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**U.S. Department of Commerce**  
**Broadband Technology Opportunities Program**  
**Authentication and Certifications**

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1. I certify that I am the duly Authorized Organization Representative (AOR) of the applicant organization, and that I have been authorized to submit the attached application on its behalf.
2. I certify that I have examined this application, that all of the information and responses in this application, including certifications, and forms submitted, all of which are part of this grant application, are material representations of fact and true and correct to the best of my knowledge, that the entity(ies) that is requesting grant funding pursuant to this application and any subgrantees and subcontractors will comply with the terms, conditions, purposes, and federal requirements of the grant program; that no kickbacks were paid to anyone; and that a false, fictitious, or fraudulent statements or claims on this application are grounds for denial or termination of a grant award, and/or possible punishment by a fine or imprisonment as provided in 18 U.S.C. §1001 and civil violations of the False Claims Act.
3. I certify that the entity(ies) I represent have and will comply with all applicable federal, state, and local laws, rules, regulations, ordinances, codes, orders and programmatic rules and requirements relating to the project. I acknowledge that failure to do so may result in rejection or deobligation of the grant or loan award. I acknowledge that failure to comply with all federal and program rules could result in civil or criminal prosecution by the appropriate law enforcement authorities.
4. I certify that the entity(ies) I represent has and will comply with all applicable administrative and federal statutory, regulatory, and policy requirements set forth in the Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements ("DOC Pre-Award Notification"), published in the Federal Register on February 11, 2008 (73 FR 7696), as amended; DOC Financial Assistance Standard Terms and Conditions (Mar. 8, 2009); the Department of Commerce American Recovery and Reinvestment Act Award Terms (Apr. 9, 2009); and any Special Award Terms and Conditions that are included by the Grants Officer in the award.
5. I certify that any funds awarded to the entity(ies) I represent as a result of this application will not result in any unjust enrichment of such entity(ies) or duplicate any funds such entity(ies) receive under federal universal service support programs administered by the Universal Service Administrative Corporation (USAC).
6. I certify that the entity(ies) I represent has secured access to pay the 20% of total project cost or has petitioned the Assistant Secretary of NTIA for a waiver of the matching requirement.

March 19, 2010  
Date

  
Authorized Organization Representative Signature

John Richards  
Print Name

Chief Financial Officer  
Title

To: NTIA

From: Sho-Me Technologies, LLC

Subject: Summary of Application Revisions

Date: July 23, 2010

The following memo outlines the changes between our original application for Broadband Stimulus funds and documentation submitted via the due diligence phase of our application review.

- A. General Application Information – No changes
- B. Executive Summary, Project Purpose and Benefits
  - a. The estimated job-years changed from 288 to 293. See SIR# 25.
- C. Partners – No changes
- D. Congressional Districts – No changes
- E. Service Area Details – No changes
- F. Community Anchor Summary – No changes
- G. Project Benefits
  - a. How many direct jobs-years will be created from this project changed from 66 to 102.
  - b. How many indirect jobs will be created from this project changed from 118 to 101.
  - c. How many jobs will be induced from this project changed from 104 to 114.
  - d. Methodology used to estimate jobs was changed by SIR #25.
- H. Technology – No changes
- I. Project Budget – No changes
- J. Historical Financials – No changes
- K. Project Readiness – No changes
- L. Environmental Questionnaire – No changes
- M. Uploads
  - a. Service Offerings and Competitor Data – No changes to this upload
  - b. Network Diagram – Was updated with file 4521\_SIR32\_Network Diagram\_06-14-10.pdf
  - c. Build Out Timeline – No changes
  - d. List of Community Anchors and Points of Interest – No changes
  - e. Management Team Resumes and Organization Chart – No changes
  - f. Government and Key Partnerships – The following letters of support should have been uploaded under “Supplemental Information”: Osage County School District.pdf, OSCA Combined.pdf, Edgar Springs.pdf, Eldon Schools.pdf, McCaskill’s Sho-Me Letter.pdf, and State of Missouri Letter of Recommendation.pdf.
  - g. Historical Financial Statements – This upload was updated with SIR #22. The additional more detailed and audited historical financial statements were uploaded under file name 4521\_SIR22\_SMP SMT Historical Financial Statements\_06-14-10.pdf



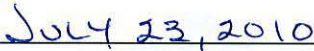
- h. Budget Narrative – The budget narrative was updated to include the following additional items: “support of reasonableness”, replace missing sections, additional detail on the in-kind fiber value and more detailed breakdown of costs. The new narrative was uploaded as 4521\_SIR20\_CCI Budget Narrative\_07-06-10.pdf.
- i. Detailed Project Budget – The detailed project budget was updated to include additional “support of reasonableness”, break out of indirect costs and rounding of figures to the nearest whole dollar. The updated detailed project budget is uploaded under the file name: 4521\_SIR54\_Detailed Budget\_07-06-10.pdf and a second upload containing labor information was uploaded under file name: 4521\_SIR54\_Detailed Labor Budget\_06-30-10.pdf.
  - 1. We also submitted a matrix and a narrative explaining the basis for the match valuation methodology. Those files were uploaded as 4521\_SIR23 and SIR65\_Project Funding\_07-02-10.pdf and 4521\_SIR65\_IRU Matrix\_06-30-10.pdf
- j. Pro Forma Forecast – We withdrew our objection to the use of terminal value to calculate net present value. The documents were updated to reflect only the specific project financial forecast as opposed to a companywide forecast. The new Pro Forma Forecast was uploaded as 4521\_SIR54\_Revised CCI Pro Forma Financial Projections\_07-01-10.pdf.
- k. Subscriber Estimates – No changes
- l. Dashboard Metrics – The following changes were made: revised 2009 Data of applicant, additional detail to the Proposed MM Network Capacity and the Jobs Created section was updated to match the numbers presented in the revised Project Benefits section. The new Dashboard Metrics was uploaded as 4521\_SIR28\_Key Metrics Dashboard\_07-02-10.pdf.
- m. Service Area Data – Our original Service Area Data was cleaned up by NTIA. We approved of the revisions NTIA suggested and uploaded the revised document as 4521\_SIR15\_Service Area Data\_06-08-10.pdf
- n. Waivers – No changes
- o. Network Maps – A more highly detailed Network Map was provided during the Due Diligence phase. This new map contained counties, surrounding states, updated POP locations, interconnect points, a typical lateral fiber build example and NOC locations. The revised map is uploaded as 4521\_SIR53\_Sho-Me Technologies Map\_07-06-10.pdf
- p. BTOP Certifications – No changes
- q. SF-424C and SF-424D – The value of the in-kind fiber was added to the construction line item in the SF-424C form to reflect the changes in the detailed project budget. A revised SF-424C was uploaded under as 4521\_SIR51\_SF424C\_07-06-10.pdf.
- r. Supplemental Information
  - i. The following CAI letters of support were added to the application during the due diligence phase:
    - 1. 4521\_SIR6\_OSCA Letter\_07-02-10.pdf
    - 2. 4521\_SIR7\_CAI Support Letters\_06-18-10.pdf
    - 3. 4521\_SIR9\_Sho-Me State Savings Letter\_07-09-10.pdf

4. 4521\_SIR10\_State Due Diligence Support Letter\_07-02-10.pdf
5. 4521\_SIR17\_Last Mile Provider Letters\_06-15-10.pdf
6. 4521\_SIR52\_Niangua Letter\_07-08-10.pdf

This memo reflects the material changes from our original Round 2 BTOP application for Broadband Stimulus.



John Richards, Chief Financial Officer



Date





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1. I certify that I am the duly Authorized Organization Representative (AOR) of the applicant organization, and that I have been authorized to submit the attached application on its behalf.
2. I certify that I have examined this application, that all of the information and responses in this application, including certifications, and forms submitted, all of which are part of this grant application, are material representations of fact and true and correct to the best of my knowledge, that the entity(ies) that is requesting grant funding pursuant to this application and any subgrantees and subcontractors will comply with the terms, conditions, purposes, and federal requirements of the grant program; that no kickbacks were paid to anyone; and that a false, fictitious, or fraudulent statements or claims on this application are grounds for denial or termination of a grant award, and/or possible punishment by a fine or imprisonment as provided in 18 U.S.C. §1001 and civil violations of the False Claims Act.
3. I certify that the entity(ies) I represent have and will comply with all applicable federal, state, and local laws, rules, regulations, ordinances, codes, orders and programmatic rules and requirements relating to the project. I acknowledge that failure to do so may result in rejection or deobligation of the grant or loan award. I acknowledge that failure to comply with all federal and program rules could result in civil or criminal prosecution by the appropriate law enforcement authorities.
4. I certify that the entity(ies) I represent has and will comply with all applicable administrative and federal statutory, regulatory, and policy requirements set forth in the Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements ("DOC Pre-Award Notification"), published in the Federal Register on February 11, 2008 (73 FR 7696), as amended; DOC Financial Assistance Standard Terms and Conditions (Mar. 8, 2009); the Department of Commerce American Recovery and Reinvestment Act Award Terms (Apr. 9, 2009); and any Special Award Terms and Conditions that are included by the Grants Officer in the award.
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6. I certify that the entity(ies) I represent has secured access to pay the 20% of total project cost or has petitioned the Assistant Secretary of NTIA for a waiver of the matching requirement.

March 19, 2010  
Date

  
Authorized Organization Representative Signature

John Richards  
Print Name

Chief Financial Officer  
Title



## **Comprehensive Community Infrastructure**

### **Budget Narrative Template**

**Applicant Name: Sho-Me Technologies, LLC**

**EasyGrants Number: 4521**

**Organization Type: Interexchange Carrier certified by the Missouri Public Service Commission**

**Proposed Period of Performance: 1 year**

**Total Project Costs: \$38,000,000**

**Total Federal Grant Request: \$26,600,000**

**Total Matching Funds (Cash): \$2,600,000**

**Total Matching Funds (In-Kind): \$8,800,000**

**Total Matching Funds (Cash + In-Kind): \$11,400,000**

**Total Matching Funds (Cash + In-Kind) as Percentage of Total Project Costs: 30%**

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**Cash Source 1** - Sho-Me Power Electric Cooperative = \$2,600,000. The cash contribution is equal to 6.84% of the total project cost.

**In-Kind Source 1** - Sho-Me Power Electric Cooperative = 880 miles of four (4) dedicated dark fibers at a value of [REDACTED] per mile for two (2) dark fibers, Sho-Me is providing all four (4) dark fiber strands at the same cost as two (2) dark fiber strands. Recently [REDACTED] purchased a similar amount (distance) of two (2) dark fibers at [REDACTED] per mile. Even more recently, they sent out a statewide RFP for another two (2) dark fibers and there were no respondents, said one. The amount of the in-kind contribution is equal to 23.26% of the total project cost. This fiber is need to connect the new builds in order to form a 1,380 mile "seamless" network, which will be used for bringing Ethernet to CCIs while making available DWDM channels for other service providers.

## **2. Land, structure, rights-of-way, appraisals, etc. - \$1,047,334**

### **- Poles @ 35' and taller**

Over 200 miles of the new construction will consist of aerial (overhead) construction. Some of this will be on high voltage transmission lines, but the majority will be installed on lower voltage distribution lines. This accounts for the installation of approximately 125 new wooden poles, at least 35' or taller.





They will be used to minimize clearance issues resulting in the sag of the cable. The poles cost an average of \$800 each installed. Therefore, the total amount allocated to wood poles is \$100,000.

125 poles x \$800 each = \$100,000.

#### **- Anchors**

When adding another cable to existing overhead lines, an additional tension is placed on the existing wood pole infrastructure. In order to keep the poles from falling over due to the increased force or tension, support anchors are required. For almost 200 miles of new aerial construction on existing lines, approximately 300 new anchors will need to be installed. The cost per anchor is an average of [REDACTED] and the lead length of the guy wires will vary from 15' to 40'. Therefore, the total amount allocated to anchors is [REDACTED]

300 anchors x [REDACTED] each = [REDACTED]

#### **- Easements**

There will be almost 300 miles of new underground cable installed. The route connects 136 communities. Most of the underground will be installed along public streets and public rights of way, but there will be places in most towns where an easement is required for an intersection, access, manhole, crossing, etc. Easements, such as these, cost on average of [REDACTED] each. Therefore, the total amount allocated to easements is [REDACTED]

150 land acquisitions/easements x [REDACTED] each = [REDACTED]

#### **- Land**

Along the route of 500 new miles of construction and 880 miles on "donated" fiber, there will be fifteen (15) regen and access telecom shelters installed. The amount of land required to install a 12x20' shelter with a generator is 50'x50'. The average cost for these properties (mainly in towns/communities) located in business districts is [REDACTED] each. Therefore, the total amount allocated to the purchase of 15 building/vacant lots is [REDACTED]

15 sites x \$30,000 each = \$450,000.

### **7. Site work - \$75,000**

#### **- Site Preparation**

The installation of the telecom shelters was previously discussed, but each lot will require site preparation for pouring a concrete pad for the buildings, installing a ground field, electrical connections, etc. The average cost per site for site preparation is [REDACTED]. Therefore, the total amount allocated to the effort of site preparation is [REDACTED]

15 sites x [REDACTED] each = [REDACTED]

### **9. Construction - \$17,427,666**





### - Cables

The aerial construction will utilize two designs of cables; All Dielectric Self Supporting (ADSS) cable and Optical Ground Wire (OPGW). The average cost for 60 strand ADSS cable is [REDACTED] per mile. Therefore, the total amount allocated to the cost of ADSS cable is [REDACTED]. The average cost for 36 strand OPGW is [REDACTED] per mile. Therefore, the total amount allocated to the cost of OPGW cable is [REDACTED]. The average cost for 72 strand buried fiber optic cable is [REDACTED] per mile. Therefore, the total amount allocated to the underground cable is [REDACTED]. Finally, the total amount allocated to all cables is [REDACTED].

$$190 \text{ miles} \times [REDACTED] \text{ each} = [REDACTED]$$

$$20 \text{ miles} \times [REDACTED] \text{ each} = [REDACTED]$$

$$290 \text{ miles} \times [REDACTED] \text{ each} = [REDACTED]$$

### - Conduits

The 290 miles of underground will require a 1.5 inch conduit system. The average cost of the innerduct is [REDACTED] per foot installed. Therefore, the total amount allocated to the underground conduit system is [REDACTED]. Along the route vaults are placed to splice fiber cables together. In towns, the ratio of vaults installed to rural areas is about 4 to 1. There will be approximately 500 vaults installed in the urban areas and 350 vaults installed in the rural areas. The cost per vault installation is an average of [REDACTED] each. Therefore, the total amount allocated to the installation of underground vaults is [REDACTED].

There is an estimated 870 vaults requiring splice enclosures to be installed. The splice enclosure will contain anywhere from 36 to 72 splices and more in cases where more than 2 cables are being spliced together in a single enclosure. The average cost per splice is about [REDACTED]. In a mile of fiber, on average, there could be around 160 individual strands to splice (accounting for urban and rural and the number of cables). The cost to splice per mile is then [REDACTED]. Therefore, the total amount allocated for the splicing of the underground cables is [REDACTED]. Finally, the total amount allocated to all innerduct, vaults and underground splicing is [REDACTED].

$$290 \text{ miles innerduct} \times [REDACTED] \text{ each} = [REDACTED]$$

$$870 \text{ vaults} \times [REDACTED] \text{ each} = [REDACTED]$$

$$290 \text{ miles splicing} \times [REDACTED] \text{ each} = [REDACTED]$$

### - Aerial

The aerial construction consists of approximately 210 miles with 190 miles consisting of ADSS and 30 miles consisting of OPGW. Pole hardware, such as deadends, tangent supports, down lead cushions, spiral vibration dampners, bolts etc. will be included in the construction of about 170 miles at an average of \$17,160 per mile. The number of poles per mile is roughly anywhere from 25 to 45 poles pending urban or rural. Therefore, the total amount allocated for the pole hardware needed for aerial installation is \$2,917,200. There will be road crossing and places where the fiber optic cable is not allowed to sag according to its design specifications per ruling span. So, a steel messenger cable is required for such spans where greater tension can be accommodated to remove sag. The fiber cable is then lashed or tied to the messenger wire. The cost to install a messenger cable is an average of [REDACTED] per mile. Therefore, the total amount allocated to the installation of the messenger wire is [REDACTED] for about 30 miles worth of messenger. Like before, the splicing requirements for aerial are



similar to that of underground. Therefore, the total amount allocated for the splicing of the aerial cables is [REDACTED]. Finally, the total amount allocated to all pole hardware, messengers, and aerial splicing is [REDACTED].

170 miles pole hardware x [REDACTED] each = [REDACTED]

30 miles of messenger x [REDACTED] each = [REDACTED]

210 miles splicing x [REDACTED] each = [REDACTED]

#### **- Pre-Fab Huts**

The telecom shelters will be made of either steel or concrete and will be 12' x 20' in dimension. Each building can weigh as much as 55,000 pounds. They will come preassembled and will include cable ladders/raceway. Each building will also be powered by AC current and a backup generator supporting AC current to an AC/DC rectifier charging a string of batteries that ultimately provide 48V DC current to telecom equipment. The generators will be 30kW gensets. The cost of each building is an average of [REDACTED]. Therefore, the total cost allocated for the telecom shelters is [REDACTED]. The gensets, usually fueled by propane gas, but can be alternatively fueled by diesel or natural gas, cost an average of [REDACTED] each. Therefore, the total cost allocated for the gensets is [REDACTED]. Finally, the total amount allocated to all shelters and generators is [REDACTED].

15 buildings x [REDACTED] each = [REDACTED]

15 generators x [REDACTED] each = [REDACTED]

#### **- NOC**

Due to the increase in heat dissipated from new electronic transport equipment like DWDM, Ethernet, servers, computers, monitors, test equipment, etc., air handler units have to be installed along with humidity control in order to keep equipment running cool and dry. The Network Operations Center, a critical component to this project in how communications circuits are provisioned, monitored and maintained, will need additional air handling support. The cost to install the required amount of air would require four (4) [REDACTED] commercial 10 ton units at [REDACTED] each. Therefore, the total cost allocated for the installation of air handling to support the load growth of this project is [REDACTED].

1 lot air/humidity support x [REDACTED] each = [REDACTED]

### **10. Equipment - \$10,650,000**

#### **- Switching**

The Ethernet switches are [REDACTED] T5C 1 Gbps (1 Gig) switches that will be installed at the CCIs. 100 have been dedicated to CCIs and the other 30 will reside back in telecom shelters for interconnection with DWDM lambdas. The combination of the two systems will create GigE rings. The cost to purchase and install the switches is an average of [REDACTED] each. Therefore, the total cost allocated for the installation of the GigE switches is [REDACTED].

130 switches x [REDACTED] each = [REDACTED]



### - Transport

The Dense Wave Division Multiplexing (DWDM) system is comprised of shelves capable of 10 Gbps (10 Gig) transport cards or channels. Each of these channels represents a lambda or wave frequency across the fiber optic strands. It is not uncommon to need more than 3 shelves at any given intersection of cable, a shelf sending/receiving light waves down each path of glass. Across the 30 county system of the "Sho-Me MO" project, 78 shelves are needed. The average cost per shelf, equipped with various tributary cards, power cards, filters, etc. is [REDACTED] for 10G. Therefore, the total cost allocated for the installation of the DWDM network is [REDACTED]

78 shelves x [REDACTED] each = [REDACTED]

### - Digital Cross Connect

The Digital Cross Connect is the [REDACTED] that is used as an ADM (add-drop mux), terminal multiplexer, multi-ring hub, and broadband cross-connect. It support applications in backbone and metro networks. The MultiService Switch supports SONET/SDH rings, while enabling a graceful migration towards dynamic mesh-based networking. The system offers a full non-blocking duplicated switch matrix, including 160G, 320G and 640G capacities that are in-service upgradeable. Applicant would install one of these in the primary NOC to serve as an aggregation point of demarcation between various systems. It will serve as a multi-ring ADM, global backbone feeder, regional/metro core hub, broadband cross-connect and Ethernet switch. Therefore, the total cost allocated for the installation of the MultiService Switch is [REDACTED]

1 MSS x [REDACTED] each = [REDACTED]

### - Billing Support and Operations Support Systems

The customer care systems utilizes an engineering toolset for performing diagnostics and system inquiries in order to properly maintain and log events which should and should not be occurring. The [REDACTED] software and servers will cost an average of [REDACTED] each. Therefore, the total cost allocated for the installation of the [REDACTED]

2 customer care systems x [REDACTED] each = [REDACTED]

### - Test Equipment

The DWDM at 10 Gbps requires testing and maintenance that is performed by specialized test equipment. The [REDACTED] 10G Analyzer modules will be purchase for existing [REDACTED] test units which Applicant currently owns. Therefore, the new modules will be used to benefit the new system. The cost of each module is between [REDACTED] and [REDACTED] each depending on the specific function of the module. Therefore, the total cost allocated to the purchase of required test modules is [REDACTED]





2 10G modules x [REDACTED] each = [REDACTED]

1 OSA module x [REDACTED] each = [REDACTED]

#### **- Servers/Computers**

For visualization into the DWDM network which allows provisioning access to a proprietary network management system, a server and supporting software is required for the [REDACTED] DWDM. Therefore, the total cost allocated to purchase the server and supporting NMS software is [REDACTED]

1 server/software x [REDACTED] each = [REDACTED]



## **Comprehensive Community Infrastructure** **Budget Narrative Template**

**Applicant Name: Sho-Me Technologies, LLC**

**EasyGrants Number: 4521**

**Organization Type: Interexchange Carrier certified by the Missouri Public Service Commission**

**Proposed Period of Performance: 1 year**

**Total Project Costs: \$38,000,000**

**Total Federal Grant Request: \$26,600,000**

**Total Matching Funds (Cash): \$2,600,000**

**Total Matching Funds (In-Kind): \$8,800,000**

**Total Matching Funds (Cash + In-Kind): \$11,400,000**

**Total Matching Funds (Cash + In-Kind) as Percentage of Total Project Costs: 30%**

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**Cash Source 1** - Sho-Me Power Electric Cooperative = \$2,600,000. The cash contribution is equal to 6.84% of the total project cost.

**In-Kind Source 1** - Sho-Me Power Electric Cooperative = \$8,800,000. In 2007 Sho-Me Power Electric Cooperative allowed Sho-Me Technologies, L.L.C. to make available two strands, over 779 miles, to the [REDACTED] as documented in the attached November 1, 2007 Agreement. The market value of these 1,558 fiber miles was [REDACTED] in cash and bandwidth with a present value in excess of [REDACTED] (see Exhibit B, pages 22 – 24 of Agreement), or approximately [REDACTED] per fiber mile. The design of this project requires 4 fiber-optic strands to be contributed by Sho-Me Power Electric Cooperative over 880 miles of existing fiber-optic routes, which equals 3,520 fiber-optic route miles (4 x 880 = 3,520). By multiplying the 3,520 fiber miles required by the [REDACTED] of actual value per the [REDACTED] a case could be made that the true market value of Sho-Me's contribution will be [REDACTED]. Potential purchasers of fiber in rural Missouri are limited, therefore for purposes of this exercise, an estimated market value of only [REDACTED] per fiber mile was used for grant application purposes, a price that is approximately [REDACTED] of what was actually received less than three years ago.

The amount of the in-kind contribution is equal to 23.16% of the total project cost. This fiber is needed to connect the new builds in order to form a 1,380 route mile "seamless" network, which will be used for bringing Ethernet to CCIs while making available DWDM channels for other service providers.



## **1. Administrative and legal expenses - \$0**

## **2. Land, structure, rights-of-way, appraisals, etc. - \$1,047,400**

### **- Poles @ 35' and taller**

Over 200 miles of the new construction will consist of aerial (overhead) construction. Some of this will be on high voltage transmission lines, but the majority will be installed on lower voltage distribution lines. This accounts for the installation of approximately 125 new wooden poles, at least 35' or taller. They will be used to minimize clearance issues resulting in the sag of the cable. The poles cost an average of \$800 each installed. Therefore, the total amount allocated to wood poles is \$100,000.

125 poles x \$800 each = \$100,000. [Typical cost for Sho-Me Power and Member Cooperatives]

### **- Anchors**

When adding another cable to existing overhead lines, an additional tension is placed on the existing wood pole infrastructure. In order to keep the poles from falling over due to the increased force or tension, support anchors are required. For almost 200 miles of new aerial construction on existing lines, approximately 300 new anchors will need to be installed. The cost per anchor is an average of [REDACTED] and the lead length of the guy wires will vary from 15' to 40'. Therefore, the total amount allocated to anchors is [REDACTED]

300 anchors x [REDACTED] each = [REDACTED] [Quote from [REDACTED] May 2010]

### **- Easements**

There will be almost 300 miles of new underground cable installed. The route connects 136 communities. Most of the underground will be installed along public streets and public rights of way, but there will be places in most towns where an easement is required for an intersection, access, manhole, crossing, etc. Easements, such as these, cost on average of [REDACTED]. Therefore, the total amount allocated to easements is [REDACTED]

150 land acquisitions/easements x [REDACTED] each = [REDACTED] [Typical cost for Sho-Me Power/Technologies]

### **- Land**

Along the route of 500 new miles of construction and 880 miles on "donated" fiber, there will be fifteen (15) regen and access telecom shelters installed. The amount of land required to install a 12x20' shelter with a generator is 50'x50'. The average cost for these properties (mainly in towns/communities) located in business districts is [REDACTED] each. Therefore, the total amount allocated to the purchase of 15 building/vacant lots is [REDACTED]

15 sites x [REDACTED] each = [REDACTED] [Typical cost for Sho-Me Power/Technologies]

## **3. Relocation expenses and payment - \$0**





#### **4. Architectural and engineering fees - \$0**

#### **5. Other architectural and engineering fees - \$0**

#### **6. Project inspection fees - \$0**

#### **7. Site work - \$75,000**

##### **- Site Preparation**

The installation of the telecom shelters was previously discussed, but each lot will require site preparation for pouring a concrete pad for the buildings, installing a ground field, electrical connections, etc. The average cost per site for site preparation is [REDACTED]. Therefore, the total amount allocated to the effort of site preparation is [REDACTED].

15 sites x [REDACTED] each = [REDACTED] [Quote from [REDACTED] September 2009]

#### **8. Demolition and removal - \$0**

#### **9. Construction - \$26,227,600**

##### **- Cables**

The aerial construction will utilize two designs of cables; All Dielectric Self Supporting (ADSS) cable and Optical Ground Wire (OPGW). The average cost for 60 strand ADSS cable is [REDACTED] per mile. Therefore, the total amount allocated to the cost of ADSS cable is [REDACTED]. The average cost for 36 strand OPGW is [REDACTED] per mile. Therefore, the total amount allocated to the cost of OPGW cable is [REDACTED]. The average cost for 72 strand buried fiber optic cable is [REDACTED] per mile. Therefore, the total amount allocated to the underground cable is [REDACTED]. Finally, the total amount allocated to all cables is [REDACTED].

190 miles x [REDACTED] each = [REDACTED] [Quote from [REDACTED] November 2009]

20 miles x [REDACTED] each = [REDACTED] [Typical cost for Sho-Me Power/Technologies]

290 miles x [REDACTED] each = [REDACTED] [Quote from [REDACTED] November 2009]

**880 miles x \$10,000 each = \$8,800,000 [In-Kind Contribution] See SIR 23**



## - Conduits

The 290 miles of underground will require a 1.5 inch conduit system. The average cost of the innerduct is [REDACTED] per foot installed. Therefore, the total amount allocated to the underground conduit system is [REDACTED]. Along the route vaults are placed to splice fiber cables together. In towns, the ratio of vaults installed to rural areas is about 4 to 1. There will be approximately 500 vaults installed in the urban areas and 350 vaults installed in the rural areas. The cost per vault installation is an average of [REDACTED] each. Therefore, the total amount allocated to the installation of underground vaults is [REDACTED]. There is an estimated 870 vaults requiring splice enclosures to be installed. The splice enclosure will contain anywhere from 36 to 72 splices and more in cases where more than 2 cables are being spliced together in a single enclosure. The average cost per splice is about [REDACTED]. In a mile of fiber, on average, there could be around 160 individual strands to splice (accounting for urban and rural and the number of cables). The cost to splice per mile is then [REDACTED]. Therefore, the total amount allocated for the splicing of the underground cables is [REDACTED]. Finally, the total amount allocated to all innerduct, vaults and underground splicing is [REDACTED].

290 miles innerduct x [REDACTED] each = [REDACTED] [Quote from [REDACTED] May 2010]

870 vaults x [REDACTED] each = [REDACTED] [Quotes from [REDACTED] May 12, 2010; Innerduct.com, November 11, 2009]

290 miles splicing x [REDACTED] each = [REDACTED] [Quote provided by [REDACTED] 2010]

## - Aerial

The aerial construction consists of approximately 210 miles with 190 miles consisting of ADSS and 30 miles consisting of OPGW. Pole hardware, such as deadends, tangent supports, down lead cushions, spiral vibration dampers, bolts etc. will be included in the construction of about 170 miles at an average of \$17,159 per mile. The number of poles per mile is roughly anywhere from 25 to 45 poles pending urban or rural. Therefore, the total amount allocated for the pole hardware needed for aerial installation is \$2,917,030. There will be road crossing and places where the fiber optic cable is not allowed to sag according to its design specifications per ruling span. So, a steel messenger cable is required for such spans where greater tension can be accommodated to remove sag. The fiber cable is then lashed or tied to the messenger wire. The cost to install a messenger cable is an average of [REDACTED] per mile. Therefore, the total amount allocated to the installation of the messenger wire is [REDACTED] for about 30 miles worth of messenger. Like before, the splicing requirements for aerial are similar to that of underground. Therefore, the total amount allocated for the splicing of the aerial cables is [REDACTED]. Finally, the total amount allocated to all pole hardware, messengers, and aerial splicing is [REDACTED].

170 miles pole hardware x \$17,159 each = \$2,917,030. [Typical cost from Sho-Me Power/Technologies]

30 miles of messenger x [REDACTED] each = [REDACTED] [Typical cost from Sho-Me stock, quotes for install from [REDACTED] May 12, 2010]

210 miles splicing x [REDACTED] each = [REDACTED] [Quote provided by [REDACTED] 2010]



### - Pre-Fab Huts

The telecom shelters will be made of either steel or concrete and will be 12' x 20' in dimension. Each building can weigh as much as 55,000 pounds. They will come preassembled and will include cable ladders/raceway. Each building will also be powered by AC current and a backup generator supporting AC current to an AC/DC rectifier charging a string of batteries that ultimately provide 48V DC current to telecom equipment. The generators will be 30kW gensets. The cost of each building is an average of [REDACTED]. Therefore, the total cost allocated for the telecom shelters is [REDACTED]. The gensets, usually fueled by propane gas, but can be alternatively fueled by diesel or natural gas, cost an average of [REDACTED] each. Therefore, the total cost allocated for the gensets is [REDACTED]. Finally, the total amount allocated to all shelters and generators is [REDACTED].

15 buildings x [REDACTED] each = [REDACTED] [Quote from [REDACTED] September 2009]

15 generators x [REDACTED] each = [REDACTED] [Quote from [REDACTED] September 2009]

### - NOC

Due to the increase in heat dissipated from new electronic transport equipment like DWDM, Ethernet, servers, computers, monitors, test equipment, etc., air handler units have to be installed along with humidity control in order to keep equipment running cool and dry. The Network Operations Center, a critical component to this project in how communications circuits are provisioned, monitored and maintained, will need additional air handling support. The cost to install the required amount of air would require four (4) [REDACTED] commercial 10 ton units at [REDACTED] each. Therefore, the total cost allocated for the installation of air handling to support the load growth of this project is [REDACTED].

1 lot air/humidity support x [REDACTED] each = [REDACTED] [Quote provided by [REDACTED]]

## 10. Equipment - \$10,650,000

### - Switching

The Ethernet switches are [REDACTED] 1 Gbps (1 Gig) switches that will be installed at the CCIs. 100 have been dedicated to CCIs and the other 30 will reside back in telecom shelters for interconnection with DWDM lambdas. The combination of the two systems will create GigE rings. The cost to purchase and install the switches is an average of [REDACTED] each. Therefore, the total cost allocated for the installation of the GigE switches is [REDACTED].

130 switches x [REDACTED] each = [REDACTED] [Quote from [REDACTED], August 2009]

### - Transport

The Dense Wave Division Multiplexing (DWDM) system is comprised of shelves capable of 10 Gbps (10 Gig) transport cards or channels. Each of these channels represents a lambda or wave frequency across the fiber optic strands. It is not uncommon to need more than 3 shelves at any given intersection of cable, a shelf sending/receiving light waves down each path of glass. Across the 30 county system of the "Sho-Me MO" project, 78 shelves are needed. The average cost per shelf, equipped with various tributary cards, power cards, filters, etc. is [REDACTED] for 10G. Therefore, the total cost allocated for the installation of the DWDM network is [REDACTED].





78 shelves x [REDACTED] each = [REDACTED] [Quote from [REDACTED], August 2009]

### - Digital Cross Connect

The Digital Cross Connect is the [REDACTED] that is used as an ADM (add-drop mux), terminal multiplexer, multi-ring hub, and broadband cross-connect. It support applications in backbone and metro networks. The MultiService Switch supports SONET/SDH rings, while enabling a graceful migration towards dynamic mesh-based networking. The system offers a full non-blocking duplicated switch matrix, including 160G, 320G and 640G capacities that are in-service upgradeable. Applicant would install one of these in the primary NOC to serve as an aggregation point of demarcation between various systems. It will serve as a multi-ring ADM, global backbone feeder, regional/metro core hub, broadband cross-connect and Ethernet switch. Therefore, the total cost allocated for the installation of the MultiService Switch is [REDACTED]

1 MSS x [REDACTED] each = [REDACTED] March 2009]

### - Billing Support and Operations Support Systems

The customer care systems utilizes an engineering toolset for performing diagnostics and system inquiries in order to properly maintain and log events which should and should not be occurring. The [REDACTED] software and servers will cost an average of [REDACTED] each. Therefore, the total cost allocated for the installation of the [REDACTED] is [REDACTED]

2 customer care systems x [REDACTED] each = [REDACTED] [Quote from [REDACTED], August 2009]

### - Test Equipment

The DWDM at 10 Gbps requires testing and maintenance that is performed by specialized test equipment. The [REDACTED] 10G Analyzer modules will be purchase for existing [REDACTED] test units which Applicant currently owns. Therefore, the new modules will be used to benefit the new system. The cost of each module is between [REDACTED] and [REDACTED] each depending on the specific function of the module. Therefore, the total cost allocated to the purchase of required test modules is [REDACTED]

2 10G modules x [REDACTED] each = [REDACTED] [Quote from [REDACTED], August 2009]

1 OSA module x [REDACTED] each = [REDACTED] [Quote from [REDACTED], August 2009]

### - Servers/Computers

For visualization into the DWDM network which allows provisioning access to a proprietary network management system, a server and supporting software is required for the [REDACTED] DWDM. Therefore, the total cost allocated to purchase the server and supporting NMS software is [REDACTED]



1 server/software x [REDACTED] each = [REDACTED] November 2009; Quote  
from [REDACTED] August 2009]

**11. Miscellaneous - \$0**

**12. Contingencies - \$0**

**13. Project (program) income - \$0**

## PROJECT PLAN

- Use the following table to list the major network build-out phases and milestones that can demonstrate that your entire project will be substantially complete by the end of Year 2 and fully complete by the end of Year 3. This is to be done at the aggregate level (combining all proposed funded service areas.)
- Indicated how the milestones listed below will demonstrate these completion objectives. The applicant should consider such project areas as: a) network design; b) securing all relevant licenses and agreements; c) site preparation; d) inside plant deployment; e) outside plan deployment; f) deployment of business & operational support systems; g) network testing; f) network operational. The applicant may provide any other milestones that it believes showcase progress.
- Project inception (Year 0) starts at the date when the applicant receives notice that the project has been approved for funding.
- In the table, provide any information (e.g., facts, analysis) to: a) demonstrate the reasonableness of these milestones; b) substantiate the ability to reach the milestones by the quarters indicated.

Time Period	Quarter	Milestones	Support for Reasonableness/Data Points
Year 1	Qtr. 1	<ul style="list-style-type: none"> <li>• Network Design</li> <li>• Transport Equipment Ordered</li> <li>• Shelters Ordered</li> <li>• Shelter Sites Selected/Construction Permits Requested</li> <li>• OSP Routes Finalized</li> <li>• 500 Miles of Fiber Ordered</li> <li>• MultiService Switch Ordered for NOC</li> <li>• Additional Air Handling Capacity Installed in NOC</li> </ul>	<ul style="list-style-type: none"> <li>• Ring Maps Complete</li> <li>• Purchase Orders Issued to Equipment Suppliers</li> <li>• Engineering Plans Sent to Shelter Manufacturer</li> <li>• Lease Agreements Signed by Landowners</li> <li>• OSP Route Maps</li> <li>• Purchase Orders Issued to Fiber Suppliers</li> <li>• Purchase Orders Issued to Equipment Supplier</li> <li>• Construction Status Provided by Project Coordinator</li> </ul>
	Qtr. 2	<ul style="list-style-type: none"> <li>• Shelter Site Construction</li> <li>• 300 Miles of Fiber Installed</li> </ul>	<ul style="list-style-type: none"> <li>• Sites Construction Status Provided by Project Coordinator</li> <li>• Fiber Construction Status Provided by Project Coordinator</li> </ul>
	Qtr. 3	<ul style="list-style-type: none"> <li>• MultiService Switch Installed in NOC</li> <li>• 15 Shelters Setup</li> <li>• In-Kind Fiber (880 mi.) Terminated and Transport Equipment Ready for Testing</li> <li>• 200 Miles of Fiber Installed (6 Crews)</li> </ul>	<ul style="list-style-type: none"> <li>• Construction Status Provided by Project Coordinator</li> <li>• Site Construction Status Provided by Project Coordinator</li> <li>• Provide OTDR Results</li> <li>• Fiber Construction Status Provided by Project Coordinator</li> </ul>
	Qtr. 4	<ul style="list-style-type: none"> <li>• 500 Miles of Fiber Spliced and Tested</li> <li>• 78 DWDM Nodes Lit</li> </ul>	<ul style="list-style-type: none"> <li>• Provide OTDR Results</li> <li>• Provide Test Result Data</li> </ul>



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**BUILD-OUT TIMELINE**


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Complete the following schedule for *each* Last Mile or Middle Mile Service Area to note the degree of build-out, based on: a) infrastructure funds awarded; b) entities passed (households, businesses, and community anchor institutions.). In addition, please complete a schedule that aggregates the build-out timeline across all of the Proposed Funded Service Area.

Service Area	MOBROADBANDNOW “Sho-Me MO” Middle Mile Network												
	YEAR 0	YEAR 1				YEAR 2				YEAR 3			
		Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4
Infrastructure Funds													
Infrastructure Funds Advanced (estimate)		\$3.3M	\$2M	\$11M	\$10.3M	\$2.6M							
Percentage of Total Funds		11.3%	6.8%	37.7%	35.3%	8.9%							
Entities Passed & %													
Households			57,301	74,497	128,776								
Percentage of Total Households			22%	29%	49%								
Businesses			14,216	13,408	39,302								
Percentage of Total Businesses			21%	20%	59%								
Community Anchor Institutions			31	28	41								
Percentage of Total Institutions			31%	28%	41%								

## **BTOP Comprehensive Community Infrastructure Detailed Budget**

Please complete the General Budget Overview and Detailed Project Costs worksheets.

**Please refer to the Comprehensive Community Infrastructure Grant Guidance for detailed instructions on the completing this upload.**

Applicants are required to provide this upload as an Excel file, and not to convert it to a PDF prior to upload. Applicants should not alter the layout of the provided templates, except to insert additional line-items as needed in the Detailed Project Costs worksheet.

## General Budget Overview

Budget	Federal Funding Request	Matching Funds (Cash)	Matching Funds (In-Kind)	Budget TOTAL	Last Mile Allocation	Middle Mile Allocation	Allocated TOTAL
Network & Access Equipment (switching, routing, transport, access)	\$8,200,000	\$2,210,020		\$10,410,020		\$10,410,020.00	\$10,410,020
Outside Plant (cables, conduits, ducts, poles, towers, repeaters, etc.)	\$17,200,000			\$17,200,000		\$17,200,000.00	\$17,200,000
Buildings and Land – (new construction, improvements, renovations, lease)	\$1,200,000	\$150,000		\$1,350,000		\$1,350,000.00	\$1,350,000
Customer Premise Equipment (modems, set-top boxes, inside wiring, etc.)				\$0			\$0
Billing and Operational Support Systems (IT systems, software, etc.)		\$99,980		\$99,980		\$99,980.00	\$99,980
Operating Equipment (vehicles, office equipment, other)				\$0			\$0
Engineering/Professional Services (engineering design, project management, consulting, etc.)				\$0			\$0
Testing (network elements, IT system elements, user devices, test generators, lab furnishings, servers/computers, etc.)		\$140,000		\$140,000		\$140,000.00	\$140,000
Site Preparation				\$0			\$0
Other			\$8,800,000	\$8,800,000		\$8,800,000.00	\$8,800,000
<b>TOTAL BROADBAND SYSTEM:</b>	<b>\$26,600,000</b>	<b>\$2,600,000</b>	<b>\$8,800,000</b>	<b>\$38,000,000</b>	<b>\$0</b>	<b>\$38,000,000</b>	<b>\$38,000,000</b>
<b>Cost Share Percentage:</b>	<b>70.00%</b>	<b>6.84%</b>	<b>23.16%</b>				



DETAIL OF PROJECT COSTS

PLEASE COMPLETE THE TABLE BELOW FOR THE DIFFERENT CATEGORIES OF EQUIPMENT THAT WILL BE REQUIRED FOR COMPLETING THE PROJECT. EACH CATEGORY SHOULD BE BROKEN DOWN TO THE APPROPRIATE LEVEL FOR IDENTIFYING UNIT COST

SERVICE AREA or COMMON NETWORK FACILITIES:		Match (Cash/In-kind)	Unit Cost	No. of Units	Total Cost	Last Mile Allocation	Middle Mile Allocation	Allocated Total	SF-424C Budget Category	Support of Reasonableness	General Budget Overview Total
NETWORK & ACCESS EQUIPMENT					\$10,410,020	\$0	\$10,410,020	\$10,410,020			
Switching	Telco Systems T5C for CCLs	Cash Match	\$7,000.00	130	\$910,000		\$910,000.00	\$910,000	10. Equipment	Quote provided by vendor	\$10,410,020
					\$0			\$0			
					\$0			\$0			
Routing					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Transport	ADVA FSP9000R7	Cash Match	\$118,590.00	16	\$1,897,440		\$1,897,440.00	\$1,897,440	10. Equipment	Quote provided by vendor	
	ADVA FSP9000R7		\$118,590.00	61	\$7,233,990		\$7,233,990.00	\$7,233,990	10. Equipment	Quote provided by vendor	
	ADVA FSP9000R7 (partial unit)	Cash Match	\$62,580.00	1	\$62,580		\$62,580.00	\$62,580	10. Equipment	Quote provided by vendor	
Access	ADVA FSP9000R7 (partial unit)		\$56,010.00	1	\$56,010		\$56,010.00	\$56,010	10. Equipment	Quote provided by vendor	
					\$0			\$0			
					\$0			\$0			
Other	Digital Cross Connect	Cash Match	\$250,000.00	1	\$250,000		\$250,000.00	\$250,000	10. Equipment	Quote provided by vendor	
					\$0			\$0			
					\$0			\$0			\$17,200,000
OUTSIDE PLANT					\$26,000,000	\$0	\$26,000,000	\$26,000,000			
Cables	Aerial ADSS 60 Strand		\$4,277	190	\$812,592		\$812,592.00	\$812,592	9. Construction	Quote provided by vendor	
	Aerial OPGW 36 Strand		\$7,920	20	\$158,400		\$158,400.00	\$158,400	9. Construction	Quote provided by vendor	
	Buried 72 Strand		\$2,746	290	\$796,224		\$796,224.00	\$796,224	9. Construction	Quote provided by vendor	
Conduits	Duct and Labor		\$29,040	290	\$8,421,600		\$8,421,600.00	\$8,421,600	9. Construction	Quote provided by vendor	
	Vaults and Labor		\$575	870	\$500,250		\$500,250.00	\$500,250	9. Construction	Have prior experience w/this brand & costs	
	Provisioning/Splicing		\$4,330	290	\$1,255,584		\$1,255,584.00	\$1,255,584	9. Construction	Have prior experience w/this brand & costs	
Ducts	Hardware and Install Labor		\$17,160	170	\$2,917,200		\$2,917,200.00	\$2,917,200	9. Construction	Have prior experience w/this brand & costs	
	Carrier Construction		\$27,720	30	\$831,600		\$831,600.00	\$831,600	9. Construction	Have prior experience w/this brand & costs	
	Splicing		\$4,330	210	\$909,216		\$909,216.00	\$909,216	9. Construction	Have prior experience w/this brand & costs	
Poles	Pole - 35 Feet		\$800	125	\$100,000		\$100,000.00	\$100,000	2. Land, structures	Have prior experience w/this brand & costs	
	Anchoring		\$500	300	\$150,000		\$150,000.00	\$150,000	2. Land, structures	Have prior experience w/this brand & costs	
	Easement/Crossings/Gates		\$2,316	150	\$347,334		\$347,334.00	\$347,334	2. Land, structures	Have prior experience w/this brand & costs	
Towers					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Repeaters					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Other	4 strands dark fiber	In-kind Match	\$10,000	880	\$8,800,000		\$8,800,000	\$8,800,000		Quote provided by vendor	
					\$0			\$0			
					\$0			\$0			
COMMON		Match	Unit Cost	No. of	Total Cost	Last Mile	Middle Mile	Allocated Total	SF-424C Budget	Support of Reasonableness	\$1,350,000
BUILDINGS					\$1,350,000	\$0	\$1,350,000	\$1,350,000			
New Construction					\$0			\$0			
					\$0			\$0			
	12x20 Hut		\$30,000	15	\$450,000		\$450,000.00	\$450,000	9. Construction	Quote provided by vendor	
Pre-Fab Huts	Site Preparation		\$5,000	15	\$75,000		\$75,000.00	\$75,000	7. Site work	Have prior experience w/this brand & costs	
	Generator/Transfer Switch		\$15,000	15	\$225,000		\$225,000.00	\$225,000	9. Construction	Quote provided by vendor	
	Land Acquisitions/50'x50'		\$30,000	15	\$450,000		\$450,000.00	\$450,000	2. Land, structures	Have prior experience w/this brand & costs	
Improvements &	NOC Air Handlers/Capacity	Cash Match	\$150,000	1	\$150,000		\$150,000.00	\$150,000	9. Construction	Quote provided by vendor	
					\$0			\$0			
					\$0			\$0			
Other					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
CUSTOMER PREMISE EQUIPMENT					\$0	\$0	\$0	\$0			\$0
Modems					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Set Top Boxes					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Inside Wiring					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Other					\$0			\$0			
					\$0			\$0			
					\$0			\$0			\$99,980
BILLING SUPPORT AND OPERATIONS SUPPORT SYSTEMS					\$99,980	\$0	\$99,980	\$99,980			
Billing Support					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Customer Care	Solarwinds Orion Unlimited	Cash Match	\$49,990	2	\$99,980		\$99,980.00	\$99,980	10. Equipment	Have prior experience w/this brand & costs	
					\$0			\$0			
					\$0			\$0			
Other Support					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
COMMON		Match	Unit Cost	No. of	Total Cost	Last Mile	Middle Mile	Allocated Total	SF-424C Budget	Support of Reasonableness	\$0
OPERATING EQUIPMENT					\$0	\$0	\$0	\$0			
Vehicles					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Office Equipment /					\$0			\$0			
					\$0			\$0			
Other					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
PROFESSIONAL SERVICES					\$0	\$0	\$0	\$0			\$0
Engineering					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Project					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Consulting					\$0			\$0			
					\$0			\$0			
Other					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
TESTING					\$140,000	\$0	\$140,000	\$140,000			\$140,000
Network	Anritsu 10G Analyzer	Cash Match	\$40,000	2	\$80,000		\$80,000.00	\$80,000	10. Equipment	Quote provided by vendor	
	Anritsu OSA Analyzer	Cash Match	\$30,000	1	\$30,000		\$30,000.00	\$30,000	10. Equipment	Quote provided by vendor	
					\$0			\$0			
IT System					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
User Devices					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Test Generators					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Lab					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Servers/Computer	ADVA NMS/Software	Cash Match	\$30,000	1	\$30,000		\$30,000.00	\$30,000	10. Equipment	Quote provided by vendor	
					\$0			\$0			
					\$0			\$0			
COMMON		Match	Unit Cost	No. of	Total Cost	Last Mile	Middle Mile	Allocated Total	SF-424C Budget	Support of Reasonableness	
OTHER UPFRONT COSTS					\$0	\$0	\$0	\$0			\$8,800,000
Site					\$0			\$0			
					\$0			\$0			
					\$0			\$0			
Other					\$0			\$0			
					\$0			\$0			
					\$0			\$0			\$38,000,000
PROJECT TOTAL:					\$38,000,000	\$0	\$38,000,000	\$38,000,000			

SF-424C Cross-check Totals	
1. Admin and Legal	\$0
2. Land, structures	\$1,047,334
3. Relocation expenses	\$0
4. Architectural and engi.	\$0
5. Other archit. and engi.	\$0
6. Inspection fees	\$0
7. Site work	\$75,000
8. Demolition/removal	\$0
9. Construction	\$17,427,666
10. Equipment	\$10,650,000
11. Misc.	\$0

Matching Contribution Cross-check Totals	
Federal Funding Request	\$26,600,000
Cash Match Contribution	\$2,600,000
In-kind Match Contribution	\$8,800,000

Approach to allocating Last Mile and Middle Mile costs:

This project is a CCI Middle Mile project connecting 30 counties in the State of Missouri with a broadband fiber optic network comprised of 500 miles new construction and 880 miles of contributed fiber for a total of 1,380 network miles. Federal funds would be used for the construction of the 500 miles of aerial and underground fiber and a portion of the electronics required to light the fiber. The contributory cash funds would be used for the remainder of transport electronics, test equipment and all the customer premise equipment or CCI equipment, such as, Ethernet switches. The in-kind fiber is fiber that will be turned over and dedicated to this project to connect rings and form complete paths with the new construction.

# Comprehensive Community Infrastructure Key Metrics Dashboard

Please refer to the CCI Grant Guidelines for instructions on completing this form.

Applicant Profile	
Applicant Name	Sho-Me Technologies, LLC
Title	MoBroadbandNow "Sho-Me MO" Middle Mile Project
Easygrants ID	4521
Headquarters	<b>Marshfield, MO</b>
Size (2009 Data) of Applicant Entity	<ul style="list-style-type: none"> <li>Current Year Revenues: \$1,477,908</li> <li>Employees: 34, All contracted through Sho-Me Power Electric Cooperative</li> </ul>
Technology Type	<b>Middle Mile – Buried and Aerial Fiber</b>
Key Partners	<b>Sho-Me Power Electric Cooperative</b>

Project Economics			
Budget Information		Project Financials	
Project Budget	<b>\$38,000,000</b>	Project Revenues (Yr 8)	<b>\$4,066,800</b>
Federal Contribution (%)	<b>70%</b>	Net Income and Margin (Yr 8)	<b>\$753,785 (18.5%)</b>
Cash Match Amount (%)	<b>6.84%</b>	EBITDA and Margin (Yr 8)	<b>\$1,457,200 (35.8%)</b>
In Kind Match Amount (%)	<b>23.16%</b>	Rate of Return (w/o BTOP Funds)	-7.27%
Middle Mile/Last Mile Budget Allocation		Rate of Return (w/ BTOP Funds)	0.84%
Middle Mile Percentage (%)	100%	Cost Efficiency	
Last Mile Percentage (%)	0%	Cost per Mile (MM)	<b>\$58,000</b>
Rural Last Mile Percentage	0%	Cost per Household (LM)	<b>n/a</b>

Market Territory	
Geographic Area(s)	<b>South Central Missouri covering 30 Counties within ½ mile of 136 Communities</b>
Middle Mile Network Composition	
Total Proposed Network Miles (MM only)	<ul style="list-style-type: none"> <li>Total Miles: 1380</li> <li>Backbone Miles: 1380</li> <li>Lateral Miles: 0</li> </ul>
New Construction Network Miles (MM only)	<ul style="list-style-type: none"> <li>Total Miles: 500</li> <li>Backbone Miles: 500</li> <li>Lateral Miles: 0</li> </ul>
Existing Applicant Network Miles Utilized (MM only)	<ul style="list-style-type: none"> <li>Total Miles: 880</li> <li>Backbone Miles: 880</li> <li>Lateral Miles: 0</li> </ul>
Leased Network Miles Utilized (MM only)	<ul style="list-style-type: none"> <li>Total Miles: 0</li> <li>Backbone Miles: 0</li> <li>Lateral Miles: 0</li> </ul>



## Comprehensive Community Infrastructure Key Metrics Dashboard

Underserved/Unserved	<ul style="list-style-type: none"> <li>Percentage of Backbone Miles in Underserved/Unserved Areas: 93%</li> <li>Percentage of Lateral Miles in Underserved/Unserved Areas: 0%</li> </ul>
<b>Existing Customer Base</b>	
Existing Residential/Individual Customers within PFSA	<b>0</b>
Existing Business Customers within PFSA	<b>109 (Including Banks, Cellular Tower Backhaul, etc.)</b>
Existing Community Anchor Institution Customers within PFSA	<ul style="list-style-type: none"> <li>Total CAI's: 36</li> <li>Community Colleges: 4</li> <li>Public Safety Entities: 15</li> </ul>
Existing Third Party Service Provider Customers within PFSA	
<b>Potential Customer Base</b>	
Market Potential Households (within PFSA)	<ul style="list-style-type: none"> <li>Total HH's: 260,574</li> <li>Located in Underserved/Unserved Areas: 94%</li> </ul>
Market Potential Businesses (within PFSA)	<ul style="list-style-type: none"> <li>Total Businesses: 66,926</li> <li>Located in Underserved/Unserved Areas: 94%</li> </ul>
Market Potential Community Anchor Institutions (within PFSA)	<ul style="list-style-type: none"> <li>Total CAI's: 8,996</li> <li>Located in Underserved/Unserved Areas: 94%</li> <li>Community Colleges: 3</li> <li>Public Safety Entities: 20</li> </ul>
Market Potential Third Party Service Providers (within PFSA)	<ul style="list-style-type: none"> <li>Total Third Party Service Providers in PFSA: n/a</li> <li>Expressing Commitment or Letter of Interest: 13</li> </ul>
<b>Funded Network Coverage</b>	
Households Connected to Network (via BTOP Funds by end of Year 3)	<ul style="list-style-type: none"> <li>Total Households Connected: <b>0</b></li> <li>Located in Underserved/Unserved Areas: 94%</li> </ul>
Businesses Connected to Network (via BTOP Funds by end of Year 3)	<ul style="list-style-type: none"> <li>Total Businesses Connected: 82</li> <li>Located in Underserved/Unserved Areas: <b>94%</b></li> </ul>
Community Anchor Institutions Directly Connected (via BTOP Funds by end of Year 3)	<ul style="list-style-type: none"> <li>Total Directly Connected CAI's: 100</li> <li>Located in Underserved/Unserved Areas: <b>94%</b></li> <li>Community Colleges: 3</li> <li>Public Safety Entities: 2</li> </ul>
Projected Subscribers by Year Five	<p><b><u>Directly Served by Applicant</u></b></p> <ul style="list-style-type: none"> <li>Community Anchor Institutions: 99</li> <li>Households: 0</li> <li>Businesses: 82</li> <li>Third Party Service Providers: <b>n/a</b></li> </ul> <p><b><u>Served by Proposed Network Via Third Party Service Provider</u></b></p> <ul style="list-style-type: none"> <li>Community Anchor Institutions: n/a</li> <li>Households: n/a</li> <li>Businesses: n/a</li> </ul>



## Comprehensive Community Infrastructure Key Metrics Dashboard

Other	
Proposed MM Network Capacity	<ul style="list-style-type: none"> <li>• Backbone: 10G DWDM, 1G Ethernet, Dark Fiber New Construction</li> <li>• Laterals:</li> </ul>
Proposed LM Network Speed	<ul style="list-style-type: none"> <li>• Highest offered speed tier: n/a</li> <li>• Estimated Average speed for highest speed tier: n/a</li> </ul>
Total Points of Interconnection	<ul style="list-style-type: none"> <li>• Total Pol's: 30</li> <li>• Pol's in Underserved/Unserved Areas: 23</li> <li>• Environmentally-controlled, non-passive Pols:30</li> </ul>
Jobs Created	<ul style="list-style-type: none"> <li>• <b>Direct Job-years: 66</b></li> <li>• <b>Indirect Job-years: 118</b></li> <li>• <b>Induced Job-years: 104</b></li> </ul>
Required Time for Project Completion (Number of Required Quarters to Fully Build-out and Test Network and Make Ready for Commercial Service)	<p><b>One Year (4 Quarters)</b></p>