



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: 3/26/2010 9:23:52 PM	Easygrants ID: 7487
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: TEXAS A & M UNIVERSITY
Task: Submit Application - BTOP	Applicant Name: Charlene Miller

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A. General Application Information

Applicant Information	
Name and Federal ID for Applicant	
DUNS Number	020271826
CCR # (CAGE)	1T3H7
Legal Business Name	TEXAS A & M UNIVERSITY
Point of Contact (POC)	GREG ALLEN 9798458117 Ext. g-allen@tamu.edu
Alternate POC	GREG ALLEN 9798458117 Ext. g-allen@tamu.edu
Electronic Business POC	CHARLENE B. MILLER 9798626450 Ext. cmiller@tamu.edu
Alternate Electronic Business POC	JANET E. WINCHESTER 9798456711 Ext. ewinchester@tamu.edu

Name and Contact Information of Person to be Contacted on Matters Involving this Application:	
Prefix	
First Name	Charlene
Middle Name	
Last Name	Miller
Suffix	
Telephone Number	979-862-8450



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Fax Number	
Email	cmiller@tamu.edu
Title	Assistant Vice President

Additional Contact Information of Person to be Contacted on Matters Involving this Application:

Project Role	Name	Phone	Email
Secondary Point of Contact	Marcie , Avery	9798626451	awards@tamu.edu

Environmental Point of Contact

Prefix:	
Name: Evans, Gordon	
Suffix:	
Telephone Number: 9794586237	
Title: Environmental Manager	

Organization Classification

Type of Organization	State or State Agency
Is the organization a small business?	No
Does the organization meet the definition of a socially and economically disadvantaged small business concern?	No

Authorized Organizational Representative

AOR Name	B., CHARLENE
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Result	Applicant Authorized
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Project Title and Project Description

Project Title: Texas Pipes

Project Description: The project is a public/private partnership between Texas A&M University System members, as anchor tenants, and regional telephone companies to build fiber and upgrade transmission equipment to provide broadband access to underserved communities where System members are located. This project will also make available advanced public safety services such as NG911 and Interoperable radio services.

CCI Priority Checklist

The following items were selected from the CCI Priority Checklist:

1. This project will deploy Middle Mile broadband infrastructure to community anchor institutions.
2. The project will deploy Middle Mile broadband infrastructure and has incorporated a public-private partnership among government, non-profit and for-profits entities, and other key community stakeholders.
3. This project will deploy Middle Mile broadband infrastructure in economically distressed areas.
4. This project will deploy Middle Mile broadband infrastructure to community colleges.
5. This project will deploy Middle Mile broadband infrastructure to public safety entities.
7. This project will deploy Middle Mile broadband infrastructure and the applicant has proposed to contribute 30 percent or more in non-federal cost match.

Comprehensive Community Infrastructure Components

The following items were selected from the Comprehensive Community Infrastructure Components:

Middle Mile



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BIP Applicants

Have you also applied to BIP for funding in the sample proposed funded service area?

- No

If Yes, please provide the project title and Easygrants ID number:

Title of Joint BIP Application:

Easygrants ID:

Other Applications

Is this application being submitted in coordination with any other application being submitted during this round of funding?

- Yes

Easygrants ID	Project Title
6873	Increasing Public Safety Broadband Demand by Enabling Multi-State Next Generation 9-1-1 Capabilities

If YES, please explain any synergies and/or dependencies between this project and any other applications.

The National Emergency Number Association (NENA) submitted a round 2 BTOP proposal (6873) entitled Increasing Public Safety Broadband Demand by Enabling Multi-State Next Generation 9-1-1 Capabilities. Texas A&M University has worked closely with NENA for the past 5 years in the development of NG9-1-1 systems. The NENA proposal is intended to begin the establishment of a national Emergency Services IP network (ESInet) by connecting three states. The intent was to link three NTIA state proposals to the NENA proposal. This project would be the linkage for Texas.

Under this project, the 13 Universities' Law Enforcement Departments would have access to the ESInet. The State of Texas Department of Public Safety for the State of Texas is also a participant of this proposal and would be granted access to the ESInet backbone should this project be funded.

Individual Background Screening



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Is the Applicant exempt from the Department of Commerce requirements regarding individual background screening in connection with any award resulting from this Application?

- Yes, Applicant is exempt because it is an accredited college or university

If the answer to the above question is "No," please identify each key individual associated with the Applicant who would be required to complete Form CD-346, "Applicant for Funding Assistance," in connection with any award resulting from this Application:

Name	Title	Employer

B. Executive Summary, Project Purpose and Benefits

Essay Question

Executive Summary of the proposed project:

The primary purpose of this project is to provide middle mile access between the eleven universities and the health science center of the Texas A&M University System. While the System sites serve as the anchor tenants, also included are municipalities, other educational entities such as Texarkana College and Atlanta ISD local telephone companies such as Wintel, Peoples Telecom and Totelcom and public safety offices including the State of Texas DPS. This project will provide access to service areas that are either unserved or underserved in terms of broadband connectivity to the campus constituents. The university communities that are included are located in Corpus Christi, Kingsville, College Station/Bryan, Waco, Canyon, Prairie View, Laredo, Texarkana, Commerce, Galveston, Stephenville, San Antonio and Killeen. These campuses include four that serve predominantly Hispanic communities, one Historically Black University, and one that is immediately adjacent to Fort Hood, the largest U.S. Army post in America.

It is our intent to leverage existing infrastructure by connecting to the nearest node of the existing Lonestar Education and Research Network (LEARN). LEARN is a five-year old, State-wide network that currently supports most of the major research universities and metropolitan areas of



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the State of Texas. This project will expand LEARN’s reach to many underserved parts of the State.

We have also established public-private partnerships with five of the small, independent, rural telephone and cable companies to share in network construction that will not only provide broadband access to the anchor institutions, but will also allow these rural carriers to deliver competitive services in the surrounding communities of Kingsville, Stephenville, Canyon and Commerce.

In addition to broadband delivery to the institutions of higher education, broadband services will also be available to several K-12 institutions through the Regional Education Service Centers (ESCs) and community colleges that are located near the service areas defined for this project. These include Region 2 in Corpus Christi (48 ISDs), a part of Region 8 in Mount Pleasant (47 ISDs), a part of Region 11 in Stephenville (7 ISDs in Erath County), Region 12 in Waco (77 ISDs), and Region 16 in Amarillo (63 ISDs). Together, these ESCs connect 242 Independent School Districts within the State of Texas.

One of the partners in this project is the State of Texas Department of Public Safety (DPS). In addition, the DPS is going to make the TLETS and T-DEX databases available to the universities. The project will provide Motobridge gateways that will allow the local campus police departments to communicate with local DPS radios over the proposed network. These partnerships will utilize this broadband network to provide increased communications and safety to the college students and community residents in the targeted service areas.

Texas A&M University has been a part of the creation of the Next Generation 911 network (an all IP based emergency communications network). Through the network funded as a part of this grant, the Texas A&M Universities will be the first to be served by this new network.

The universities of the Texas A&M University System are predominately located in rural areas, within the service areas of four different incumbent telephone companies, and across 13 LATAs. The rural landscape makes metropolitan Ethernet services unavailable and/or unaffordable. This project will provide an infrastructure to insure sufficient bandwidth to the anchor institutions for several decades to come. The Texas A&M University System TTVN network has a long history of supporting community colleges, K-12, and other not-for-profit institutions that have relationships with our member institutions, and we will continue that tradition if this grant is approved.

This project is a middle mile project. The middle mile components include network connectivity between 13 anchor institutions, and through partnerships to several K-12 and community college campuses. The Telephone companies that are partners in this project will also utilize



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infrastructure installed by this network to serve middle mile requirements of other service providers.

Number of households, businesses, community anchor institutions, public safety and critical community organizations involved or passed by this project passed. According to Census Bureau statistics, there are 28,793 individuals and 6,549 households passed by this network. Within the anchor institutions, there are 72 businesses, public safety and community anchor institutions. Along with the anchor institutions we pass 12 additional schools, colleges and community centers. It is our intention to leave a fiber loop at each of these sites to allow them to be future beneficiaries of this network.

Proposed services and applications. The services that we intend to make available include Internet access, access to research and education networks, such as Internet2 and the National Lambda Rail (NLR), and the public safety databases listed above.

Approach to addressing non-discrimination and interconnection. The network established by this project will adhere to all FCC requirements for non-discrimination and interconnection as described in other parts of this proposal.

Type of broadband system proposed. This project is a combination of Dense Wave Division Multiplexing (DWDM) and Ethernet (Gigabit and 10 Gigabit) over fiber optic cable. The DWDM component involves converting existing carrier SONET systems to DWDM with the carrier making optical wavelengths capable of supporting very high speed (10 and 40 gig) Ethernet to the anchor universities. The portions of the project that are not carried over DWDM networks will run at 1 gigabit and 10 gigabit Ethernet speeds. This project takes the unique approach of merging existing public and new private networks in a collaborative manner that provides access to constituents that would otherwise be cost-prohibitive.

Qualifications of the Applicant. There are several key Texas A&M University personnel that will be involved in this project. In addition there are several independent telephone companies that are partners on this project, each of which has been responsible for building and operating successful networks for many years.

Key personnel at Texas A&M University include:

- Dr. Pierce Cantrell is the Vice President and Associate Provost for Information Technology at Texas A&M University, and he also serves as the Chief Information Officer for the Texas A&M University System. In these two capacities, he provides and maintains the technologies for 11 universities, one health science center, and seven state higher education agencies that employ 27,000 faculty and staff, and support 114,000 students. He is an associate professor of Electrical and Computer Engineering at Texas A&M University where his research is in the area of computer networking.



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- Dr. Zent has over 25 years of experience as the Executive Director of the Trans Texas Video Network (TTVN). TTVN is one of the largest educational networks in the United States with over 150 connections within the state of Texas and several international connections. TTVN currently supports, not only the needs of the Texas A&M University System members, but for several other K-12 and higher education institutions within Texas. TTVN has been recognized both the State and National Distance Education associations for its vision and leadership.

- Dr. Walt Magnussen has over 25 years of experience in building and running networks within the State of Texas and elsewhere. He has overseen the construction of several hundred miles of fiber optic cable. He began his tenure at the Texas A&M University System by teaching fiber optic placement and splicing classes to telephone companies. Dr. Magnussen will oversee all of the project construction.

Overall Infrastructure cost of the project. The total cost of this project is \$9,518,398, with over 30% coming from cash match from the partners.

Overall expected subscriber projections. Since this is a middle mile project serving the anchor tenants of the Texas A&M University System, it will serve the 114,000 students and 27,000 faculty and staff of the University System.

Number of jobs to be created. It is anticipated that this project will create 23 new jobs. One position will be that of a network engineer, whose primary responsibility for the first two years will be to oversee and manage this project. The majority of this project involves the installation of over 100 miles of fiber optic cable. The construction crews and engineers will include both placing and splicing/testing personnel. The project will require 39.81 man years of installation staff and 3.31 man years of engineering staff. Since this is a two year project we calculated 23 new jobs.

Project purpose:

The purpose of this project is to provide Internet access to the Universities and Agencies of the Texas A&M University System. These institutions, located primarily in rural, underserved areas provide access to 114,000 students and 27,000 faculty and staff.

In the process of deciding how to best meet these needs, we were able to create strategic relationships with four telephone independent telephone companies, one cable television company and one municipality. The solution involves running fiber optic cable from the anchor institutions facility to a carriers POP in a larger city that serves as a connection point to the Texas educational backbones. Under this arrangement, both service providers (independent telephone companies and cable TV companies) would have access to the facilities and resources enabled by this grant. This will make middle mile services available to both the anchor institutions that



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would use them for their own access as well as to the Service providers that would resell middle mile access to the public at large. Another part of this project involves the running of IP based emergency radio traffic, public safety database access and access to the emerging NG9-1-1 network by University Police Departments.

Under this scenario we meet the BTOP statutory mandates 2, 3, 4 and 5. They are met in the following manners:

- 2.) Many of the areas surrounding the campuses that serve as the anchor institutions would be considered underserved even if the campus does not meet the strict underserved definitions. Underserved for a campus would be a significantly higher level of access than most other types of entities would require.
- 3.) This grant serves or will serve several anchor institutions that include Universities, Community Colleges, K-12 schools, Public Libraries and Community Centers.
- 4.) The DPS will be linked with the University Police Departments in supporting public safety applications.
- 5.) Since this project is primarily the building of infrastructure (fiber optic cables), it will create at least 45 man years of labor.

Recovery Act and Other Governmental Collaboration:

- We were not able to leverage any other governmental collaborative programs on this project.

Fit with BTOP CCI Priorities:

This proposal meets six of the seven CCI Priorities.

- 1.) Middle mile to anchor institutions - this project provides access to 13 Universities and Texas A&M University Agencies that provide public service to the State of Texas.
- 2.) This project provides a private public partnership that makes middle mile network services available between Texas A&M University and four private rural telephone companies and one private rural cable television company.
- 3.) This project will deploy Middle Mile broadband infrastructure in economically distressed areas – most of the counties in which Texas A&M anchor institutions are located are classified as economically distressed areas.
- 4.) This project provides middle mile access to at least one Community College with more planned as the network is deployed.



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5.) This project connects the University Police Departments to the State of Texas Department of Public Safety for the purposes of connecting radio systems, making DPS databases available to University Police and it provides a conduit for the enabling of NG911 network through the middle mile provided as a part of this project . This meets the CCI public safety mandate.

7.) This project is a middle mile project and the non-federal match provided by the participants of this project is 31.34%

Is the applicant seeking a waiver of the Buy American provision pursuant to section x.Q of the NOFA?

- No

Is the applicant delinquent on any federal debt?

- No

If Yes, justification for delinquency:

Are you seeking a waiver of any requirement set forth in the NOFA that is not mandated by statute or applicable law?

- No

Is the applicant a current recipient of a grant or loan from RUS?

- No

C. Partners

Are you partnering with any other key institutions, organizations, or other entities for this project?

- Yes

If YES, key partners are listed below:

Project Role: Third party in-kind contributor Name: Seymour, Brad Phone: 8306935532 Email: brad@tlsn.net Address 1: 107 Meadowlakes Drive Address 2: Address 3:



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<p>City: Marble Falls State: Texas Zip Code: 78654 Organization: Texas Lone Star Network LLC Organization Type: For-profit Entity Small business: Yes Socially and economically disadvantaged small business concern: No</p>
<p>Project Role: Third party in-kind contributor Name: Kennedy, Brent Phone: 8066684420 Email: bkennedy@midplains.org Address 1: P. O. Box 300 Address 2: 411 N. Hale Street Address 3: City: Tulia State: Texas Zip Code: 79088 Organization: Mid-Plains Rural Telephone Cooperative, Inc. Organization Type: Cooperative or Mutual Small business: No Socially and economically disadvantaged small business concern: No</p>
<p>Project Role: Third party in-kind contributor Name: Humpert, Clifford Phone: 9404236201 Email: cliffhumpert@comcell.net Address 1: P. O. Box 130 Address 2: 10183 State Hwy. 25 E Address 3: City: Windthorst State: Texas Zip Code: 76389 Organization: Wintel Fiber Organization Type: For-profit Entity Small business: Yes Socially and economically disadvantaged small business concern: No</p>
<p>Project Role: Third party in-kind contributor Name: Prather, Toney Phone: 2548931000 Email: toney.prather@totelcom.net</p>



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Address 1: 6100 Hwy. 16
 Address 2: P. O. Box 290
 Address 3:
 City: DeLeon
 State: Texas
 Zip Code: 76444
 Organization: Totelcom Communications, LLC
 Organization Type: For-profit Entity
 Small business: Yes
 Socially and economically disadvantaged small business concern: Yes

Project Role: Third party in-kind contributor
 Name: Armstrong, Michael
 Phone: 3618262489
 Email: MichaelAr@cctexas.com
 Address 1: City of Corpus Christi
 Address 2: 1201 Leopard Street
 Address 3:
 City: Corpus Christi
 State: Texas
 Zip Code: 78401
 Organization: City of Corpus Christi, Texas
 Organization Type: City or Township Government
 Small business: No
 Socially and economically disadvantaged small business concern: No

Project Role: Third party in-kind contributor
 Name: Simpson, Mike
 Phone: 5124247427
 Email: tlets@txdps.state.tx.us
 Address 1: 5805 N. Lamar Blvd.
 Address 2: Box 4087
 Address 3:
 City: Austin
 State: Texas
 Zip Code: 78773
 Organization: Texas Department of Public Safety
 Organization Type: State or State Agency
 Small business: No
 Socially and economically disadvantaged small business concern: No

Project Role: Third party in-kind contributor



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Name: Allen, Robbie
Phone: 9038782433
Email: PTC102@PEOPLES.COM.NET
Address 1: P. O. Box 228
Address 2:
Address 3:
City: Quitman
State: Texas
Zip Code: 75783
Organization: Peoples Telephone Cooperative, Inc.
Organization Type: Cooperative or Mutual
Small business: No
Socially and economically disadvantaged small business concern: No

Description of the involvement of the partners listed above in the project.

State of Texas Department of Public Safety The State of Texas DPS is partnering to provide access from University Police Department radio systems to the State DPS troopers radio networks by using an IP backbone. In addition DPS will make their public safety data bases (including warrants and warrants) for the first time over a shared link. This could eliminate the need for costly satellite based communications links.

TotelCom Totelcom is a rural telephone company in the Stephenville area. This project will utilize about 20 miles of existing fiber, add about 40 new miles of fiber and then place DWDM network equipment on the fiber to establish middle mile access service both to the University and to their middle mile customers. Upon completion of the network, TotelCom will take over maintenance and operation of the network.

MidPlains Telephone MidPlains is a rural telephone company in the Canyon area. This project will utilize about 30 miles of existing fiber, add about 20 new miles of fiber and then place DWDM network equipment on the fiber to establish middle mile access service both to the University and to their middle mile customers. Upon completion of the network, MidPlains will take over maintenance and operation of the network.

WinTel Wintel is a rural telephone company that operates outside of the Temple area. They own fiber and a SONET system that currently connects Temple to Waco. This project would upgrade the SONET system to a DWDM network capable of supporting up to 32 wavelengths. Four of the wavelengths would be reserved for the middle mile use of the University. The rest



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would be reserved for use by middle mile customers of Wintel. Upon completion of the project, Wintel would take over maintenance and operations of the DWDM network.

City of Corpus Christi The city has a large investment in fiber optic cable in the Corpus Christi area. They have chosen to work with Texas A&M University to not only expand their network but to make some of their resources available to the University as well. The fiber optic network being funded out of this project would provide access to several additional anchor institutions such as public libraries, public safety facilities such as fire departments and other off campus sites for the University. The City will maintain the fiber facilities once the project is completed.

Texas Lone Star Network TLSN is a consortium of Independent Telephone companies in the State of Texas. The DWDM equipment managed by WinTel is co-owned by TLSN making them a financial partner in this project. TLSN provided half of the matching funds for the DWDM upgrade.

Peoples Telephone Company Peoples is a rural telephone company in the Commerce area. They have existing fiber between Campbell Texas and Commerce Texas. Peoples Telephone intends to add DWDM capabilities to the link between these two towns and put the Campbell POP on a DWDM network that will, once installed connect Dallas to Tyler Texas. The DWDM network will be used by both the University and Peoples for middle mile access. The University will once again reserve 4 wavelengths on the network. Once the network is installed, Peoples will maintain and operate the network.

D. Congressional Districts

Applicant Headquarters

- Texas

Project Service States

Texas

Project Service Areas

Texas - 4

Texas - 17



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Texas - 14

Texas - 27

Texas - 20

Texas - 31

Texas - 28

Texas - 13

Texas - 10

Will any portion of your proposed project serve federally recognized tribal entities?

- No

Indicate each federally recognized tribal entity your proposed project will serve.

Have you consulted with each of the federally recognized tribal entities identified above?

- No

E. Service Area Details

Is the applicant seeking a waiver for providing less than 100% coverage of a service area?

- No

Project Details

Service Area Type:

Middle Mile



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Service Area Name: Texas A&M - Riverside
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.
 No fixed or mobile broadband service provider advertises broadband transmission speeds of at least 3 mbps downstream in the proposed funded service area;

Total Square Miles in Service Area: 4
Total Population in Proposed Service Area: 4
Total Number of Households in Service Area:
Total Number of Businesses in Service Area:
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 1
Unemployment Rate in the Service Area: 3
Median Income in the Service Area: 38,733
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Texas A&M - Galveston
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 2
Total Population in Proposed Service Area: 614
Total Number of Households in Service Area:
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 4
Median Income in the Service Area: 55,955
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100



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Service Area Type: Middle Mile
Service Area Name: Texas A&M - Commerce
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list. No fixed or mobile broadband service provider advertises broadband transmission speeds of at least 3 mbps downstream in the proposed funded service area;

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 3,825
Total Number of Households in Service Area: 1,200
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 4
Median Income in the Service Area: 45,396
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Texas A&M - San Antonio
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.
--

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 1,009
Total Number of Households in Service Area: 265
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 4



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Median Income in the Service Area: 45,792
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Texas A&M - Texarkana
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.

No fixed or mobile broadband service provider advertises broadband transmission speeds of at least 3 mbps downstream in the proposed funded service area;

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 2,538
Total Number of Households in Service Area: 910
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 5
Unemployment Rate in the Service Area: 4
Median Income in the Service Area: 41,364
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Texas A&M - Central Texas
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 2,825
Total Number of Households in Service Area: 921



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Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 4
Median Income in the Service Area: 48,771
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Texas A&M - Kingsville
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 1,655
Total Number of Households in Service Area: 316
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 5
Median Income in the Service Area: 30,670
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Texas A&M - Corpus Christi
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 2,085



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Total Number of Households in Service Area: 487
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 4
Median Income in the Service Area: 42,439
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Tarleton State University
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.
 No fixed or mobile broadband service provider advertises broadband transmission speeds of at least 3 mbps downstream in the proposed funded service area;

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 2,703
Total Number of Households in Service Area: 810
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 3
Median Income in the Service Area: 40,097
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Texas A&M International
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Served



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If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 6,230
Total Number of Households in Service Area: 599
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 4
Median Income in the Service Area: 36,454
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Prairie View A&M
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 2,763
Total Number of Households in Service Area: 22
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 35
Median Income in the Service Area: 24,805
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: West Texas A&M
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved



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If Service Status is "Underserved" please select at least one applicable option from this list.
No fixed or mobile broadband service provider advertises broadband transmission speeds of at least 3 mbps downstream in the proposed funded service area;

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 1,763
Total Number of Households in Service Area: 599
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 6
Median Income in the Service Area: 32,361
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100

Service Area Type: Middle Mile
Service Area Name: Texas A&M HSC - Temple
Rural Classification of the Last Mile Service Area: Non-Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 1
Total Population in Proposed Service Area: 779
Total Number of Households in Service Area: 428
Total Number of Businesses in Service Area: 2
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 3
Median Income in the Service Area: 49,448
Estimated Percentage of Households with Access to Broadband: 100
Estimated Percentage of Households Subscribing to Broadband: 100



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F. Community Anchor Summary

Community Anchor Summary	
Schools (k-12)	0
Libraries	12
Medical and Healthcare Providers	12
Public Safety Entities	12
Community Colleges	2
Public Housing	0
Other Institutions of Higher Education	13
Other Community Support Organization	0
Other Government Facilities	0
TOTAL COMMUNITY ANCHOR INSTITUTIONS	51
Historically Black colleges and Universities	1
Tribal Colleges and Universities	0
Alaska Native Serving Institutions	0
Hispanic Serving Institutions	3
Native Hawaiian Serving Institutions	0
TOTAL MINORITY SERVING	4



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INSTITUTIONS	
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G. Project Benefits

Demographics

Jobs	
How many direct jobs-years will be created from this project?	45
How many indirect jobs will be created from this project?	5
How many jobs will be induced from this project?	2

Methodology used to estimate jobs:

The direct job years created by this project came to 45. We did not use the \$92,000 multiplier factor since we had actual labor quotes for the jobs proposed. Assuming a 2,080 per hour work year the fiber construction required the following:

Splicing and placing labor of 82,805 hours of labor for a total of 40 job years.

Engineering labor of 5,541 hours of labor for a total of 3 job years.

Network engineer hire by TAMU to manage the project for 2 job years.

The indirect jobs years were estimated at 5 based upon the amount of network equipment purchased.

The induced jobs were estimated at 2

Project Impact:

This project will meet the needs of the anchor institutions included not only for the immediate future but for the next several decades as well. It is built on a combination of bundles of dark fiber and DWDM technology, both of which are almost unlimited in capacity, making them a good long term investment.

The DWDM technology will support up to 32 wave lengths that will run at 10 billion bits per second (10 Gbps) each at this time. The equipment installed is supposed to support 40 Gbps going forward. There has not been any description of a bandwidth limit to the single mode fiber itself.

The TTVN network has a rich history of supporting other educational and not for profit entities. Today there are two Regional Service Centers that represent over a hundred school districts and other Community Colleges and School Districts already get their network access from TTVN. If



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funded, this network will expand the ability of TTVN to do other partnering arrangements with additional anchor tenants.

Additional tenants that would be approached include ESCs located in the Texarkana, Corpus Christi, Laredo, Stephenville, Commerce, Canyon (Amarillo), Killeen and others. The organization that all of the ESCs belong to is the TETN network (Texas Educational Television Network). TETN has provided a letter of support indicating their intent to utilize services on this network should it be funded.

The Texarkana College and the Atlanta ISD are both on the path of the East Texas link to Texarkana and have provided a letter of support indicating their intent to use the link to access the Educational backbone if funded. Texarkana College is served by Windstream Telephone, which has very limited access.

It is the intent of the City of Corpus Christi to offer access to their Robstown data center to the ISDs served by the Corpus Christi connection allowing them access to facilities not directly on the Gulf of Mexico.

The opportunity of the Telco partners of this project to offer services to other service providers is another key benefit of the solution selected by this project. Under our design, the carriers networks are also upgraded making middle mile opportunities a possibility going forward. Some of these potentials include:

Stephenville link. The fiber and DWDM equipment being installed in the Stephenville location connects and existing DWDM network in Goldwaith to Stephenville. This link will not only support the University but will allow connection to the existing cellular site in Stephenville. Since the inception of this project, two additional independent telephone companies north of Stephenville have shown an interest in connecting their networks to the link in Stephenville should it become a reality.

Temple link. CentroVision is a rural cable television company in Temple Texas that serves most of the rural Independent School Districts in the Temple area. CentroVision has submitted a letter of support for this project should it be funded that would provide access to all of the schools that they connect.

Vulnerable Populations:

There are no vulnerable population groups that have been found to be overrepresented in this project.

Level of Need:

In most of the service areas covered by this project there is only one service provider, none of which would be willing to offer any type of dark fiber services. Since the location of the State



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educational network access point is in either in a different LATA or at least a different Serving Area than the anchor institutions point to point optical services are not even possible. An example of this has been the Tarleton State University campus link. Last year when we had to upgrade from a DS-3 link to Dallas we tried to get the two service providers (AT&T on the Dallas side and Centrytel on the Stephenville side) to facilitate an Ethernet connection between the two sites. After 8 months of negotiating with the two companies and several multi hour conference calls with the service providers we came to the sad realization that this could not happen and we upgraded to a very expensive (about \$7,000 per month) 155mpbs OC-3 connection. Our network utilization monitoring is showing that we are rapidly approaching the point where we have to go to an OC-12. This will bring our costs up to over \$14,000 per month. Two of our other campuses (Texarkana and Commerce) are currently served by OC-3 microwave radios so there is no upgrade path on these devices. It would take a wholesale network replacement. They are also approaching full capacity on their existing links. West Texas A&M University also has a costly OC-3 network link from Amarillo to Dallas that has at the most a year of life span left. All of our campuses are rapidly approaching the need for a full gigabit (1 billion bits per second) of bandwidth. In most of our areas, the serving company is utilizing expensive SONET equipment that either cannot support the gigabit requirement or make this solution unaffordable. The stimulus act has created an environment where the carriers are more open now to public private partnerships that they had been in the past or may be in the future. This has created a window of opportunity that may or may not be available in the future. Without these partnerships and the ability to leverage existing carrier facilities our ability to meet our long term bandwidth needs will become unattainable. For example, we are building about 20 miles of fiber in Canyon because of this partnership. Without it this would be a 75 mile build. In the same light, the Laredo several hundred feet build would be over 11 miles. The 34 mile fiber build in Texarkana would be a 90 mile build and the DWDM placement in Commerce would require a 100 plus mile build.

H. Technology

Technology Type

Indicate the technology that will be used to deliver last mile services. The following items were selected:

Wireline - Fiber-optic Cable

Wireless - Terrestrial Fixed



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Other:

Technology Questions

Methodology for Area Status:

The Tarleton State University, West Texas A&M University, Commerce, TAMU Riverside and Texarkana campuses are all considered underserved. All five of these campuses are limited to an OC-3 (155 mpbs) link either for cost reasons or for technical limitations of the underlying infrastructure reasons. The number of students, faculty and staff residing on each of these campuses places the per access point well under the 768Kbps per user limitation. Even the other Texas A&M University campuses that are currently not considered underserved surely are close to this point due to increases in enrollment. It is also certain that the 786K minimum criteria will need to shift upwards as time goes by but the access available to the campuses will not without this NTIA grant.

Description of Network Openness:

TTVN (the managing entity of the network funded under this grant) agrees to adhere to the FCC's Internet Policy Statement (FCC 05-151, adopted August 5, 2005). No lawful Internet applications or content will be favored over any others. Network management policies will be displayed in a prominent location on the TTVN web page. Changes to network management policies will be sent automatically to customers via an "opt-in" push mail technology. TTVN will be implemented as an open network. On all Internet applications and content that traverse the public Internet, TTVN will use generally-accepted technical measures, such as BGP advanced routing techniques, caching, and application-neutral bandwidth allocation, to provide acceptable service levels to all customers.. Industry accepted techniques will be employed to address spam, denial of service attacks, illegal content and other harmful activities. TTVN will connect to the Internet through 2 independent service providers (one is a direct connection to a tier 1 ISP and the other is an indirect connection to a different tier 1 ISP through a peering relationship with the University of Texas at Austin, as well as peer with LEARN which will provide a path to Internet2, thus assuring that TTVN will never be a closed private network. Regional commercial entities will be encouraged to build corporate backbones using TTVN fiber provided through this grant. Telecommunications suppliers such as ISPs, cell services and POTS



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providers will be welcome to extend their services into the region using the fiber provided under this grant. TTVNs goal is to deliver technically feasible interconnection among its customers and anchor tenants, as well as internet service at reasonable rates that are very attractive to its customers and substantially reduce the costs of anchor tenants over their current connection schemes – if any. Telecommunications providers will also be encouraged to make use of TTVN fiber funded under this grant to transit our region as well as employ our network to provide alternate paths to improve the robustness of all the networks and telecommunications systems in the region.

System Design:

This proposed network is a combination of existing network infrastructure and infrastructure to be built if BTOP funding is awarded. Since this project contains both middle mile and last mile service areas, the following narrative will treat them separately. .

Existing Infrastructure - The higher education network consists of a DWDM network capable of carrying at least 32 lambdas with speeds up to 10 Gigabit bit per second on each path. The optical equipment is owned and operated by the Lonestar Education and Research Network (LEARN). The optronics runs on fiber that is under a twenty-year Irrevocable Right to Use (IRU) from major carriers, including Level3 and AT&T. The network topology is a core ring connecting Dallas, Austin, San Antonio, Houston and College Station with spans to Midland, Lubbock, Tyler, Corpus Christi, Beaumont, Galveston, Victoria, Waco, Waller, Denton and El Paso. The following link displays the current LEARN network <http://www.tx-learn.org/about/network.aspx>, which spans approximately 3,000 miles. LEARN is a 501(c)(3) education corporation in Texas that represents 36 educational entities including public and private colleges and universities, community colleges, and K-12 institutions.

In addition to LEARN, the University of Texas and Texas A&M University have contracted with Valley Telephone to bring eight optical wavelength capabilities to the economically-challenged Rio Grande Valley with connections in Corpus Christi, Harlingen, McAllen, Laredo and San Antonio. This network is a ring network that connects to the LEARN network in both Corpus Christi and San Antonio. This network is the result of a private public partnership that was forged in 2008 under a twenty- year agreement.

Services layered on top of this network include a 10 gigabit per second connection to the Level3 ISP network in Dallas, a 10 gigabit per second connection in Austin to the Qwest ISP, a 10 gigabit per second connection to the Higher Education Internet2 network, and a 10 gigabit per second connection to the National Lambda Rail (NLR) research network. In addition to these



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connections there are several private peering arrangements with smaller local ISPs and the State of Texas Agency Network (TexAN).

The routing and switching equipment on the existing network includes several large Juniper M and T series routers, Cisco 76xx and 72xx series routers, and Cisco 65xx series switches. Most of this equipment is co-located in the carriers' facilities for maximum security and reliability.

The investment in the existing network represents tens of millions of dollars. Internally, the university campuses are already equipped with fiber optic cable capable of supporting 1 gigabit and 10 gigabit per second connections to all of their on-campus constituents. Each campus has an edge Cisco 72xx edge switch connected to the State backbone. Additionally, all of the campuses have made a significant investment in wireless networks. The capabilities of this network mean little if the rural universities in the state cannot get high speed, cost effective, reliable network access. That is the intent of this BTOP proposed project.

Proposed Infrastructure - Since several of the sites are served by, or are near to, independent telephone companies, we opted to partner with several of them. The proposal consists of jointly building fiber between the local telephone company (telco) office and the anchor university in a manner that will provide some of the fibers to the university and some to the telco. Then the telco will also use their fibers to provide middle mile services to the local underserved, rural areas. The anchor university will either use dedicated fiber to connect to the closest LEARN node if it available. If not and if the carrier is currently utilizing SONET equipment over the available fiber, the SONET equipment on existing fiber will be upgraded to DWDM. The anchor institution will then receive between four and eight optical wavelengths (lambdas) for 20 years. The carrier can use the rest of the bandwidth to support any future customer requirements. Under this plan, the telco is responsible for the ongoing maintenance of both the underlying fiber and the DWDM equipment, an enormous benefit to the anchor institutions that are ill-equipped to support such infrastructure.

The fiber paths were designed with a fiber loop for every eligible entity (k-12 schools, community colleges, public libraries and community centers) along the route for future access. A number of them were contacted by the design team, and were pleased at the possibility of future broadband access.

The Corpus Christi fiber construction is a joint project between the Texas A&M University System and the City of Corpus Christi. The proposed project will provide access to the anchor university and City access to the State backbone. The Cities network will provide access to public libraries as a part of the construction funded by this grant. In addition, the City of Corpus Christi intends to run fiber optic cable where they have chosen to locate their off- site data center. This is critical for a hurricane prone location such as Corpus Christi.



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University applications that run on these networks include backup and shared data centers, shared Internet access, sharing of core applications such as library systems, access to high speed research networks, both standard definition and high definition video conferencing, and countless others. At this time we are working on a plan to provide IPTV and VoIP peering services on this network.

Is the applicant seeking a waiver pursuant to section IX.C of the NOFA so as to sell or lease portions of the award-funded broadband facilities during their life?

No

I. Project Budget

Project Budget		
	Federal Grant Request	Match
Last Mile	0	0
Middle Mile	6,550,775	2,992,285
Total	6,550,775	2,992,285

Project Budget Total: \$9,543,060

Match Percent: 31.4%

Projects Outside Recommended Funding Range:



Outside Leverage	
Applicant is providing matching funds of at least 20% towards the total eligible project costs?	Yes
Matching cost detail	<p>We were able to obtain \$2,953,609 or 33.12% of this grant in matching funds. The detail of the match is listed below.</p> <ul style="list-style-type: none"> Texas A&M University Trans Texas Video network. The total cash match from TTVN was \$1,350,346 (14.1% of total budget). The



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	<p>matching dollars came from the reserve balance from TTVN operating budgets. TTVN funds are derived from the Universities and Agencies that make up the Texas A&M University System as well as other educational customers (data affiliates). The funds were allocated to enhance services available to the TTVN customers. These funds are split across many of the TAMUS University campus fiber runs, they will provide upgraded core network routers and replacement access router for 8 of the campuses connected.</p> <ul style="list-style-type: none"> • Texas A&M University Telecommunications. The cash match provided by Telecommunications is \$128,000 (1.3% of the total budget). These funds came from Telecommunications operational funds and from cost sharing from the TAMUS Health Science Center. The HSC is going to have a future campus that is passed by this fiber so they were able to contribute. These funds will be used towards the College Station Riverside campus fiber route. • Texas A&M University Network and Information Services (NIS). The funds applied to the cash match are \$313,740 (3.2% of the total budget). These funds come from charges to departments for network services. The funds are to be used for two core Juniper routers that will provide the network edge BGP routing in Houston and College Station Texas. • State of Texas Department of Public Safety (TX-DPS). The cash match provided by the TX-DPS is \$69,008 (.7% of the total budget). These funds were obtained from the general appropriations from the State of Texas LBB. The funds are to be used to help fund IP based radio bridges for the Police Departments of the Universities that have radio systems. It will also connect to the State of Texas Emergency Services IP network (ESInet) and the national ESInet that is being proposed under another NTIA grant. • Totalcom. Totalcom is rural telephone company in the state of Texas that serves the Stephenville area. They are providing \$325,000 in cash match in the form of cash and labor that can be used to offset the cost of the fiber installation (3.4% of the total budget). Their match comes from their general operating funds. Their match is going to be used to provide a DWDM system and fiber optic cable that will
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	<p>not only provide service to the Tarleton State University campus but they will be able to support other customers in the vicinity such as existing cellular telephone customers.</p> <ul style="list-style-type: none"> • MidPlains Telephone. MidPlains is a rural telephone company that serves customers in the West Texas (Amarillo) area. Their cash match is for \$135,000 (1.4% of the total budget). The cash is to be used to enhance their fiber optic cable plant in critical areas where only 4 strands of fiber are available. It will also bring the fiber to the campus. This fiber will provide additional services to both their Cleta and Gurley POPs. Their match comes from their general operating funds. • WinTel. WinTel is a rural telephone company in the Waco Temple area. Their cash match is \$16,087 (.2% of the total budget). These funds will be used to add a DWDM multiplexor in Temple Texas that will both serve the Texas A&M University Health Science Center in Temple Texas as well as allow Wintel to establish a POP in Temple. Their match comes from their general operating funds. • Texas Lone Star Network (TLSN). TLSN is a consortium of Independent Telephone companies in the State of Texas. They also are providing \$16,087 (.2% of the total budget) in a cash match to fund the other half of the DWDM node in Temple Texas. TLSN also serves other Telephone companies that would be able to utilize the Temple POP. Their match comes from their general operating funds. • Peoples Telephone Company. Peoples is a rural independent Telephone company that serves the Commerce Texas area. Their cash match is \$172,427 (this represents 1.8% of the total budget). Their match is being used to purchase a DWDM node that would be located in Campbell Texas. This node would replace a SONET node. The Campbell node would then be able to connect to a DWDM node that would be place in the Commerce Texas area. This would allow Peoples telephone to serve the greater Commerce area. Their match comes from their general operating funds. • The City of Corpus Christi. The City has been a great partner of the Corpus Christi A&M University for several years. This project will allow TAMU-CC to be able to connect to the educational network
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	<p>in South Texas. This partnership will also allow the City to be able to connect several other anchor tenants including public libraries. The City has agreed to provide \$466,590 (4.9% of the total budget) in a cash match, some of which will provide a much needed fiber backup link to Robstown Texas backup data center. Their match was derived from City tax revenues.</p>
Unjust enrichment	<p>TTVN, the project principle, has not received any non-recurring Federal support in any of the serving areas that are a part of this grant proposal. There are no sub-recipients in this project.</p>
Disclosure of federal and/or state funding sources	<p>The applicant has not applied for any additional funds from the State of Texas or any Federal entity for any projects or activities related to this funding request.</p>
Budget reasonableness	<p>This budget was established based upon 25 plus years of experience is managing network projects while not to the size of this project, all of the individual components are still there. There are three major components to the budgets. The following will describe how each of them was addressed.</p> <p>Fiber Optic cable plant. This part of the budget represents the majority of the project costs. To determine the costs we utilized the services of outside plant engineering resources. At least one engineer drove every mile of this route. We then had the commercial firm that holds the contract for our fiber construction provide a written detailed quote that included material, labor and engineering services to be provided should the grant be awarded. This gives us very precise pricing.</p> <p>Network routers and switches. We submitted the configurations of the equipment needed to light the fiber into the Cisco configuration tool. We were then able to obtain a quote for the equipment based upon the standard State of Texas 45% discount level.</p> <p>DWDM network equipment. We asked the carriers to budget this equipment since they will ultimately maintain it and since they have the established relationship and discount levels with the transport equipment manufacturers.</p>
Demonstration of need	<p>In most of the service areas covered by this project there is only one service provider, none of which would be willing to offer any type of dark fiber services. Since the location of the State educational</p>



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network access point is in either in a different LATA or at least a different Serving Area than the anchor institutions point to point optical services are not even possible.

An example of this has been the Tarleton State University campus link. Last year when we had to upgrade from a DS-3 link to Dallas we tried to get the two service providers (AT&T on the Dallas side and Centrytel on the Stephenville side) to facilitate an Ethernet connection between the two sites. After 8 months of negotiating with the two companies and several multi hour conference calls with the service providers we came to the sad realization that this could not happen and we upgraded to a very expensive (about \$7,000 per month) 155mpbs OC-3 connection. Our network utilization monitoring is showing that we are rapidly approaching the point where we have to go to an OC-12. This will bring our costs up to over \$14,000 per month.

Two of our other campuses (Texarkana and Commerce) are currently served by OC-3 microwave radios so there is no upgrade path on these devices. It would take a wholesale network replacement. They are also approaching full capacity on their existing links.

West Texas A&M University also has a costly OC-3 network link from Amarillo to Dallas that has at the most a year of life span left. All of our campuses are rapidly approaching the need for a full gigabit (I billion bits per second) of bandwidth. In most of our areas, the serving company is utilizing expensive SONET equipment that either cannot support the gigabit requirement or make this solution unaffordable.

The stimulus act has created an environment where the carriers are more open now to public private partnerships that they had been in the past or may be in the future. This has created a window of opportunity that may or may not be available in the future. Without these partnerships and the ability to leverage existing carrier facilities our ability to meet our long term bandwidth needs will become unattainable. For example, we are building about 20 miles of fiber in Canyon because of this partnership. Without it this would be a 75 mile build. The 34 mile fiber build in Texarkana would be a 90 mile build and the DWDM placement in Commerce would require a 100



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	<p>plus mile build. We have not applied for any other grants to attempt to establish this network due the lack of funding opportunities for anchor tenants such as Texas A&M University to obtain middle mile funding. In the application of the Rate of Return and NPV calculations, it appears that they do not apply as much to public academic institutions. Since we are not allow to earn a profit and since we do not bill our customers directly, it was difficult to apply this methodology to our situation.</p>
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Funds to States/Territories

States	Amount of Federal Grant Request
Texas	6,550,775

Funds to States/Territories Total: \$6,550,775

J. Historical Financials

Matching Funds			
	2007	2008	2009
Revenue	1,084,696,979	1,137,676,193	1,130,322,176
Expenditures	1,061,500,543	1,141,570,692	1,259,396,511
Net Assets	1,926,811,493	1,863,847,972	1,866,712,037
Change in Net Assets from Prior Year	130,044,253	-60,547,942	4,280,821
Bond Rating (if applicable)			

K. Project Readiness

BTOP Organizational Readiness



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Since 1988 Texas A&M University has, under the leadership of the Trans Texas Video Network (TTVN), operated one of the largest and most successful longest lasting educational networks in the United States. TTVN not only provides services to the Universities and Agencies of the Texas A&M University System but we have worked with partners such as Blinn College, the Cities of Bryan/College Station and the University of Texas to offer leading edge services to educational entities across the State.

The TTVN network has over 250 sites across Texas with sites in Mexico, Costa Rica, Italy and Qatar. It was one of the first networks to implement Video Conferencing and Voice over IP. It is currently taking the lead nationally in implementation of advanced network services such as IPTV and emergency services communications such as NG911.

Our backbone currently consists of a 10 gigabit backbone with commodity peering with both Level3 and Qwest (through a peering with the University of Texas) at the 10 gigabit per second level. This backbone makes advanced applications available to the cities of Dallas, Houston, Austin, and San Antonio. As the land grant institution in the State of Texas, most of our campuses are located in rural communities where access to these types of services is either unaffordable or unavailable.

The TTVN administration has decades of experience in network administration including billing services, performance reporting and other important aspects of network management. The TTVN network is backed by the Telecommunications Department who has built fiber optic networks for over 25 years and has worked on collaborative network initiatives with Telephone companies both in the United States and in over 30 countries globally.

The most important aspect of attaining success in an endeavor such as this one is the ability to be able to work with partners in a collaborative fashion. For the past 12 years, TAMU has partnered with the University of Texas in purchasing and sharing high bandwidth services, such as private lines and Internet access. To this end, the two universities have received two national awards celebrating our ability to work together. We took this one step further two years ago when the two Universities worked together with Valley Telephone to fund the upgrading of their SONET network to a DWDM network to create a high speed backbone in the underserved Rio Grande Valley. Once again we showed that we could not only work together but we showed that collaboration with a Telephone Company would result in a win-win-win relationship. If funded, the middle mile services made available through this project will grant our Universities access to the high speed backbone that we have already built. In summary, proof that we can do this is that we have already done it in other areas.

Construction and Vendor Contracts



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This project will rely heavily upon existing competitive contracts for services. Services include: Switching and routing equipment. This contract was awarded through the State of Texas Department of Information Resources (DIR) and has the weight of all state purchasing behind it. Discount levels for the Cisco equipment requested will be at least at the 45% discount level. Fiber optic services will be provided through a five year contract between the University and Verizon Inc. Verizon has been providing fiber placing, splicing and engineering services for Texas A&M University for over 23 years now. The existing contract allows for a \$65 per hour labor rate for splicing and placing staff and \$75 per hour for engineering labor. This labor is either provided by Verizon personnel or it is accomplished through a sub contract with Housley, Inc., one of the largest telecommunications sub contractors in the State of Texas. Both the Verizon and the Housley engineers joined TAMU staff for all of the site visits when planning this proposal.

Some of the fiber segments in this project and all of the DWDM equipment would be installed by the independent telephone company that is going to operate the resulting network. They will all either use their internal staff or will use their existing contracts.

Customer Base

Customers to be served by this network are the faculty staff and students of the Texas A&M University System, the Network affiliates (k-20), the entries serviced by the City of Corpus Christi network and the middle mile customers of the rural telco partners.

The current members of the Texas A&M University System include 12 universities and 10 agencies. With over 250 sites, it is one of the largest networks in the United States. It directly supports 114,000 students and 27,000 faculty and staff.

Along with the direct members, the TTVN network has supported network affiliates for over 14 years now. They include community colleges such as Blinn and Delmar, K-12 entities such as Bryan ISD, College Station ISD, Education Service Center 6 and Education Service Center 5. In the design of this network we passed by several additional Community Colleges, K-12 schools, public libraries and community centers. We spoke to several of them during the planning phases and all that were contacted plan to utilize network services.

The City of Corpus Christi network includes not only other TAMU Corpus Christi sites but public safety sites (fire stations), and public libraries.

The most of the independent telephone companies involved in this project have backhaul contracts with wireless cellular service providers. The network that is being built under this proposal will support 3G and 4G wireless bandwidth access to the rural areas being served through this proposal.



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Licenses, Regulatory Approvals and Agreements

The only permits required for the construction of this project are right-of-way use permits and pole contact permits.

This project includes professional engineering services which will provide the detailed network plans once funded. These services include obtaining all required city, county and State right of way permits. Our engineers do this on a daily basis and are very experienced in this area.

In a few locations, aerial fiber is being placed on existing telephone poles which have already been identified. Since we are utilizing the services of a company that is registered as both an ILEC and a CLEC in the State of Texas we are able to use existing right of way use provisions extended to common carriers.

SPIN Number

L. Environmental Questionnaire

Project Description

The project will construct fiber optic cable upgrades along 11 routes, each terminating at a campus of The Texas A&M University System (in Prairie View TX, Stephenville TX, Laredo TX, Bryan TX, Galveston TX, Killeen TX, Corpus Christi TX, Kingsville TX, San Antonio TX, Texarkana TX, and Canyon TX). Most construction will be underground blue tube subduct (typically 48 in below ground surface) runs, containing fiber optic cable, but some will be aerial, using existing poles, or within existing infrastructure (e.g., campus steam tunnels). Section lengths range from a few city blocks up to 39 miles. Several sections will involve partnerships with governmental or private entities.

All sections are routed along existing rights-of-way, and none will require significant disturbance of protected lands (e.g., wetlands, habitats of threatened or endangered species, sites of historical interest) or of previously undisturbed properties (“greenfields”). Construction will require minimal ground disturbance. Most off-campus locales will require obtaining construction permits from the governmental entities having jurisdiction (e.g., Texas Dept. of Transportation);



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permits that include land disturbance will require assessment of potential environmental and cultural impacts.

Due to these characteristics, all planned segments should qualify for Categorical Exclusions under NEPA and NHPA.

Segment plans, route maps, and construction specifications are provided as a separate upload.

Property Changes

These linear projects require minimal land disturbance, with underground subduct installed in 1-mile splices via slot trenches or (e.g., across Galveston Channel) directional drilling.

Complete details about how each segment crosses public land (none is federally operated) is provided in a separate upload.

Various segment legs are owned by the following: Texas A&M University System, Texas Department of Transportation, Galveston Port Authority, Randall County, City of Prairie View, City of Stephenville, City of Galveston, City of Killeen, City of Corpus Christi, City of Kingsville, City of San Antonio, and City of Texarkana.

The Land Use/Zoning of these legs are, variously: University Campus, Right of Way, or Ship Channel.

Segment plans, route maps, and construction specifications are provided as a separate upload.

Buildings

No buildings are to be constructed; however, cable segments will be connected into several existing telecommunications huts or buildings. Except for aerial segments or certain on-campus segments (e.g., campus utility tunnels), all linear segments will be constructed on or within previously disturbed public rights-of-way.

Wetlands

Project segments will not be constructed on wetlands, with a few minor exceptions, mostly limited to narrow stream crossings along rights-of-ways. Significant exceptions are as follow:

- Texarkana – The longest segment that passes near wetlands is located along North-South U.S. Hwy 59, east of Wright Patman Lake and near and about latitude 33.312404°N and longitude 94.150760°W. However, this segment will be built within preexisting elevated fill material alongside the highway and above the wetlands. (On-line digital wetlands maps unavailable for this locale)



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- Galveston – A 1900 foot segment will be bored beneath the Galveston Channel under permit obtained from the Galveston Port Authority. This cable run will be approximately 55 feet below sea level (30 feet below the channel bottom).
- Tarleton (Stephenville) – This segment largely includes minor wetland or stream crossing along the highway right-of-way. The most significant wetlands crossings are (1) along U.S. Hwy 67, southeast of Proctor Lake at approximately latitude 31.955850°N and longitude 98.462150°W, and (2) along State Hwy 16, less than 1 mile north and south of latitude 31.778300°N and longitude 98.530150°W. (On-line digital wetlands maps unavailable for this locale)

Critical Habitats

Some threatened, endangered or candidate species have been observed in some project counties. However, the minimal disturbance created by construction within preexisting highway rights-of-way will not directly or indirectly affect these species or their critical habitats. The project plans, route maps, and construction specifications for each project segment are submitted as uploaded documents.

Floodplain

Portions of the Galveston and Corpus Christi segments will be located within 100-yr or 500-yr floodplains, but both segments are within previously developed urban rights-of-way. Other project segments will cross only very limited lengths of 100-yr or 500-yr floodplains where their public highway rights-of-way intersect floodplains.

Protected Land

None of the project segments is located on or within protected land. All construction will be along previously disturbed public rights-of-way.

Coastal Area

Two segments of the project are located within a coastal zone management area, as follow:

- Galveston – Texas A&M University at Galveston, the Galveston Channel and Galveston Island are located in a CZMA
- Corpus Christi – The Segment located at and near Texas A&M University-Corpus Christi is located in a CZMA.



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Brownfield

No brownfields are included in any project area.



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Uploads

The following pages contain the following uploads provided by the applicant:

Upload Name	File Name	Uploaded By	Uploaded Date
Service Offerings and Competitor Data	uploadtemplate-CCI-ServiceOfferingsCompetitorData TAMU BTOP.xlsx	Miller, Charlene	03/25/2010
Network Diagram	BTOP Network Diagrams.pdf	Miller, Charlene	03/26/2010
Build Out Timeline	Buildout Timelines.pdf	Miller, Charlene	03/25/2010
List of Community Anchors and Points of Interest	uploadtemplate-CCI-AnchorDetailandPOL.xlsx	Miller, Charlene	03/26/2010
Management Team Resumes and Organization Chart	BTOP Org chart.pdf	Miller, Charlene	03/25/2010
Management Team Resumes and Organization Chart	NTIA BTOP Management Team Vitae.pdf	Miller, Charlene	03/25/2010
Government and Key Partnerships	Texas Pipes Match Letters.pdf	Miller, Charlene	03/26/2010
Government and Key Partnerships	ENMR.Plateau Letter of Support for TAMU, 3-22-10.pdf	Miller, Charlene	03/26/2010



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Government and Key Partnerships	TAMU CTTC Letter of Support.pdf	Miller, Charlene	03/26/2010
Historical Financial Statements	Historical Financial Statements.pdf	Miller, Charlene	03/26/2010
Budget Narrative	Budget narative.xlsx	Miller, Charlene	03/26/2010
Detailed Budget	DetailedBudget Rev 3.xls	Miller, Charlene	03/26/2010
Pro-forma Forecast	ProFormaFinancialProjections Rev 3 completed by Kathy Hubbard.xls	Miller, Charlene	03/26/2010
Pro-forma Forecast	ProFormaFinancialProjections Rev 3 completed by Kathy Hubbard.xls	Miller, Charlene	03/26/2010
Subscriber Estimates	uploadtemplate-CCI-SubscriberEstimates-1.xlsx	Miller, Charlene	03/26/2010
Dashboard Metrics	uploadtemplate-CCI-KeyMetricsDashboard.docx	Miller, Charlene	03/26/2010
Service Area Data	TAMU Service Areas.xlsx	Miller, Charlene	03/25/2010
Network Maps	BTOP network maps final.pdf	Miller, Charlene	03/25/2010



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BTOP Certifications	Authentication & Certifications_1.pdf	Miller, Charlene	03/26/2010
SF-424 C and D	424 c and d.pdf	Miller, Charlene	03/26/2010
Supplemental Information	2010-03-26 TAMUS Environmental Questionnaire Table.pdf	Miller, Charlene	03/26/2010