will be dispatched to the problem site for on-site technical support. Initial conversations with potential qualified companies suggest that two or three companies may be designated and assigned specific site responsibilities near their office locations.

With regard to node configuration support, all Access Point parameters can be set remotely as well as locally. Each site shall be monitored 24/7 for all aspects relating to satellite network connectivity:

- ✓ Logging details of specific events and conditions.
- ✓ Full satellite communication parameters
- ✓ Full satellite traffic reports
- ✓ Full IP traffic reports
- ✓ Operating temperature of the satellite router.
- ✓ Full remote status reporting
- ✓ Latency
- ✓ QoS
- ✓ All monitoring and reporting is 'real-time', historical reports are available.
- ✓ Each site shall be monitored 24/7 for all aspects of wireless network connectivity:
- ✓ MultiMesh Management of all wireless devices: Access Points, Nodes, & Gateways.
- ✓ QoS and Traffic Prioritization.
- ✓ Transmit Power, Multi-Hop, and RSSI Threshold
- ✓ Monitoring real-time activity.
- ✓ All Node Statistics and Faults are recorded in log files.

All "standard business day maintenance" will be conducted remotely on a 24/7 basis as problems are detected. All on-site "standard business day maintenance" will be conducted during 8 AM to 5 PM in the local time zone.

In addition, user customer service will be available on a 24/7 basis via a toll free number for any problems associated with the use of the network or interface issues with their respective computers.

REPORTING

The FTI network monitoring computers and software may be customized to provide any requested activity reports. Accordingly, FTI will meet with representatives of the State of West Virginia to determine the requested parameters, report format and access system for the quarterly activity reports.

Some examples of data that is available for the customized quarterly activity report includes on a site-by-site basis as well as for the Rural and Remote areas within the West Virginia network:

- ✓ Downtime hours and percentage of time period being reported
- ✓ SNR in route and out route from the hub
- ✓ Operating Margins in route and out route from the hub
- ✓ Internal equipment temperatures
- ✓ Total data uploaded and downloaded
- ✓ Total users

A sample custom daily report provided to our K-12 school client is included below:

From: 10/18/06 8:52 AM TO 10/19/06 8:52 AM

Remote Name	Type-SN	Up [hrs]	Up [%]	Down [hrs]	Down [%]
WY Boxelder	II+.4045	23.6	98.35	0.4	1.65
WY Cozy Hollow	II+.26157	24	100	0	0
WY Lance Creek	II+.4543	24	100	0	0
WY Lusk	II+.4437	23.01	95.89	0.99	4.11
WY River Bridge	II+.4153	24	100	0	0
WY Shawnee	II+.6538	24	100	0	0
WY Thoman Ranch	3100.44087	24	100	0	0
WY Wapiti	II+.5024	24	100	0	0
WY White	II+.7595	24	100	0	0
WY Willow Creek II	3100.42086	24	100	0	0

Foundation Telecommunications, Inc. will utilize Solarwinds Network Management Software (NMS) to remotely monitor all nodes and points of connectivity within the Rural and Remote areas within West Virginia network. The Solarwinds NMS enables FTI to quickly detect, diagnose and resolve network performance problems and outages.

This software provides comprehensive performance, fault management, and network availability tools to ensure that your network is always running at peak performance. Via a cutting-edge, customizable web interface, Solarwinds gives a unified view into the performance of thousands of nodes and interfaces on the network, all from a single web page.

An example view of the FTI Solarwinds monitoring software:

Network Monitoring Services

MODULUS: Wireless Networks

views: Home Top 10 Events Alerts Syslog Overview Reports Event Summary Logout Help

Tuesday, May 12, 2009 2:47:14 PM

RogersNOC

Nodes with Problems
THE FOLLOWING PROBLEMS SHOULD BE INVESTIGATED

		CURRENT RESPONSE TIME	PERCENT LOGS
NIOSH AP-3	Node status is Down 'adh' is Down.	30 %	
NIOSH AP-13	Node status is Down One or more interfaces are in an Unknown state.	100 %	
NIOSH AP-9	Node status is Down One or more interfaces are in an Unknown state.	100 %	
NIOSH AP-15	Node status is Down One or more interfaces are in an Unknown state.	30 %	
NIOSH AP-1	Node status is Down One or more interfaces are in an Unknown state.	30 %	
NIOSH AP-11	Node status is Down One or more interfaces are in an Unknown state.	60 %	
NIOSH AP-6	Node status is Down One or more interfaces are in an Unknown state.	100 %	
NIOSH AP-9	Node status is Down One or more interfaces are in an Unknown state.	100 %	
NIOSH AP-4	Node status is Down One or more interfaces are in an Unknown state.	100 %	
NIOSH AP-7	Node status is Down One or more interfaces are in an Unknown state.	100 %	

Network Map

Wireless Networks Example Map
This example shows a few of methods of depicting wireless access points on a building diagram. Use the MacMaker application to create your own network diagrams and maps.

All Active Wireless Clients
ENTIRE NETWORK:
No Wireless Clients at this time

Done

Now: Mostly Cloudy and 62°F Tonight: 65°F Wed: 82°F

INITIAL TRAINING & ON-SITE TECH SUPPORT

A complete training manual will be provided at site that will include all troubleshooting information, as built drawings and all manufacturers' manuals for all equipment. All Help Desk numbers are included, including all primary and backup numbers, fax, and email addresses.

ADDITIONAL SUGGESTED EQUIPMENT

AUTOMATIC BANDWIDTH MANAGER

Bandwidth management appliances are bandwidth-shaping systems designed for voice and data networks. The flexible, scalable, and cost-effective bandwidth control products can be deployed in both corporate and service provider networks. The bandwidth management appliance is plug-and-play, installing in minutes. Bandwidth management appliances automatically shape traffic based on built-in fairness rules. This approach allows network administrators and operators to quickly and easily bring network traffic into balance without having to build and manage extensive policy libraries and with no changes to existing network infrastructure.

The bandwidth management appliance slows down the heaviest users as networks become more congested. It keeps track of all active users, including how much bandwidth each is using, how long they have been using it, and how much of the total network capacity is being used. It then applies "intelligent" rules that consider all these factors.

This device has built-in rules-based, application-level traffic-shaping technology dynamically controls traffic based on current network usage. When the network is congested, the fairness algorithm favors business class applications, including VoIP, Web browsing, chat and email, at the expense of large file downloads. This approach allows network managers and operators to maintain high levels of customer satisfaction without having to purchase additional bandwidth.

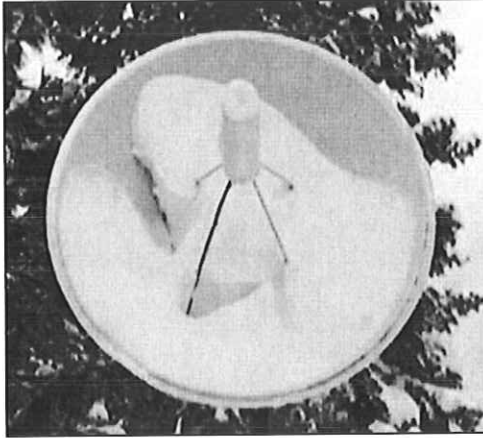
Bandwidth management appliances provide content filtering features that allow customers to block and control inappropriate material, whether outbound or inbound, including p2p overloads. Connection limits allow customers to protect their networks from malicious activities, including:

- ✓ Worms that can hijack computers and quickly overwhelm networks with traffic storms
- ✓ P2P applications that bog down traffic and render firewalls useless if left unchecked

With a single command, a system-wide connection limit can be set that applies to all hosts, external or internal to the network. If any host starts sending large numbers of messages, it will automatically be contained before causing a wide scale brownout.

ANTENNA HEATING

When snow collects in the bottom portion of the uncovered satellite dish, the moisture content of the snow reflects the signal and prevents it from focusing properly on the feed horn. When enough of the signal is scattered, the picture is lost. Also, the sheer weight of the snow often pulls the aim of the dish down below the satellite arc and picture quality is lost.



Repeated heavy snowfalls will stretch the panels of mesh and perforated dishes, reducing the accuracy of the reflective surface. Particularly heavy snowfalls will cause the panels to pop out of the channels, and can actually bend the mounts. The added weight of snow puts unnecessary stress on the actuator and motor, and can cause premature failure of either or both.

Satellite antenna De-icing systems are necessary for any antennas that are located in cold weather climates, or areas that receive large amounts of snowfall in the winter months. They keep the reflector and feed horn free of ice and snow and allow the community uninterrupted reception and transmission of satellite signals.

WARRANTIES

All equipment manufacturer warranties will be honored by FTI.

FTI provides a 2-year standard warranty on our system installation. The products are warranted against defects in workmanship or materials under normal use. We cannot warranty our products in case of misuse, acts of God, or consequential damage. Alteration of any product cancels all warranties.

Under no circumstances will we be responsible for any damage beyond the replacement cost of the defective merchandise. We reserve the right to repair or replace any products that are returned under warranty. Products distributed by us carry the warranty of the respective manufacturer only. This warranty applies to the original purchaser only and is not transferable. This limited warranty covers normal use.

The limited warranty does not cover damage incurred during shipment, caused by impact with other objects, dropping, immersion in liquid; service by anyone other than us, use not in accordance with instructions, accident, abuse, misuse, natural disasters such as flood, fire, earthquake or lightning, power surges and problems caused by use of power supplies not supplied by us. Warranty coverage will not apply in the event the serial number or brand-name has been removed, altered or defaced.

BIDDER "PREFERENCE"

Foundation Telecommunications, Inc. does claim a vendor preference as a Woman Owned Small Business.

- ✓ With gross company revenues less than \$3 million annually and less than 10 employees, Foundation Telecommunications, Inc. qualifies as a "Small Business" in all Federal and State procurements.
- ✓ The majority stock ownership of the company is held by Linda Livergood who serves as the registered Secretary for the corporation, has hire and fire capability, signs checks and takes an active role in the company.

SUMMARY

The proposed Foundation Telecommunications, Inc. wireless high-speed broadband solution is capable of providing service to any or all unserved areas in West Virginia.

The proposed Foundation Telecommunications, Inc. wireless high-speed broadband solution is capable of providing service to any or all un-served areas within the state of West Virginia. Foundation Telecommunications, Inc. will provide, install, and maintain the high-speed Internet system as described herein consistent with all terms and conditions of the Request for Proposal including two years of Internet service for the Total Turnkey price starting from \$55,000.