

## Application for Federal Assistance SF-424

Version 02

## \* 1. Type of Submission:

- ☐ Preapplication  
☒ Application  
☐ Changed/Corrected Application

## \* 2. Type of Application:

- ☒ New  
☐ Continuation  
☐ Revision

## \* If Revision, select appropriate letter(s):

## \* Other (Specify)

## \* 3. Date Received:

08/14/2009

## 4. Applicant Identifier:

## 5a. Federal Entity Identifier:

446000987

## \* 5b. Federal Award Identifier:

## State Use Only:

## 6. Date Received by State:

## 7. State Application Identifier:

## 8. APPLICANT INFORMATION:

## \* a. Legal Name: Missouri Office of Administration

## \* b. Employer/Taxpayer Identification Number (EIN/TIN):

446000987

## \* c. Organizational DUNS:

605735351

## d. Address:

## \* Street1:

301 West High Street, HST Room 280

## Street2:

PO Box 809

## \* City:

Jefferson City

## County:

Cole

## \* State:

MO: Missouri

## Province:

## \* Country:

USA: UNITED STATES

## \* Zip / Postal Code:

65102-0809

## e. Organizational Unit:

## Department Name:

Office of Administration

## Division Name:

Info Technology Services Div

## f. Name and contact information of person to be contacted on matters involving this application:

## Prefix:

## \* First Name:

Connie

## Middle Name:

## \* Last Name:

Qutami

## Suffix:

## Title:

AS III

## Organizational Affiliation:

Office of Administration, Infor Technology Services Division

## \* Telephone Number:

573-526-4545

## Fax Number:

573-526-5006

## \* Email:

Connie.Qutami@oa.mo.gov

[Close Form](#)[Previous](#)[Next](#)[Print Page](#)[About](#)

OMB Number: 4040-0004  
Expiration Date: 01/31/2009

**Application for Federal Assistance SF-424**

Version 02

**9. Type of Applicant 1: Select Applicant Type:**

A: State Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

\* Other (specify):

**\* 10. Name of Federal Agency:**

Department of Commerce

**11. Catalog of Federal Domestic Assistance Number:**

CFDA Title:

**\* 12. Funding Opportunity Number:**

0660-ZA29

\* Title:

Recovery Act - State Broadband Data and Development Grant Program

**13. Competition Identification Number:**

Title:

**14. Areas Affected by Project (Cities, Counties, States, etc.):**

State of Missouri

**\* 15. Descriptive Title of Applicant's Project:**

Missouri State Broadband Data and Development Grant

Attach supporting documents as specified in agency instructions.

[Add Attachments](#)[Delete Attachments](#)[View Attachments](#)

## Application for Federal Assistance SF-424

Version 02

## 16. Congressional Districts Of:

\* a. Applicant MO-ALL

\* b. Program/Project MO-ALL

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

## 17. Proposed Project:

\* a. Start Date: 10/01/2009

\* b. End Date: 09/30/2014

## 18. Estimated Funding (\$):

* a. Federal	3,952,480.00
* b. Applicant	0.00
* c. State	800,000.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	4,752,480.00

## \* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?

- ☒ a. This application was made available to the State under the Executive Order 12372 Process for review on 08/14/2009 .
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☐ c. Program is not covered by E.O. 12372.

## \* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)

☐ Yes ☒ No

Explanation

21. \*By signing this application, I certify (1) to the statements contained in the list of certifications\*\* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances\*\* and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

☒ \*\* I AGREE

\*\* The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

## Authorized Representative:

Prefix:  \* First Name: Connie

Middle Name:

\* Last Name: Qutami

Suffix:

\* Title: ASIII

\* Telephone Number: 573-526-4545 Fax Number: 573-526-5006

\* Email: Connie.Qutami@oa.mo.gov

\* Signature of Authorized Representative: Connie Qutami \* Date Signed: 08/14/2009

**Application for Federal Assistance SF-424**

Version 02

**\* Applicant Federal Debt Delinquency Explanation**

The following field should contain an explanation if the Applicant organization is delinquent on any Federal Debt. Maximum number of characters that can be entered is 4,000. Try and avoid extra spaces and carriage returns to maximize the availability of space.

Missouri has highly varied physical landscapes as well as its urban and rural settings. The structure of the data gathering and how the mapping of this information on the landscape is conducted needs to be in synch with the regional contexts of this variation. The sampling design employed will collect provider information as well as end-user information from this complex. The solutions deployed will need to be developed and implemented based on that technology's ability / suitability to the conditions presented.

Missouri will be teaming with GeoDecisions and its partner, CBG Communications, Inc. to aid in the collection of confidential information from broadband providers. Additionally, the State of Missouri will be partnering with the University of Missouri to provide an independent source of evaluation for the data collection and mapping efforts, much of which will be based on public information sources and materials gathered or provided by the State. It is our intent to develop and implement statewide initiatives to identify and track the adoption and availability of broadband services as outlined in the State Broadband Data and Development Grant Program (RIN 0660-ZA29) as outlined by the Department of Commerce, National Telecommunications and Information Administration.

We plan to work with an estimated 95-110 broadband providers, putting NDA's in place, and allowing data and information to be collected. This will permit the actual assessment and representation of where current broadband infrastructure exists and does not exist, on either an address-level, street level, or census block-level of detail will begin. The project goal is to create a geographically accurate map of broadband infrastructure which when combined with population, demographics, and other data can provide a detailed assessment of the availability and nature of broadband across Missouri.

In addition two planning activities are proposed. The first is to create Regional Technology Planning Teams within each of the regional planning council regions. The second is to develop and host an Information Technology Summit to start the dialog and process toward a paradigm shift in how people in academia, business, industry, legislature, government, and even the local citizen think about information technology. Experts in technology, as well as futurists, contend that we are standing on the brink of an information revolution that will rival the industrial revolution by its impact and intensity. The broadband mapping and subsequent deployment of all this infrastructure investment is lost until we recognize that information technology has become foundational infrastructure for our economy, our education, our finance, our security, and many components of our quality life now and into the future. This broadband investment represents our *knowledge infrastructure* for our future.

**State of Missouri**

**State Broadband Data and Development  
Grant Program**

**Project Narrative**

August 13, 2009



Submitted by:  
Timothy L. Haithcoat  
Geographic Information Officer - Missouri  
Office of Administration – ITSD  
Truman Bldg, Room 280  
301 W High St.  
Jefferson City, MO 65101  
Email: [Tim.Haithcoat@oa.mo.gov](mailto:Tim.Haithcoat@oa.mo.gov) or [HaithcoatT@missouri.edu](mailto:HaithcoatT@missouri.edu)  
Phone: 573-882-2324

## **Executive Summary**

Missouri will be teaming with GeoDecisions and its partner, CBG Communications, Inc. to aid in the collection of confidential information from broadband providers. Additionally, the State of Missouri will be partnering with the University of Missouri to provide an independent source of evaluation for the data collection and mapping efforts, much of which will be based on public information sources and materials gathered or provided by the State. It is our intent to develop and implement statewide initiatives to identify and track the adoption and availability of broadband services as outlined in the NOFA - State Broadband Data and Development Grant Program (RIN 0660-ZA29) as outlined by the Department of Commerce, National Telecommunications and Information Administration (NTIA). The State of Missouri and its partners clearly understand all technical requirements, deadlines, and goals of the NTIA and if awarded this project, will successfully adhere to all of these priorities.

The structure of the data gathering needs to be in synch with the context of Missouri and its highly varied physical landscapes as well as its urban and rural settings. The sampling design employed will collect provider information as well as end-user information from this complex. The solutions deployed will need to be developed and implemented based on that technology's ability / suitability to the conditions presented. It is Missouri's desire to provide equal effort to the mapping of broadband and the requisite data / attribute collection whether the site is in the rural agricultural areas of the state, fast growing areas (Branson, Lake of the Ozarks), suburbia, our large metro areas of St. Louis and Kansas City, or the Ozark hills and mountains. Missouri's purpose is to identify those *unserved* or *underserved* within the state and, through mapping, provide the context for broadband development to support economic growth, the state's knowledge infrastructure, and to enhance the quality of life for all Missourians.

As the estimated 95-110 providers are identified, the NDA's are in place, and data and information starts to flow, the actual assessment and representation of where current broadband infrastructure exists and does not exist, on either an address-level, street level, or census block-level of detail will begin. The project goal is to create a geographically accurate map of broadband infrastructure which when combined with population, demographics, and other data can provide a detailed assessment of the availability and nature of broadband across Missouri.

The initial phases of the project will map populated places as "unserved" or "underserved" across Missouri. The data gathering will focus on several information types, with details defined by the clarified Technical Appendix and any future, as yet to be determined, changes that may possibly affect these collections. The data gathering will be initiated with a request to each facility-based provider or wireless service provider with addressing information operating within Missouri to provide an end-user address list with associated attribute information for the purposes of geocoding and subsequent mapping of these coverage areas through various means. The development and compilation of a master address point file for the state will greatly enhance the ability of these methods to accurately represent the service areas from the provider information.

In lieu of reporting address-specific data, Missouri will satisfy the requirements by providing NTIA either a list of all census blocks (< 2 square miles in area) or a list of all street segments with address ranges in such census blocks, in which broadband service is available to end users.

From these data requests the consultant and MU will generate geospatial files to be delivered including: Dissolved composite any-broadband provider layer; Union-based composite broadband provider layer – presence of multiple providers; Broadband technology type layers; Broadband advertised speed layers; Broadband subscriber-weighted nominal speed layers; Broadband capacity still available; Broadband service end user tiers – academia – residential –

business – government; Broadband spectrum based wireless footprints, and Tower locations and heights of towers.

These data components and geospatial files created through the consultant's processes will be independently spot checked by the University and assessed with feedback provided back to the consultants to inform their processes. These assessments and quality control measures will be run using a variety of approaches and methods based on the type of data being reviewed to ensure that the State and its users can have known confidence in the products being generated so that they can be used effectively. Specific data elements and types of focus include provider lists, addressing and geocoding, census data and information (2010 is coming out in mid-cycle!), wired and wireless footprints, field based infrastructure assessment, field based survey methods, web-based speed test and surveys, and elements surrounding anchor point identification and attribution.

The State, working with and through its consultant will develop a web site using ESRI's Flex Viewer (which is in use in our emergency operations) for viewing and interacting with the various databases that can be shared with the public. Pre-made hardcopy maps as pdfs will also be available for download and printing. The overarching goal of the web site is to deploy a user friendly, visually appealing web application that engages and educates the general public. The application will display detailed information that educates users on broadband availability in Missouri.

The State and its partners understands that it will need to execute a NDA with each of the broadband providers to protect the proprietary and competitively sensitive information that it would seek and need to receive to develop the dataset for accurate and useful mapping. The Missouri team will work together to determine the State's ability to maintain confidentiality and structure the NDAs accordingly. All parties understand data security is very important to the State, the NTIA and the providers. Therefore, the team will establish multi-level security protocols to insure data integrity and to control and limit access to confidential data and derived GIS data, not only through the website, but with data handling in general. Only the NTIA and the State of Missouri (to the extent the State of Missouri can maintain confidentiality), and GeoDecisions and CBG Communications employees, actively working on the project will have access to the data.

The required data files specified in the Technical Appendix will be formatted and delivered with the State's first 'substantially complete' version being delivered February 1, 2010 and the baseline data series as a complete submission for the March 1, 2010 deadline. Timelines and specific delivery items are outlined in Section 3. Paramount to adhering to strict timelines is communication between partners and their various roles and responsibilities. The consultant will develop an individualized Communication Plan for the entire Broadband Mapping Project.

At this time the State of Missouri and its project team will not be able to meet the initial 11/1/2009 deadline. We propose as an alternative to have all NDAs delivered to the providers and initial contact, discussion and negotiation with the providers taking place well prior to November 1, 2009. In addition, we feel confident that we can use the State's current data to identify coverage of 95% of community anchor institutions by the November 1, 2009 deadline.

For the mapping elements and metrics of percent providers, percent of households in the state, and percent of households in rural areas, our team will work to gather information from providers who come to early agreement on and sign an NDA. The team will begin inputting this data into the database as soon as it is received, so that all the data that can be input by November 1, 2009 will be. At this point a status report against the four metrics of '*substantially complete*' will be provided to NTIA.

The State recognizes that it will be evaluated based on its ability to update the data at least semi-annually and on a continuing basis. The State, through arrangements with our

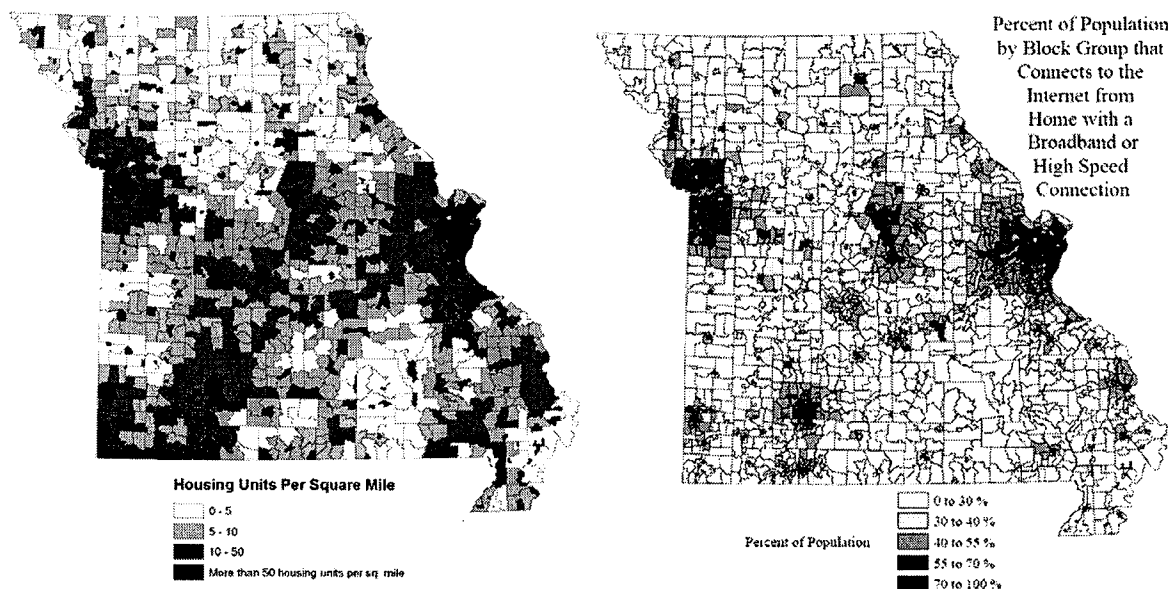
partners, is willing and able to provide this ongoing maintenance and support of the Broadband Mapping program. The consultants will work with the State of Missouri to develop a workable and sustainable framework for updating the data for 5 years or longer.

Finally, included within this narrative are two (2) planning proposals. The first is to create Regional Technology Planning Teams (RTPT) within each of the of the 16 regional planning council (RPC) regions. These RPCs conduct regional planning for transportation, homeland security, and economic development applications. This focus will mesh well with their duties and roles to provide guidance to their respective areas. The second proposal is to develop and host, from the CIO's Office, an Information Technology Summit. Missouri needs this forum to start the process toward a paradigm shift in how people in academia, business, industry, legislature, government, and even the local citizen think about information technology. Experts in technology, as well as futurists, contend that we are standing on the brink of an information revolution that will rival the industrial revolution by its impact and intensity. However, one stumbling block remains--the lack of planning. This void can be compared to sailing a rudderless ship into the twenty-first century. The broadband mapping and subsequent deployment of all this infrastructure investment is lost until we convince the powers that be that information technology has become foundational infrastructure for our economy, our education, our finance, our security, and many components of our quality life now and into the future. What this broadband deployment represents is our *knowledge infrastructure*, our future. This will start the dialog in the State of Missouri.

## Section 1. Data

### (a) Data Gathering.

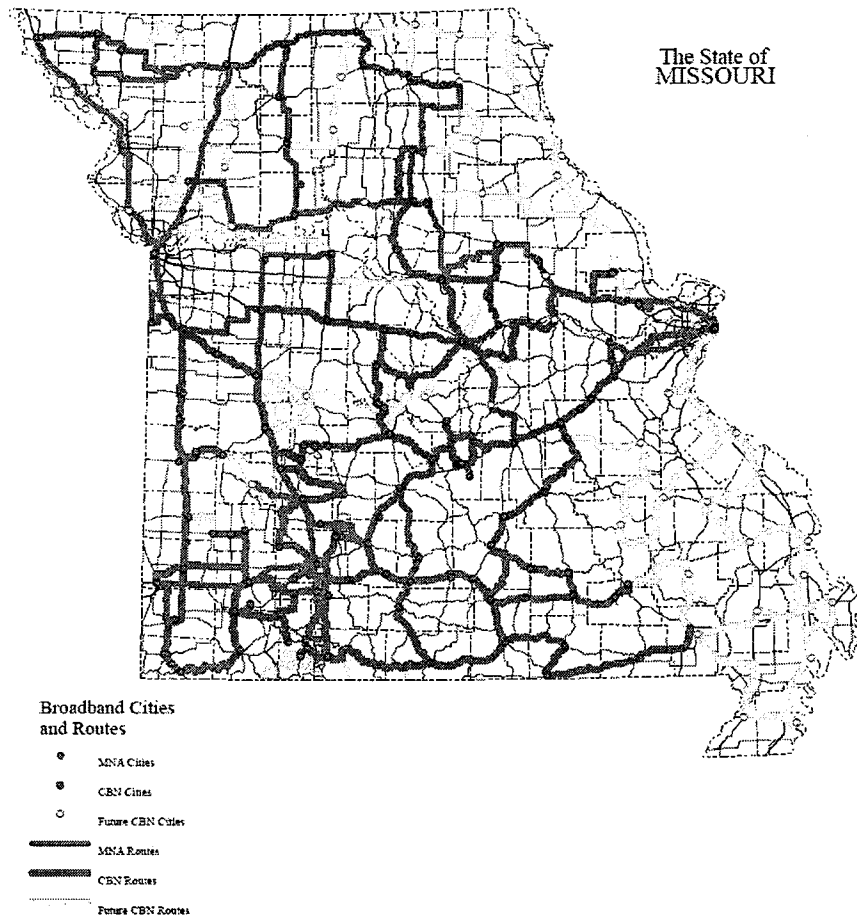
The structure of the data gathering needs to be in synch with the context of Missouri and its highly varied physical landscapes as well as its urban and rural settings. The sampling design employed will collect provider information as well as end-user information from this complex. The solutions deployed will need to be developed and implemented based on that technology's ability / suitability to the conditions presented. It is Missouri's desire to provide equal effort to the mapping of broadband and the requisite data / attribute collection whether the site is in the rural agricultural areas of the state, fast growing areas (Branson, Lake of the Ozarks), suburbia, our large metro areas of St. Louis and Kansas City, or the Ozark hills and mountains. Missouri's purpose is to identify those *unserved* or *underserved* within the state and, through mapping, provide the context for broadband development to support economic growth, the state's knowledge infrastructure, and to enhance the quality of life for all Missourians.



The map above shows housing unit density across the state of Missouri by census blockgroup. The more dispersed the population the harder the 'last-mile' becomes. By reaching only the two classes of '10-50' and 'more than 50' housing units per square mile the state could achieve approximately 90% of the total population of Missouri being covered. This same 90% of the population only covers 32% of the total area of Missouri. This '90% population' figure has been used by many as the target to reach and as you can see from the map it would potentially leave large portions of the state – particularly rural – 'unserved' or 'underserved'. The second map of information for the year 2008 provided from Mediamark Research (MRI) shows the percent of population by blockgroup that connects to the internet from home using 'broadband or high speed' connections. This map is another view that potentially illustrates the regional holes that might exist in Missouri's current broadband coverage.

The State of Missouri is moving forward with a request to build out Middle-Mile capacity and extent to provide accessibility to local service providers for last-mile build-outs and

partnerships. The map below is a representation of what that proposed future state would look like for the state of Missouri.



Missouri will be teaming with GeoDecisions and its partner, CBG Communications, Inc. (herein 'contractor') to aid in the collection of confidential information from broadband providers. Additionally, the State of Missouri will be partnering with the University of Missouri (herein MU) to provide an independent source of evaluation for the data collection and mapping efforts, much of which will be based on public information sources and materials gathered or provided by the State. It is our intent to develop and implement statewide initiatives to identify and track the adoption and availability of broadband services as outlined in the NOFA - State Broadband Data and Development Grant Program (RIN 0660-ZA29) as outlined by the Department of Commerce, National Telecommunications and Information Administration (NTIA). With this proposal the State of Missouri agrees to provide NTIA with broadband data, of the type and in the format provided in the clarified Technical Appendix, from all commercial or public providers of broadband service in Missouri, including, but not limited to, commercial or public providers of broadband service to Indian tribes, Community Anchor Institutions or agencies or instrumentalities of the State, or municipalities or other subdivisions of the State and their respective agencies and instrumentalities.

As the estimated 95-110 providers are identified, the contractor and the State will make contact with each of the providers to establish a collaborative and cooperative relationship while

ensuring the providers understand the goals and objectives of the State of Missouri and the NTIA. The contractor will compile and maintain comprehensive list of Missouri broadband providers with a list provided to the state on a monthly basis. We will make certain that the providers fully understand the process of information gathering that will need to take place and will work with the providers to establish aggressive yet realistic timelines for feedback from the providers. This step will also require development and negotiation of a Non-Disclosure Agreement (NDA) with each of the providers. A rough draft of such an NDA can be provided upon request. It is unknown at this time if the NTIA is going to provide an NDA template but if and when one is provided it will be adopted or adapted for use within this data gathering process. The contractor will compile and maintain a comprehensive list of NDA status with broadband providers. This list will be provided to the state on a monthly basis with status codes of *signed*, *refused*, or *other* (with explanation) for tracking and monitoring purposes.

Once the NDA's are in place and data and information starts to flow, the actual assessment of where current broadband infrastructure exists and does not exist, on either an address-level, street level, or census block-level of detail will begin.

Sources to be exploited include exchange area and wire center location data on file with the State of Missouri, geospatial data available through the State's geospatial clearinghouse, the Missouri Spatial Data Information Service (MSDIS), county governments, trade groups, cable franchise information on file with local governments, tower and frequency licensing information from the FCC, state agencies and local zoning authorities as well as any potential information provided by the Federal Communications Commission (FCC) in relation to submitted Forms 477. This information will furnish an initial list of broadband providers in the state and will start to define the general area(s), cities, towns, counties, etc. of the state in which each provider is offering service.

The data gathering will focus on several information types, with details defined by the clarified Technical Appendix and any future, as yet to be determined, changes that may possibly affect these collections. The data and information to be solicited include:

- End-user address lists
- Business tiers of service (residential, education, business, governmental, etc.)
- Available capacity of services
- Components needed to calculate the subscriber-weighted nominal speed (subscribership by speed tier)
- Speed (advertised and typical speeds of providers)
- Technology of transmission type
- Spectrum used for the provision of wireless broadband service

The data gathering will be initiated with a request to each facility-based provider or wireless service provider with addressing information operating within Missouri to provide an end-user address list with associated attribute information as per instructions of the Technical Appendix (Record Format 1: Address Data for Each Provider)(RF1) (as clarified on August 7, 2009) and coding schemas therein. The State and its contractors will work with each provider to provide compliant data and formats. The contractor will ascertain the latest updated list of Missouri addresses served by the United States Postal Service both residential and business addresses. The State will supplement this list through the continuing development and use of the State's master address point file.

Carriers will be encouraged to provide data in the form of end-user addresses or street segments with associated address ranges to which they provide service. The MU partner has

already started to gather existing address point data from various county databases including CAMA, E9-1-1, and other sources to create a starting point from which to continue the development of the master address point data file. The master address point layer will be spirally constructed and continue to evolve as part of this project. This layer places a point at the location of each unique address in the master address file. These points can be generated from multiple sources, the tax parcel GIS layer with CAMA attributes attached, E9-1-1 files, and aerial survey with associated field verification using GPS. Leaf-off, 2-foot resolution, aerial photography (2007-09) will provide the mapping base for the structures mapping. For select areas we propose to code these structures as residential, commercial or institutional and count them. The association of structures to type will be accomplished by MU.

Parcel use descriptions can be used to identify properties on which multiple addresses may occur (apartments, condos, shopping malls, office complexes, etc.). Parcels that did not meet this criteria had their address mapped at the center of the parcel polygon and were coded as such. This location ordinarily is adequate to locate an address point such that the structure being addressed is easily recognizable from that point. Parcels that were identified as potentially having multiple addresses will be visited by field crews to the extent possible to record a point location of each distinct address found on the property. These locations will be limited to the "house number level". The resulting field locations were placed at the main entrance to the address, and coded as being field verified.

There are several important benefits to including the structure count in the overall methodology. As noted, it supports an analysis of broadband service delivery to both residential and business areas. Most importantly, where parcel mapping is available, the point locations of structures can be assigned addresses. This would allow them to be used with web-survey results or other address-based sources of data on service levels to improve the estimate of the areas served. The integration of this survey information will allow for a much better analysis of the true level of service, going beyond the mere presence/absence of infrastructure or the claims of the carriers. The development and use of these located point addresses to geocode end-users will substantially improve the accuracy and reliability of the mapping of areas served, underserved, and unserved by each provider's solution.

In the event that providers cannot make available the addresses they serve, a secondary data collection methodology will be implemented. If the provider has created digital boundary files of their coverage areas, these files can be used in lieu of their address list of service areas to create the served, underserved, and unserved areas. For each digital boundary file, the providers will be asked to describe the technology used, service levels, and up/down transmission speeds all other attributes required by the clarified Technical Appendix RF1 for each coverage area (or portion of coverage area where technologies or service levels may differ). If available for the area the point-based master address file will then be intersected with these polygons and thereby subdivided to closely match each provider's service area(s). These sub-lists will then be given to each provider with the goal of the provider verifying which of the addresses in these mapped areas are serviceable and which addresses are not serviceable. This process will minimize the level of work the providers will need to perform and will further encourage timely participation from the providers, as they will only need to review address lists in areas closely associated with where they provide services.

If the providers cannot provide either a list of its serviceable addresses or digital boundary files, a third method will be used. This process will obtain and compile cable strand maps, as well as maps of service / coverage areas obtained from the service provider directly or from their websites and advertising materials if no other authoritative source is forthcoming from the provider. These would then be imported, scanned, and georeferenced to a common base map. The spatial transformation methodology will be determined during the requirements

gathering portion of the project. The contractor and MU will use the highest accuracy base data to spatially reference the maps, which would include the State's 2-foot resolution leaf-off aerial imagery for the entire state acquired from 2007-2009. To the extent that files are available to the State and its contractors we will also use digital parcel information for QA/QC purposes. The contractor and MU will then attribute newly created data with the attributes required by the clarified Technical Appendix RF1 for each different portion of the coverage area. Once coverage areas are assembled we propose to use the methods above to generate the preferred address-based lists.

In lieu of reporting address-specific data, Missouri will satisfy the requirements of the Technical Appendix RF1 by providing NTIA, for each facilities-based provider of broadband service in Missouri, a list of all census blocks of no greater than two square miles in area in which broadband service is available to end users, along with the associated service characteristics identified in the clarified Technical Appendix RF1.

For census blocks larger in area than two square miles, the State will provide NTIA, for each facilities-based provider of broadband service, either the address-specific data as described in the original Notice or a list of all street segments with address ranges in such census blocks, in which broadband service is available to end users, along with the associated service characteristics identified in the Technical Appendix RF1.

For facilities-based wireless services not provided to a specific address (mobile, nomadic, or satellite) an availability area will be approximated for each provider service based on terrain, signal strength properties, attenuation, tower height, antenna height, and other relevant factors. The contractor will assemble tower location and attribute information from the FCC, as well as public and private sources. The resulting modeled and mapped areas will be closed, non-overlapping, internally consistent polygons with a single unique identifier. Attribute information will include those associated service characteristics identified in the clarified Technical Appendix (RF 2: Wireless Services Not Provided to a Specific Address) to include provider, spectrum, and speed information. Shapefiles will be individually compiled, then assembled and submitted as a single, zipped file containing all the component files.

Data to be gathered regarding pricing and speed are to be aggregated and reported at a county level for each provider based on the guidance provided in Technical Appendix (RF3: Residential Broadband Service Pricing and Speed Characteristics). As per the clarification on August 7, 2009 the Average Revenue per End User is not to be collected. Thus the RF3 is to be comprised of only the provider information, county, state, technology of transmission, and subscriber-weighted nominal speed. The contractor will collect and provide subscriber-weighted nominal speed for each provider by county and provider. This is calculated as the sum of the products of the provider's advertised maximum download data transmission rate (in kbps) for each residential rate tier advertised by the provider in the county, times the average monthly number of residential subscribers receiving the advertised download transmission rate tier for the relevant reporting month, divided by the average total number of residential subscribers for all the included data transmission rate tiers in the county for that month. This information will be an essential element in the data survey being distributed to providers during the data collection phase. This file will reside in a tab-delimited text file in NTIA format.

As per the clarification on August 7, 2009, RF4: Last-Mile Connection Points Data for each Provider is not to be collected.

Data for middle-mile and backbone interconnections (RF5: Middle-Mile and Internet Backhaul Connection Points Data for each Provider) will be solicited and compiled from the providers through the State's contractor. This will include such points of interconnection enabling communications such as between a local office and the Internet, or between a cable

aggregation point and the Internet, as examples. The data will be formatted per NTIA format and accurately display all applicable codes in a tab delimited text file.

Community anchor points (RF6: Community Anchor Institutions) have compiled by the Department of Public Safety providing an initial point data set for this collection. These point data include K-12 schools, libraries, healthcare and medical facilities, public safety facilities, colleges and universities, county seats of government, courts, correctional facilities, and other government buildings. The community anchor attribute information will be gathered by the State and its MU partner through working with associated respective state agencies with jurisdiction on these sites as well as through local data review, validation, and verification in partnership with Regional Planning Councils and local governments. This process of data development has already been deployed in some areas of Missouri in association with the development and review of public safety structure-based information and has worked well. As per the clarified Technical Appendix RF6 all data will be delivered in tab-delimited text files with measured accuracy and compliant category codes populated.

During and after NDA's are being negotiated, signed, and collected. The State's partners will develop easy to use, easily searchable, and interactive GIS layers within an approved data model that meets NTIA and State of Missouri geospatial standards and allows for easy updates with the understanding that NTIA technical specifications may change. From past experience, we understand that data from providers will not necessarily have the same accuracy or format. The contractor recognizes that smaller broadband providers may require some aid in collection/transfer/ and verification of their data. We will migrate or transform those datasets into the approved data model format required under NTIA standards. This integration and standardization will deploy multiple methods to get the data into a compliant system.

Regardless of initial mapping method, the State's partners will develop boundaries (polygons) and/or address records (points) to meet NTIA standards, depending on the service type. They will utilize ArcGIS spatial analysis tools to inform and perform the analysis. The project's output will include the requisite tab-delimited text files (RF1, RF2, RF3, RF5, and RF6), GIS shapefiles, as well as File Geodatabase. The GIS files will identify where current infrastructure exists, service areas, and include attribute information indicating the transmission speeds and levels and types of service all other attributes required by the clarified Technical Appendix of the Mapping NOFA. The geodatabase deliverables will include full service records of address data for each provider in the required NTIA format, including the appropriate end-user codes, technology of transmission codes, pricing, speed characteristics, and speed tier codes for facility based providers. For Wireless Service providers, the contractor will develop feature classes that depict these geographic boundaries and include the required attributes of this type of provider. The geospatial files to be delivered include:

1. Dissolved composite any-broadband provider layer
2. Union-based composite broadband provider layer – presence of multiple providers
3. Broadband technology type layers
4. Broadband advertised speed layers
5. Broadband subscriber-weighted nominal speed layers
6. Broadband capacity still available
7. Broadband service end user tiers – academia – residential – business - government
8. Broadband spectrum based wireless footprints
9. Tower locations and heights of towers (and antenna?)

These GIS files will be compatible with Environmental Systems Research Institute, Inc. (ESRI) software specifically, as part of the comprehensive GIS database development process; we will incorporate the following steps:

- Establish required data security and a disaster recovery plan.
- Develop appropriate GIS data standards and data schema. (Possibly incorporate the proposed ESRI standard data model)
- Design shapefile and geodatabase with appropriate database software and populate the database with pertinent attribute data assigned to appropriate layers.
- Develop FGDC compliant metadata for each layer, shapefile and geodatabase.

All data will be delivered in WGS 1984 geographic coordinates and UTM (zone 15) coordinate system as requested by the State and will be compatible with The National Map. The contractor will also make certain that all data that can be publicly shared (non-confidential) has been successfully transferred, is working within the State's system, and is under the State's ownership.

#### **(b) Accuracy and Verification**

The consultant and MU provide complementary and supportive roles for the project in the realm of verification, validation, and accuracy assessments. We have purposefully identified the consultant to be in the role of confidential information collection and the modeling and representation of this private information for public consumption in the form of service areas and other previously mentioned data bases for the entire state.

The MU provides a public data and information gathering group that can assemble and compile various provider source information (marketing materials, public documents of service, public documents of rates and speeds, census information, etc.) to create representations of service coverage for these same providers – although on a sampling basis rather the statewide focus of the consultant. The sampling will reflect the rural / urban breaks as well as the service gaps as they are defined.

On the consultant side, there will be several levels of QA/QC provided for this project. A Technical Manager will review all project deliverables before they are delivered to the State of Missouri and MU. Specific review elements will be defined in advance for each deliverable. A QA/QC task team will also be put in place to assist the Technical Manager that is independent of the data production team and will review these data from a technical and non-biased standpoint. The consultant will also employ the use of a QA Plan. The QA Plan entails how to prepare, edit, and finalize all deliverables. The QA Plan also describes how quality is assured for the project. It describes the QC process for deliverables, and the QC process for the data development process. It also establishes who is responsible for conducting quality reviews, and how often they occur. A findings and recommendations document will be prepared after every quality review and will be presented to the State. Other elements mentioned below will be flagged if the consultant will be used to gather and assess the validation information.

On the MU side, a process of 'convergence of evidence' will be used to create layers for comparison and contrast with the information provided by the consultants. MU will assemble for selected areas across the state all available public sources of information regarding the broadband deployment in the area. These sources will be compiled and meshed together with field data to create boundaries of broadband service. These boundaries will at a minimum represent all providers in an area. At a maximum it will represent a specific provider's service for a specific type of technology to a particular sector at a particular speed. The ability to achieve this maximum level through public means is acknowledged to be low but it remains a target of the validation exercise.

The following is a list of nine areas wherein validation, verification, and accuracy assessment have been identified for this project.

## 1. Provider Information & Lists

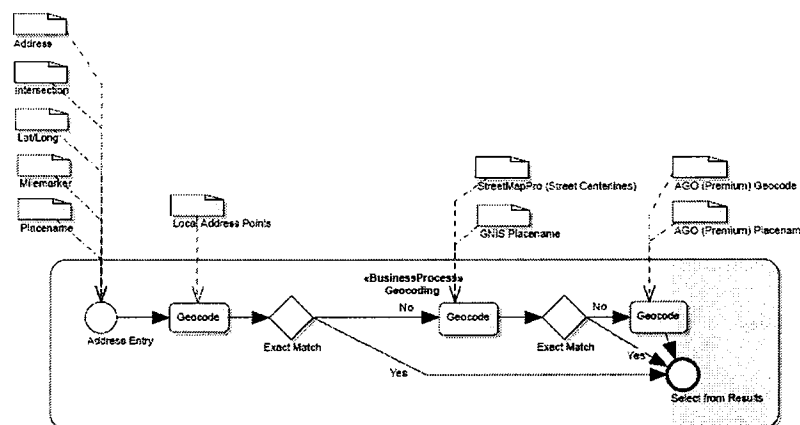
For coverage to represent the entire range of providers and provider's services we must proactively develop and maintain across the 5 year period of performance an accurate list of providers working within the boundaries of Missouri. The lists will be generated and cross referenced / validated from such sources as the Missouri Public Service Commission, local governments, provider associations, provider registration with state offices, Missouri Network Alliance, and other sources. As the field elements are deployed for collection and as survey elements are put afield we hope to capture any 'missing' provider in this matrix. We have to know they exist to be able to map them.

## 2. Address and Geocoding of Address Lists

The GIS-assisted mapping relies primarily on the process of geocoding. Geocoding is the automated process of attributing features (end-users or infrastructure) to a latitude and longitude based on other geographic information such as an address range, a situs address, or a name. End-user addresses are compared to point location tables contained in the GIS. If the addresses match closely enough, a feature representing the user location is placed on the map. In this case, the end-users are represented as point features because they are events--in other words, they do not have a specific shape, area, or physical form that would require representation by a line or a polygon. The accuracy of this geocoding will define in large part the accuracy of the service boundaries created for broadband provision.

The geocoding process allows the user to adjust several variables affecting the accuracy of a match. Different tests can match features to specific points, approximate street location based upon address ranges, or even more general zones. Minimum match scores can be varied, allowing features to be placed on the map liberally and increasing the number of matches. Conversely, features can be placed precisely, mitigating the risk of false positives. Even the spelling accuracy can be adjusted. Matching accuracy is an important consideration, largely because the State and its partners will have little control of the accuracy of the input data.

The proposed process (figure below) favors precision. Addresses are first tested against specific address points within the state's master address point file. Spelling sensitivity is adjusted to 80 percent to allow for typographical errors. Minimum match scores are adjusted to 100 percent, meaning that an address will not be matched to a point on the map unless it matches the locator exactly.



After point-matching is complete, unmatched addresses are then run against street segment address ranges using the same spelling and match score settings. The street address

range test is slightly less precise because it is not based on actual address points. Addresses are placed at an approximate location on one side of the street centerline based upon the address number. For example, the address "150 Main Street" would be matched halfway between 100 and 200 on the even-numbered side of the street.

Because the matching is based on the theoretical position of an address number, and the resulting point is placed on the street itself, there is some risk of error, most likely resulting from bad input data. This kind of error needs to be measured and quantified for proper interpretation and use of the later derived service polygons based on this information.

These processes normally leave some addresses unmatched, but the remaining manual review is considerably more manageable than matching everything manually. We will conduct a cursory review of unmatched addresses before abandoning further manual examination, assessing the combined probability that an unmatched address is, in fact, on the periphery and is important to denoting a boundary of some form within the data.

The analysis will also use geocoded point locations for businesses from a licensed commercial data set and compare them with the service areas described above to aid in the determination of business areas served.

### 3. *Census information*

Another foundational element of the broadband mapping and its associated targets is population data. It is important to note that new population totals and housing unit counts at the block level will be available in 2010 after the Census. At the blockgroup level we will have access to new household counts and demographics that could prove critical to a mid-project realignment assessment for gaps, structure of the sampling effort, and the 'types' of gaps to be addressed. It is our assumption that a lot, if not most, of the new growth from 2000 to 2010 will be 'internet enabled' growth and that we will actually have higher rates of availability Statewide after the 2010 data becomes available in Dec 2010. It is critical to use these data as a check to assess coverage, growth, and other aspects of this change. We will validate these new numbers for selected areas through actual housing unit structure counts within selected areas for further validation.

In order to quantify the level of service to residential versus business areas we will use two complementary methods. The first method relies on the allocation of Census population or household totals at the block level to residential areas as portrayed in zoning maps where available. These residential areas are then overlaid with the map of areas served to estimate the population and number of households served. In the same way areas zoned for business, commercial, or industrial can be segmented and assessed.

We will also evaluate the census block information for zero-population blocks as well as large areas of agricultural usage or forest through the use of land cover maps for selected areas. If these maps and layers are to be used to support deployment and assessment of infrastructure decisions then these elements need to be known and taken into account in this validation and verification stage.

### 4. *Wired Footprint*

There are several levels of validation that will be pursued in order to assess and validity and accuracy of the provider service polygons. The first validation method will to obtain and compile any *public maps of service / coverage areas* obtained as public data from the service provider directly or from their websites and advertizing materials if no other public authoritative source is forthcoming from the provider. These would then be imported, scanned, and georeferenced to a common base map and form one source of verification and accuracy assessment.

A second element to examine has been used by other states, most notably New York, where they *modeled census and infrastructure information* to generate areas served by broadband. This type of verification can be used for the general ‘provision of broadband’ assessment and would not be able to define individual providers that may have a presence in the area. As an example, we will locate telephone company central offices (CO’s) and additional infrastructure components based on information volunteered by the carriers or available through field resources and reconnaissance. The area served will be estimated by identifying all street segments within a given network distance of the CO and any additional terminal equipment locations provided or defined. The extent of such telephone company modeling would be limited by their regulatory exchange areas.

Field collection and surveys as defined below will also be used to assess these maps, their attribution, and their extents.

#### 5. *Wireless Footprints*

For a selected set of sites, again structured in rural/urban and served and unserved, an availability area will be approximated for each provider service based on terrain, signal strength properties, attenuation, tower height, antenna height, and other relevant factors. The model used will be the one used by MU in the determination of tower coverage for the Missouri State Highway Patrol’s analysis for statewide radio communication. It will be adjusted for the wireless broadband components under advisement of subject matter experts. These footprints will then be compared to the wireless footprints provided by the company or those modeled by the consultant to assess consistency of representation. Wireless systems utilizing towers in a specific area do not have hard physical boundaries. Wireless networks have many obstacles, in addition to distance from the tower and vegetative state (leaf-on / leaf-off), which will alter the availability of broadband as well as achievable service levels and up/down network speeds.

Regardless of method use to generate the initial boundary, we will also use field verification to ensure the boundaries come as close to NTIA accuracy standards as possible within budget and deadline constraints. We will field verify the wireless signal and spectrum around the perimeter of the boundaries at multiple testing points. The testing points will be determined by the boundary’s proximity to residential, commercial, and other manmade dwellings or by a “cold spot” analysis. The “cold spot” analysis will utilize 3D terrain data layers, such as Missouri’s 10 meter Digital Elevation Models to determine where physical landscape may have a significant effect on signal availability. We will use mobile devices and laptops to test the wireless connectivity and also deploy surveys to those residents/businesses living on the peripheral of boundary. Based on Field Testing results and surveys, we will update the boundaries accordingly and record the magnitude of any changes made.

#### 6. *Field Mapping and Surveys*

The field work and survey deployment will be structured using a stratified sampling regime to take into account the rural/urban matrix, terrain variation, known gaps in coverage, and well known and documented broadband deployments. We will leverage state partners such as MOREnet for educational and state institutions as well our local government partners developed through our state GIS initiatives and data sharing agreements with Regional Planning Councils across the state.

As we gather information from providers in the State, detailing serviceable areas, service levels, advertised and typical downstream and upstream speeds, it will be critical to work to verify this information against actual realized service availability, and attributes. We will utilize scientifically valid stratified random sampling techniques to verify customers are receiving the typical speeds defined by the providers through surveys and field reconnaissance. In addition,

we will enlist services such as broadbandcensus.com and others to enhance the findings of the random sampling. Broadband availability does not always follow set boundaries (such as Municipal or County) but is determined by the providers' anticipated return on their investment required to build a network to offer broadband. Knowing that system boundaries are often not well defined, our team will physically perform spot checks throughout the State to determine the accuracy of each provider's declared footprint or system boundaries.

A significant aspect of the project will be to identify where broadband infrastructure and therefore service to the residents of the State does not exist today. As these areas are determined, the consultant will identify public infrastructure such as towers, fiber optic cables, known conduits etc. that may be leveraged going forward to further the deployment of broadband in currently unserved areas. The consultant will work with the State to identify key contacts for the various counties, cities, and towns in order to most effectively gain the information pertaining to the existence and location of potentially usable infrastructure.

In addition to this public infrastructure, the State desires to ascertain the existence and location of similar infrastructure owned by private entities. The consultant will work with private providers to identify and map infrastructure that may help further deployment of broadband to residents and businesses throughout the State where broadband connectivity is unavailable today.

In some cases, system boundaries can be determined by the existence or absence of infrastructure. This is the case with cable communications networks that provide cable modem services as well as Fiber-To-The-Home networks. Field surveys will be performed in very limited and select locations to glean representations of these physical assets. In other cases, the mere existence of infrastructure does not define if broadband is available and if broadband is available at the speeds offered by the provider. For instance, telephone network based systems, such as DSL, may have infrastructure in place but it cannot be assumed whether broadband is available and if so what service levels are attainable at specific locations. DSL networks have a limited footprint and attainable speeds, by the nature of the network, decrease proportionate to the distance from the provider's central office or other demarcation point.

Mail-out surveys can be performed to glean scientifically valid representations of actual verses advertised upload and download service levels. These surveys could be facilitated by local government partners to deploy a '15-mile compass rose' sampling schema against a GIS parcel database to generate a list of addresses that would be sent a mail survey to collected information to help describe boundaries of service polygons as well as attribute information required by the NOFA.

Our team views this field collection and survey task area in particular as an outstanding opportunity to hire additional Missourians to complete this project and to leverage academic resources to help collect this information.

## *7. Speed Test and Survey Website*

The State of Missouri has deployed a speed test website to collect upload and download speed information from the public. <http://transform.mo.gov/broadband/survey/> The site collects information that can be used to geocode the record and thus allows us a fairly unbiased source of independent validation for service areas, providers, advertised speeds, actual speeds, and location. The site to date has not been publicized and has received very little response. It is our intention to promote this site through numerous venues to collect as much data as possible through this mechanism. It can be mentioned on survey forms mailed, door-to-door survey administered, as well as through various State Government websites (to include the State Homepage). We are also in initial discussion with the Department of Elementary and Secondary

Education and the Department of Higher Education on pushing out the speed test via school websites and student listings to encourage substantial participation throughout the State. Another option is to select a few counties and their respective school districts and market directly to these targets to pilot the idea and what the returns on such a program might be for broadband assessment and validation.

#### *8. Community Anchor points*

Community anchor institution representatives will be similarly contacted concerning the transmission technologies used and transmission speeds achieved. For anchor institutions associated with State government, the authoritative agency will be contacted and asked to collect the necessary information for that anchor type. This will be facilitated through the CIO's Office by the Geographic Information Officer.

For anchor institutions within local government, this project element will leverage the existing programs and synergy created to support the collection and local review of public safety infrastructure. The project will identify, code, attribute, and validate a comprehensive anchor point geodatabase (to include all types as defined by the Technical Appendix) through a collaboration of UM undergraduate students and Regional Planning Commissions (RPC). UM undergraduates will identify and geocode all structures listed to complete the anchor database's first draft. The RPC or other local source will provide review, necessary changes, attribute collection, and verification / validation for the database constructed. This process leverages the key strengths of each participant (MU-inexpensive labor pool and educational setting; RPC/Local Gov- local knowledge and access) to achieve the final goal of a database in which all anchor points are known, and locally confirmed, reviewed and then maintained by local project cooperators. The tasks can be accomplished via a web interface or download of the initial database for work within a local setting. This activity will also address Missouri Public Safety, SEMA, and Homeland Security needs for similar locational elements to meet state emergency management requirements.

After all data has been collected and field verified, the consultant will update the statewide inventory to reflect any field reconnaissance changes. The consultant will then build topology rules and domain values to make certain that all spatial data is correctly entered into the final mapping deliverable. They will use ESRI topology rules such as overlap identification and gap and sliver notifications in conjunction with snapping tolerances to make certain that no geometry errors or oversights exist in the data. The consultant will also use valid domain ranges in the GIS attribute fields to make certain that no data entry errors exist or erroneous data types are listed in the attribute. These steps will ensure that the State of Missouri will receive a set of clean and ready to use GIS deliverables.

#### **(c) Accessibility**

The State's consultant on this project specializes in web site and web mapping application development, having developed more than 100 information portals and web-mapping applications. The consultant will develop a Missouri specific broadband web site using ESRI's Flex environment for posting maps and other relevant project information, with the intent of transferring the site over to State of Missouri control during year 2 of the proposed activity. The web site will allow users to gather information such as what broadband coverage is available in a specific area through interactive Web mapping technology. Users of the site will also be able to submit information such as data updates and corrections to the initial state maps, take surveys, and report broadband coverage through traditional web site technologies. The web site would also serve as a centralized mechanism to securely and easily update or submit information related to this initiative via a graphical user interface. Additionally, users will be able to test upload and

download speeds of their own connection through integration with the existing State of Missouri speed site (<http://transform.mo.gov/broadband/survey/>)

The overarching goal of the web site is to deploy a user friendly, visually appealing web application that engages and educates the general public. The application should display detailed information that educates users on broadband availability in Missouri. The application must also meet the somewhat difficult goals of being intriguing and simple, yet informative and detailed enough to answer the questions most would have regarding broadband. In addition, the application would contain many of the basic web mapping tools, including zoom in and out and query. The application would also display icons of the selected features, with informative boxes populated with relevant data regarding the specific information needed or displayed.

Prior to developing the web site, the consultant will meet with the State of Missouri to determine final functionality and specifications that make certain that the web site meets all data, software, and development specifications required by the State of Missouri and will make certain of easy migration to the State in year 2. The development of the web site will take into account the ability to integrate demographic and socio-economic data from other sources including, but not limited to, population density, housing units density, household income, education, legislative districts, school districts, and other information types.

Initially the following elements are to be supported through data provision. All of these layers may or may not be presented to the general user community. As well, some may be presented as static maps and not interactive. The details of the site are as yet undetermined. We will however look at the NTIA site for examples as well as other state-based sites.

- Areas of Missouri unserved by any broadband provider
- Areas of Missouri served by a single broadband provider
- Areas of Missouri served by multiple broadband providers
- Advertised upstream and downstream transmission speeds
- Actual upstream and downstream transmission speeds
- Types of technology used to provide broadband services
- Broadband service tiers – academia; business; residential; governmental
- Subscriber-weighted nominal speed
- Locations of towers used to transmit and receive broadband signals
- Broadband spectrum used for wireless
- Broadband service available at selected anchor types

Although final parameters will be determined during the requirements meetings, the plan is to utilize a customized ESRI ArcGIS Server web site developed on the new Flex API. The state has developed a Flex Viewer for its Public Safety application and we feel that it will provide a robust web mapping solution and would streamline the data maintenance process through some of the commercially available desktop tools as well as the community development of scripts for the Flex Viewer. The State will leverage existing licenses already purchased to accomplish this goal initially. The Arc platform is the most popular commercial geospatial solution in the world and the new Flex API provides an easily maintainable solution for the owner and a visually pleasing experience for the end-user.

#### **(d) Security and Confidentiality**

The State and its partners understands that it will need to execute a NDA with each of the broadband providers to protect the proprietary and competitively sensitive information that it would seek and need to receive to develop the dataset for accurate and useful mapping.

As described in the Mapping NOFA and further explained during the Webinar on National Broadband Mapping Program administered by the NTIA on July 24, 2009, all

information required in the Mapping NOFA must be provided to the NTIA. Therefore, NDAs will be structured to allow access to the data required in the Mapping NOFA by the NTIA. As indicated in the Mapping NOFA, Confidential Information will be defined as any information, including trade secrets, or commercial or financial information, submitted under this Program that: (1) Identifies the type and technical specification of infrastructure owned, leased, or used by a specific broadband service provider; (2) identifies the average revenue per user (ARPU) for a specific broadband service provider; or (3) explicitly identifies a broadband service provider in relation to its specific Service Area or at a specific Service Location.

Notwithstanding the above, the *CLARIFICATION WITH RESPECT TO USE OF DATA* communicated August 9, 2009 by NTIA and stated below will be followed:

*“NTIA intends no changes to the use of data collected hereunder, except to the extent that the clarifications and deferrals provided in this Notice may affect the type and level of detail of the data reported, or as otherwise expressly provided in this Notice. In light of these clarifications and deferrals, NTIA intends to identify all broadband providers by name on the broadband map, rather than leaving such identification to the discretion of the provider.<sup>5</sup> Thus, an address-specific search of the map shall identify the names of all providers whose service is available in the corresponding census block or street segment.”*

<sup>5</sup> In light of the clarification regarding reporting of availability data at a census block or street segment level rather than street address level, the definition of “Confidential Information” in section III of the Notice published on July 8, 2009, shall no longer include the identification of a service provider’s specific Service Area. A service provider’s “footprint” will likewise no longer be included in the definition of “Confidential Information.” Notice, 74 Fed. Reg. at 32549.

The Missouri team will work together to determine the State’s ability to maintain confidentiality and structure the NDAs accordingly. The consultant team has significant experience in negotiating and signing such NDAs with service providers and has demonstrated faithful performance of its obligations under such NDAs. Companies with whom CBG has reached mutually beneficial NDAs in the past that have allowed the full protection of confidential information while enabling CBG to complete its required tasks include large broadband providers such as Comcast, Adelphia (now Time Warner and Comcast), Mediacom and others.

Our team will work with providers to restrict data to the fewest possible personnel with a need to access the data, including GeoDecisions, CBG, the State of Missouri (to the extent the state can remain confidential) and the NTIA. The consultant will clearly identify each team member and submit background checks of each employee if requested. No portion of this work will be done outside of the United States and to the extent possible work will be conducted within the State of Missouri. Our team will abide by all terms within the non-disclosure agreement (NDA) signed between our team and each service provider. Our team will also structure the NDA’s in manner that will give the State the ability to request updated data at later dates. This data would then be used for maintenance.

The partners will also make certain that GIS data security mechanisms are in place while allowing updating by authorized personnel from offices, remote sites, or mobile locations in real-time. This will also be fully automated and consistent with our collaboration strategy with broadband providers and internet service providers.

All parties understand data security is very important to the State, the NTIA and the providers. Therefore, the team will establish multi-level security protocols to insure data integrity and to control and limit access to confidential data and derived GIS data, not only through the website, but with data handling in general. Only the NTIA and the State of Missouri (to the extent the State of Missouri can maintain confidentiality), and GeoDecisions and CBG Communications employees, actively working on the project will have access to the data.

## **Section 2. Project Feasibility**

### **(a) Applicant Capabilities.**

#### **Main Mapping 1: Missouri's State Broadband Data and Development Grant Program**

##### **Budget Narrative:**

This project will:

- Provide comprehensive and verifiable data meeting the NTIA Program standards as published.
- Provide all data in an accessible and clearly presented manner to NTIA, the public, and State and local governments without unduly compromising this data or the protection of Confidential Information.
- Create a workable and sustainable framework for repeated updating of these data.
- Outline and implement a plan for collaboration with State-level agencies, local authorities, and other constituencies for broadband data collection and mapping.
- Assemble a team with the capacity, knowledge and experience to complete the tasks; and
- Create a hold to a realistic timeline for data delivery.

#### **PERSONNEL**

**Tim Haithcoat, State Project Leader**, is the State of Missouri's Geographic Information Officer and works under the Office of Administration, Information Technology Services Division, Office of the Chief Information Officer. He will provide project oversight, collaborate with State agency personnel, the consultants, MU personnel, and external stakeholders, and provide review and direction for the effort. The level of effort will be significant in early project years and taper off as the program is established and processes and protocols are in place. FTE effort by year is Y1: .41FTE; Y2: .41 FTE; Y3: .33FTE; Y4: .25FTE; and Y5: .25FTE. With an annual salary of \$70,012, we are requesting funds by year of: Y1: \$29,172; Y2: \$30,047; Y3: \$24,759; Y4: \$19,126; and Y5: \$19,700. Total funds: \$122,803.

**James Harlan, MU - Project Leader**, is the Program Director for the Geographic Resources Center (GRC), and Sr. Research Specialist. He will provide guidance and oversight for GRC project staff, graduate students, and undergraduate student workers. In addition he will coordinate with the GIO, local government, and other project stakeholders. This position will also support project geographic data acquisition, data development, modeling development, QA/QC assessment of consultant data layers, and management. The level of effort will be significant in early project years and taper off as the program is established and processes and protocols are in place. FTE effort by year is Y1: .75FTE; Y2: .50 FTE; Y3: .33FTE; Y4: .33FTE; and Y5: .33FTE. With an annual salary of \$57,390, we are requesting funds by year of: Y1: \$43,043; Y2: \$29,556; Y3: \$20,295; Y4: \$20,904; and Y5: \$21,531. Total funds: \$135,328.

**MU - Project Technical Staff** is a Geographical Information Systems Specialist in the GRC. This position will support project geographic data acquisition, data development, accuracy assessment, survey development, and geospatial analysis and management. The level of effort is 1.00FTE for the duration of this project. With an annual salary of \$32,000 we are

requesting funds by year of: Y1: \$32,000; Y2: \$32,960; Y3: \$33,949; Y4: \$34,967; and Y5: \$36,016. Total funds: \$169,892.

**MU - Project Technical Staff** is a Geographical Information Systems Specialist in the GRC. This position will provide web site design, development, and support. As well, the position will create cartographic products for distribution and review in support of the project. The level of effort is .25FTE for the duration of this project. With an annual salary of \$32,000, we are requesting funds by year of: Y1: \$8,000; Y2: \$8,240; Y3: \$8,487; Y4: \$8,742; and Y5: \$9,004. Total funds: \$42,473.

**MU – Dianne Roberts, Clerical Project Support Staff**, is an Administrative Associate in the GRC. She will coordinate project fiscal administration with campus personnel and project leaders. The level of effort is .25FTE for the duration of this project. With an annual salary of \$38,989, we are requesting funds by year of: Y1: \$9,747; Y2: \$10,040; Y3: \$10,341; Y4: \$10,651; and Y5: \$10,971. Total funds: \$51,749.

**MU - Graduate Research Assistant.** They will perform research on the assessment elements of the proposed activity. They will receive \$23,145 for Y2 and \$23,839 for Y3, for 12 calendar months effort (100%). The University considers tuition for GRAs to be a necessary expense to include as a fringe benefit. The current rate is \$307.66 per credit hour. We estimate a total of \$6,769 for 22 credits for the GRA. We are also required to provide health insurance at a cost of \$1,876 per year. These are included in the above total cost figures.

Note: Salaries have been increased by 3% each year for subsequent years.

#### **FRINGE BENEFITS**

We have applied the federally negotiated rate of 31.65% for fringe benefits for full-time employees. This number has been increased by 3% each year for subsequent years.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total Salaries	136,781	132,752	120,175	101,800	104,632	596,141
Total Fringe	38,601	38,010	34,781	32,645	34,633	178,669
Total Personnel	175,382	170,762	154,957	134,445	139,264	774,810

#### **TRAVEL**

1. State of Missouri travel will be focused on coordination, field validation, NDA development, data sharing, and meetings for project coordination, review, and management. We expect some travel to be associated with NTIA project meetings at some point as well for national coordination and sharing. The State has set aside \$5,000 per year to offset the costs of this travel. Total of \$25,000 for the duration of the project.
2. The University of Missouri travel will be focused on sampling, field data collection, and functions of coordination with the GIO office, the contractors, and other stakeholders. An amount of \$3,500 is set aside for Y1 with this amount decreasing to \$2,000 in Y2, and \$1,500 for each of the subsequent years. Total of \$10,000 for the duration of the project. Total travel for both State and MU is \$35,000.

#### **MU - MATERIALS AND SUPPLIES**

Plotter supplies (ink and paper) for creation of hard copy products for display and presentations. Paper and copying for survey forms and printing of marketing materials.

#### **MU - COMPUTER SERVICES**

Computer service costs include computing hours on lab machines used in the GRC in support of the projects objectives, some hardware replacement costs and software costs are built into these numbers. The significant push in the first year to create initial products and in year to test and validate all aspects of the products results in a higher cost of \$15,500 for Y1 and \$12,000 for Y2. Subsequent costs drop off to \$8,500 (Y3), \$7,000 (Y4), and \$7,000 (Y5). The total of computer service costs is \$50,000 over the duration of the project.

#### **CONTRACTUAL**

1. The State of Missouri will execute subcontracts with Missouri-based GIS companies or local government partners to develop address point databases for targeted counties within the State of Missouri. These point address databases are foundational to the accurate portrayal and assessment of broadband provision in the state. The State is seeking to spend a total of \$300,000 in federal funds while matching that amount with \$650,000 of State funds. The expenditure by year is Y1: \$225,000 (all State); Y2: \$325,000 (\$225,000 State: \$100,000 Fed); Y3: \$300,000 (\$200,000 State: \$100,000 Fed); Y4: \$100,000 (all federal); and Y5: \$0.
2. The State of Missouri will also keep on contract ESRI for support and contractual services in support of the broadband data development, mapping program, and website development support through its existing agreement for such services in the amount of \$25,000 for each of the first two years, for a total of \$50,000. This also will be used as the final portion of state match.
3. The State of Missouri is planning on using the University of Missouri through an existing MOU to provide the contracting mechanism to engage the consultants GeoDecisions and CBG. These costs include: management costs, QA/QC, communications, and NDA activities (\$474,565); Broadband Mapping elements (\$170,480); Field Verification (\$193,830); Website development and transfer (\$196,520); and, Materials, supplies, and travel costs (\$82,000).

Much of the costs associated with this relationship will be engaged in Y1 (\$873,525) and into Y2 (\$381,321) with subsequent years being substantially lower (Y3: \$171,471; Y4: \$130,730; and Y5: \$89,988) as the consultant disengages and the state program takes over. The total contract for the 5 year period is \$1,647,035.

#### **INDIRECT COSTS**

Indirect costs are calculated at the federally negotiated rate of 30% for '*Other Sponsored Activity*' of the modified total direct costs. This is calculated by subtracting costs for equipment, tuition, and subcontract costs in excess of \$25,000 for each subcontract, from the total direct costs.

#### **PLANNING COSTS**

Planning Budgets and Narratives attached separately for the Regional Technology Planning Teams (\$260,299) and the Information Technology Summit (209,932). Total budget for Planning Grant is \$470,231.

#### **Match Requirement:**

The required 20 percent match for the \$3,952,480 grant request is calculated to be approximately \$800,000. This amount is included as part of a \$40,000,000 line in House Bill No. 21 that has been appropriated by the 95<sup>th</sup> General Assembly of Missouri's State Legislature to be used as a cost match for these broadband technology opportunities.

PI: Timothy L. Haithcoat - Geographic Information Officer - Missouri

**A1. Salaries Senior/Key Persons - State of Missouri - ITSD - Contracted**

Name	Project Role	9-month	12-month	Y1	Y2	Y3	Y4	Y5	Year 1	Year 2	Year 3	Year 4	Year 5	Total
		Salary	Salary											
1 Timothy Hailthcoat	PI - GIO		70,012	5.0	5.0	4.0	3.0		29,172	30,047	24,759	19,126	19,700	122,803
			Fringe Benefits						9,233	9,795	8,313	6,615	7,018	40,973
			Total Salary Senior/Key Persons State of Missouri - ITSD						29,172	30,047	24,759	19,126	19,700	122,803
			Total Fringe Senior/Key Persons State of Missouri - ITSD						9,233	9,795	8,313	6,615	7,018	40,973
			Total Salary and Fringe Senior/Key Persons State of Missouri - ITSD						38,404	39,842	33,072	25,741	26,717	163,777

Name	Project Role	Enter one only		Y1	Y2	Y3	Y4	Y5	31.65%	32.60%	33.56%	34.56%	35.62%	Fringe Rate
		9-month Salary	12-month Salary											
1 James Harlan	Proj. Manager		57,390	9.0	6.0	4.0	4.0	4.0	43,043	29,556	20,295	20,904	21,531	135,328
Fringe Benefits									13,623	9,635	6,815	7,230	7,670	44,972
Total Salary Senior/Key Persons University of Missouri									43,043	29,556	20,295	20,904	21,531	135,328
Total Fringe Senior/Key Persons University of Missouri									13,623	9,635	6,815	7,230	7,670	44,972
Total Salary and Fringe Senior/Key Persons University of Missouri									56,665	39,191	27,110	28,133	29,201	180,300

Full-time People													Year 1	Year 2	Year 3	Year 4	Year 5	Total
2	In this position			12-month sal	Cal mo													
1	Staff	Clerical		38,989	3.0	3	3	3	3	3	9,747	10,040	10,341	10,651	10,971	51,749		
				Fringe Benefits							3,085	3,273	3,472	3,684	3,908	17,422		
1	Staff	Technical		32,000	3.0	3.0	3.0	3.0	3.0	3.0	8,000	8,240	8,487	8,742	9,004	42,473		
				Fringe Benefits							2,532	2,686	2,850	3,023	3,207	14,299		
1	Staff	Technical		32,000	12.0	12.0	12.0	12.0	12.0	12.0	32,000	32,960	33,949	34,967	36,016	169,892		
				Fringe Benefits							10,128	10,745	11,399	12,093	12,830	57,195		
Part-time People																		
1		Grad student		14,500	0.0	12	12					14,500	14,935			29,435		
				Medical Insurance	rate							1,876	1,932			3,808		
2		Undergrad	no fringe	hourly rate	9.5	780	390	390	390	390	14,820	7,410	7,410	7,410	7,410	44,460		
Total Salary Other Personnel University of Missouri											64,567	73,150	75,122	61,770	63,401	338,010		
Total Fringe Other Personnel University of Missouri											15,745	18,580	19,653	18,800	19,945	92,724		
Total Salary and Fringe Other Personnel University of Missouri											80,312	91,730	94,775	80,571	83,346	430,734		
Total Salary All Personnel University of Missouri											107,610	102,705	95,417	82,674	84,932	473,338		
Total Fringe All Personnel University of Missouri											29,368	28,215	26,468	26,030	27,615	137,696		
Total Salary and Fringe All Personnel University of Missouri											136,978	130,920	121,885	108,704	112,547	611,034		

Domestic Travel	8,500	7,000	6,500	6,500	6,500	35,000
<b>Total Travel</b>	<b>8,500</b>	<b>7,000</b>	<b>6,500</b>	<b>6,500</b>	<b>6,500</b>	<b>35,000</b>

1	Materials and Supplies - University of Missouri	1,200	750	750	750	750	4,200
4	Computer Services - University of Missouri	15,500	12,000	8,500	7,000	7,000	50,000
5	Consulting Subcontracts - State of Missouri - ITSD						
#1	State-based address points mapping - STATE		100,000	100,000	100,000		300,000
#2	State-based address points mapping - STATE MATCH						750,000
#3	ESRI Consulting - STATE MATCH						50,000
6	Consulting Subcontracts - University of Missouri						
#4 < \$25,000	GeoDecisions/CBG - NDA; Project Mgmt; QC; Communications	25,000	25,000	25,000	25,000	25,000	125,000
#4 > \$25,000		337,165	112,400				449,565
#5 > \$25,000	GeoDecisions/CBG - Broadband Mapping	170,480					170,480
#6 > \$25,000	GeoDecisions/CBG - Field Verification	145,380	48,450				193,830
#7 > \$25,000	GeoDecisions/CBG - Website Development and Transfer	147,520	49,000				196,520
#8 > \$25,000	GeoDecisions - Years 2-5		137,968	137,968	97,225	56,483	429,644
#9 > \$25,000	GeoDecisions/CBG - Materials, Supplies, Travel, Accomodations, etc.	47,980	8,505	8,505	8,505	8,505	82,000

State provided 20% match to the federal funds	500,000	220,000	100,000	120,000		500,000
Planning - RTPT - ITSD & Geodecisions/CBG	181,862	78,437	0	0	0	260,299
Planning - Summit - ITSD & University of Missouri	128,671	81,261	0	0	0	209,932
			0	0	0	

## Broadband Planning

### **Planning 1: Regional Technology Planning Teams**

#### **Budget Narrative:**

The summit will identify strategies and priorities in order to improve Missouri's critical information infrastructure and the Missouri economy. Such a summit would lead the way for collaboration between and among the institutions of higher education, policy makers, legislators, business, industry and potential investors. Another outcome of the summit would be to help identify issues and gaps to be considered in developing state policy for advancing the critical infrastructure needed for success in the knowledge-based world economy.

#### **PERSONNEL**

**Tim Haithcoat, State Project Leader**, is under contract as the State of Missouri's Geographic Information Officer. He will provide project oversight, collaborate with RPC personnel, the consultants, and external stakeholders, and provide review and direction for the effort. The 2-year project's level of effort by year is Y1: .166FTE; Y2: .166FTE. With an annual salary of \$70,012, we are requesting funds by year of: Y1: \$11,669 and Y2: \$12,019.

#### **FRINGE BENEFITS**

We have applied the federally negotiated rate of 31.65% for fringe benefits for full-time employees. This number has been increased by 3% each year for subsequent years.

	Year 1	Year 2	Total
Total Salaries	11,669	12,019	23,687
Total Fringe	3,693	3,918	7,611
Total Personnel	15,362	15,937	31,299

#### **TRAVEL**

State of Missouri travel will be focused on coordination meetings and participation in local RPC planning meetings for the launch and development of the RTPT program and plans. The State has set aside \$5,000 per year to offset the costs of this travel. Total of \$10,000 for the duration of the project.

#### **CONTRACTUAL**

The State of Missouri is planning on using the University of Missouri through an existing MOU to provide the contracting mechanism to engage the consultants GeoDecisions and CBG. Much of the costs associated with this relationship will be engaged in Y1 (\$154,000) and into Y2 (\$50,000) as the consultant disengages and the state RTPT program moves forward. The total contract for the 2 year period is \$204,000.

#### **INDIRECT COSTS**

Indirect costs are calculated at the federally negotiated rate of 30% for 'Other Sponsored Activity' of the modified total direct costs. This is calculated by subtracting costs for equipment, tuition, and subcontract costs in excess of \$25,000 for each subcontract, from the total direct costs.

**Project Plan 1: State of Missouri - Regional Technology Planning Teams - Planning****PI: Timothy L. Haithcoat - Geographic Information Officer - Missouri****A1. Salaries Senior/Key Persons - State of Missouri - ITSD - Contracted**

Name	Project Role	Enter one only		Y1	Y2	Y3	Y4	Y5	31.65%	32.60%	Fringe Rate
		9-month Salary	12-month Salary						Year 1	Year 2	Total
1 Timothy Haithcoat	PI - GIO		70,012	2.0	2.0				11,669	12,019	23,687
Fringe Benefits									3,693	3,918	7,611
<b>Total Salary Senior/Key Persons State of Missouri - ITSD</b>									<b>11,669</b>	<b>12,019</b>	<b>23,687</b>
<b>Total Fringe Senior/Key Persons State of Missouri - ITSD</b>									<b>3,693</b>	<b>3,918</b>	<b>7,611</b>
<b>Total Salary and Fringe Senior/Key Persons State of Missouri - ITSD</b>									<b>15,362</b>	<b>15,937</b>	<b>31,299</b>

**D1. Travel - State of Missouri - ITSD - Contracted**

Domestic Travel	5,000	5,000	10,000
<b>Total Travel</b>	<b>5,000</b>	<b>5,000</b>	<b>10,000</b>

**F. Other Direct Costs -**

1 Consulting/Subcontracts - University of Missouri			
#4 < \$25,000 GeoDecisions/CBG - Regional Technology Planning Teams	25,000	25,000	50,000
#4 > \$25,000	129,000	25,000	154,000
<b>Total Other Direct Costs</b>	<b>154,000</b>	<b>50,000</b>	<b>204,000</b>
<b>Total Direct Costs - University of Missouri - Contracted</b>	<b>154,000</b>	<b>50,000</b>	<b>204,000</b>
<b>Total Direct Costs - State of Missouri - ITSD - Contracted</b>	<b>20,362</b>	<b>20,937</b>	<b>41,299</b>
<b>Modified Total Direct Costs (no equip, partic., subs &gt; \$25, other no F&amp;A, tuit.)</b>	<b>25,000</b>	<b>25,000</b>	<b>50,000</b>
<b>University of Missouri F&amp;A Rates:</b>	<b>MTDC</b>	<b>30.00%</b>	<b>7,500</b>
			<b>7,500</b>
			<b>15,000</b>

**Planning 2: Information Infrastructure Summit****Budget Narrative:**

The summit will identify strategies and priorities in order to improve Missouri's critical information infrastructure and the Missouri economy. Such a summit would lead the way for collaboration between and among the institutions of higher education, policy makers, legislators, business, industry and potential investors. Another outcome of the summit would be to help identify issues and gaps to be considered in developing state policy for advancing the critical infrastructure needed for success in the knowledge-based world economy.

**PERSONNEL**

**Tim Haithcoat, State Project Leader**, is the State of Missouri's Geographic Information Officer. He will provide project oversight, collaborate with State agency personnel, the consultants, MU personnel, and external stakeholders, and provide review and direction for the effort. The 2-year project's level of effort by year is Y1: .083FTE; Y2: .0415 FTE. With an annual salary of \$70,012, we are requesting funds by year of: Y1: \$5,834 and Y2: \$3,005.

**Shannon White, MU - Project Leader**, is the Geospatial Extension Specialist with the Department of Geography. She will provide guidance and oversight for the graduate student, and undergraduate student workers. In addition she will coordinate with the GIO, to develop the program, identify speakers, develop list of invitees, develop promotional materials, and other tasks relevant to the successful completion of the research leading up to the summit as well as the summit itself. The level of effort by year is Y1: .50FTE and Y2: .50 FTE. With an annual salary of \$50,000, we are requesting funds by year of: Y1: \$25,000 and Y2: \$25,750.

**MU - Dianne Roberts, Clerical Project Support Staff**, is an Administrative Associate in the GRC. She will coordinate project fiscal administration with campus personnel and project leaders. The level of effort is .125FTE for Y1 and .166FTE for Y2 of this project. With an annual salary of \$38,989, we are requesting funds by year of: Y1: \$4,874 and Y2: \$5,020.

**MU - Graduate Research Assistant**. They will perform research on the assessment elements of the proposed activity. They will receive \$23,145 for Y1 and \$23,839 for Y2, for 12 calendar months effort (100%). The University considers tuition for GRAs to be a necessary

expense to include as a fringe benefit. The current rate is \$307.66 per credit hour. We estimate a total of \$6,769 for 22 credits for the GRA. We are also required to provide health insurance at a cost of \$1,876 per year. These are included in the above total cost figures.

Note: Salaries have been increased by 3% each year for subsequent years.

#### **FRINGE BENEFITS**

We have applied the federally negotiated rate of 31.65% for fringe benefits for full-time employees. This number has been increased by 3% each year for subsequent years.

	Year 1	Year 2	Total
<b>Total Salaries</b>	35,708	33,775	69,483
<b>Total Fringe</b>	11,303	11,010	22,313
<b>Total Personnel</b>	47,011	44,785	91,796

#### **TRAVEL**

1. State of Missouri travel will be focused on program development and meetings for project coordination, review, and management. The State has set aside \$750 in Y1 and \$500 in Y2 for a total of \$1,250 for the duration of the project.
2. The University of Missouri travel will be focused on recruitment, program development, and functions of coordination with the GIO office, the contractors, and other stakeholders. An amount of \$1,500 is set aside for Y1 with this amount decreasing to \$750 in Y2. Total of \$2,250 for the duration of the project.

#### **MU - MATERIALS AND SUPPLIES**

Plotter supplies (ink and paper) for creation of hard copy products for display and presentations. Paper and copying for survey forms and printing of marketing materials, invitations, and communications.

#### **MU- PARTICIPANT COSTS**

We are planning on bringing in up to six (6) guest speakers and have set aside funds to cover a stipend, travel, and subsistence in the amount of \$8,100 Y1. (approx \$1,620 per speaker)

#### **MU - COMPUTER SERVICES**

Computer service costs include computing hours on lab machines used in the GRC in support of the projects objectives, some hardware replacement costs and software costs are built into these numbers. The cost is \$2,000 for Y1 and \$2,000 for Y2. The total of computer service costs is \$4,000 over the duration of the project.

#### **CONTRACTUAL**

The State of Missouri is planning on using the University of Missouri through an existing MOU to provide the contracting mechanism to engage the Meeting Management, Meeting Facilitator, and pay the Hotel Contract. The costs associated with these relationships will be engaged in only Y1 (\$25,500)

#### **INDIRECT COSTS**

Indirect costs are calculated at the federally negotiated rate of 30% for '*Other Sponsored Activity*' of the modified total direct costs. This is calculated by subtracting costs for equipment, tuition, and subcontract costs in excess of \$25,000 for each subcontract, from the total direct costs.

**Project Plan 2: Planning - Information Infrastructure Summit**
**PI: Timothy L. Haithcoat - Geographic Information Officer - Missouri**
**A1. Salaries Senior/Key Persons - State of Missouri - ITSD - Contracted**

Name	Project Role	Enter one only		Σ	Σ	31.65%	32.60%	Fringe Rate
		9-month Salary	12-month Salary			Year 1	Year 2	Total
1 Timothy Haithcoat	PI - GIO		70,012	1.0	0.5	5,834	3,005	8,839
Fringe Benefits						1,847	980	2,826
<b>Total Salary Senior/Key Persons State of Missouri - ITSD</b>						5,834	3,005	8,839
<b>Total Fringe Senior/Key Persons State of Missouri - ITSD</b>						1,847	980	2,826
<b>Total Salary and Fringe Senior/Key Persons State of MO - ITS</b>						7,681	3,984	11,665

**A2. Salaries Senior/Key Persons - University of Missouri - Contracted**

Name	Project Role	Enter one only		Y1	Y2	31.65%	32.60%	Fringe Rate
		9-month Salary	12-month Salary			Year 1	Year 2	Total
1 Shannon White	Proj. Manager		50,000	6.0	6.0	25,000	25,750	50,750
Fringe Benefits						7,913	8,394	16,307
<b>Total Salary Senior/Key Persons University of Missouri</b>						25,000	25,750	50,750
<b>Total Fringe Senior/Key Persons University of Missouri</b>						7,913	8,394	16,307
<b>Total Salary and Fringe Senior/Key Persons Univ of MO</b>						32,913	34,144	67,057

**B2. Other Personnel - University of Missouri - Contracted**

<b>Full-time People</b>								
1 # in this position		12-month sal	Cal mo			Year 1	Year 2	Total
1	Staff Clerical	38,989	1.5	2		4,874	5,020	9,893
Fringe Benefits						1,543	1,636	3,179
<b>Part-time People</b>								
1 # in this position								
1	Grad student	14,500	12.0	12		14,500	14,935	29,435
Medical Insurance rate						1,876	1,932	3,808
<b>Total Salary Other Personnel University of Missouri</b>						19,374	19,955	39,328
<b>Total Fringe Other Personnel University of Missouri</b>						3,419	3,569	6,987
<b>Total Salary and Fringe Other Personnel University of MO</b>						22,792	23,524	46,316
<b>Total Salary All Personnel University of Missouri</b>						44,374	45,705	90,078
<b>Total Fringe All Personnel University of Missouri</b>						11,331	11,963	23,294
<b>Total Salary and Fringe All Personnel Univ of MO</b>						55,705	57,668	113,373

**D1. Travel - State of Missouri - ITSD - Contracted**

Domestic Travel	750	500	1,250
<b>Total Travel</b>	750	500	1,250

**D2. Travel - University of Missouri - Contracted**

Domestic Travel	1,500	750	2,250
<b>Total Travel</b>	1,500	750	2,250

**E. Participants Support Costs - University of Missouri - Contracted**

1 Stipends	5,000		5,000
2 Travel	2,500		2,500
3 Subsistence	600		600
# of participants/trainees	8,100	<b>Total Participant/Trainee Costs</b>	8,100

**F. Other Direct Contracted Costs -**

1	Materials and Supplies - University of Missouri				1,250	250	1,500
4	Computer Services - University of Missouri				2,000	2,000	4,000
5	Consulting Subcontracts - University of Missouri						
	#1 < \$25,000	Meeting Management			8,500		8,500
	#2 < \$25,000	Meeting Facilitator			12,000		12,000
	#3 < \$25,000	Hotel contract - meeting room and food			5,000		5,000
8	Equipment - Equip. Strategy						
		Rate per credit hour	\$307.66	# credits per GRA	22		
						6,769	6,972
						13,740	
	Total Other Direct Costs				28,750	2,250	31,000
Total Direct Costs - University of Missouri - Contracted					94,055	60,668	154,723
Total Direct Costs - State of Missouri - ITSD - Contracted					8,431	4,484	12,915
Modified Total Direct Costs (no equip, partic., subs>\$25, other no F&A, tuil.)					87,286	53,696	140,982
University of Missouri F&A Rates:					MTDC	26,186	16,109
						42,295	

***(b) Applicant Capacity, Knowledge and Experience***

Mr. Timothy Haithcoat is under contract as Missouri's Geographic Information Officer and is Project Lead for Missouri's application for State Broadband Data and Development Grant Program. Mr. Haithcoat has 25 years of experience developing and managing geospatial technologies in support of Missouri and national missions and mandates. He has served on the National Geospatial Programs Office's Geospatial Architecture Team and the Federal CIO Council's Geospatial Profile drafting team. He has a security clearance through NGA. His responsibilities include project design, contract development, cost estimation, staff coordination, and administrative oversight. He will assemble a full team for coordinating data collection, GIS data management, standardization, and visualization, as well as the assessment of the accuracy of the developed databases and GIS representations. He has managed statewide projects for Missouri to include a biodiversity study, legislative redistricting (1990 and 2000), block boundary suggestion programs leading up to the Census' of 1990, 2000, and now 2010, voting precinct mapping, school district mapping, and state-owned radio tower coverage models for the Missouri State Highway Patrol.

The University of Missouri's James Harlan has aided the State in the past with strong geospatial capabilities and analysis in supporting redistricting efforts in 1990 and 2000 as well as coordinated the voting precinct mapping for the state just this past year in coordination and collaboration with the U.S. Bureau of the Census. He also completed a statewide database compilation, standardization, and analysis of historic land survey notes to recreate the historic vegetation of circa 1820 Missouri. These efforts and relationships have forged a strong linkage between the State and its public land grant institution. As well, the University has developed the necessary relationships with local government entities and their mapping groups through the activities of the Missouri Spatial Data Information Service, the State's National Spatial Data Clearinghouse. These relationships will aid in the validation and verification of these maps so as to provide quality control and an unbiased assessment for the overall project and its partners. He has strong organizational skills as well as personnel management skills – particularly with student workers (both graduate and undergraduate) as well as with the general public. He has strong communication skills and high standards of excellence.

GeoDecisions and CBG communications have a long history in provided telecommunications, GIS mapping, and telecommunication planning services. Additionally, both firms have provided statewide inventory projects for State Public Utility Commissions.

GeoDecisions, with an office in St. Louis, MO, is a recognized leader in the spatial IT industry and operates as a division of Gannett Fleming Inc. It is ISO 9001:2000-certified. During the past 22 years, they have successfully completed more than 500 IT and GIS-related projects. They have built a solid reputation by championing a philosophy vested in partnering and collaboration thereby providing innovative consulting services and customized solutions in a timely and cost-effective manner for all stakeholders. GeoDecisions also has a strong relationship with ESRI and is one of only 70 firms in the U.S. that have this Corporate Business Partner designation with ESRI. This elite status demonstrates GeoDecisions' depth of knowledge with industry-standard software and our strong GIS consulting experience. GeoDecisions was the ESRI Business Partner of the Year twice and Foundation Business Partner of the year once during the last eight years.

GeoDecisions can offer the State of Missouri functional experience obtained from projects with many government and utility agencies. Most notably, GeoDecisions completed a GIS data development project for the South Dakota Public Utilities Commission (PUC). GeoDecisions worked with the state, local officials, and third party utility owners to acquire and perform conversion on 79 electric territory maps (some digital and some hard copy), 67

municipal territory maps, and the 149 docket territory changes that represented the 66 counties in South Dakota, many of which dated back to the early 1960's. GeoDecisions then created a seamless ESRI File Geodatabase.

Additionally, GeoDecisions has completed a variety of large scale telecommunications and fiber optics mapping projects including a National Fiber Optic Inventory (2000 – 2003) in 13 States for *Southwestern Bell Corporation* with almost 3,100 Wire Centers and 69 Planning and Design Centers, constituting a mapped area of 35 percent of the continental United States. Management responsibilities included project pricing, project planning, massive interviewing, project documentation, training, project team deployment, on-site project start-up in numerous areas of the country, project reporting, client relations, work assignment, progress reporting, productivity monitoring, problem resolution, and financial performance.

CBG with offices in Saint Paul, MN has established a national reputation in technology strategic planning, broadband, needs ascertainment and telecommunications matters. CBG has a proven record of accomplishment in providing consulting services for public sector entities that produce effective results. CBG's principal consultant, Tom Robinson, has been a guest speaker at National Association of Telecommunications Officers and Advisors (NATOA) Annual Conferences. In addition, Tom has been a guest speaker at National League of Cities' seminars on local government issues emanating from the Telecommunications Act of 1996 and the relationship between telecommunications infrastructure and economic development.

CBG has extensive experience in performing a variety of technology, broadband, telecommunications, technology review, assessment, analysis, survey, and other project tasks, negotiating with industry providers, meeting and working with local elected and appointed officials and staff personnel, facilitating the activities of advisory committees (that include both public and private sector representatives) and making presentations to City and County Councils, Commissions and Boards. Additionally, the principals are very knowledgeable about, and stay current on, governmental issues and regulatory matters. CBG has the requisite experience in a wide range of technology, broadband telecommunications and technical subject areas to effectively assist the State with our needs assessment and planning processes.

Through its various team members, including GeoDecisions, CBG Communications has extensive hands-on experience in developing, implementing and managing GIS mapping solutions that will provide the vision necessary to successfully assist the State in developing the comprehensive dataset it needs that will enable the Missouri to impact expansions of broadband deployment and adoption in the State. The CBG team has a broad range of GIS-related experience including developing inventories, conducting needs assessments, designing workflows, geodatabase design and implementation, data conversion, geocoding, and Web application development and implementation that will make certain of the accuracy, consistency and dependability of the State of Missouri's GIS broadband mapping strategy as part of the overall broadband deployment and adoption enhancement effort.

Further, CBG has significant experience with broadband deployment and adoption planning and strategy development. Throughout its work related to broadband networks, CBG has focused on strategies concerning how such networks are best deployed and what factors lead to various levels of availability and adoption. For example, CBG recently concluded a large project for the State of Washington where it helped develop and facilitate a high-speed internet and deployment adoption strategy for the entire State.

GeoDecisions and CBG understands that this is a decisive time concerning broadband access in the State of Missouri, and is fully committed to assisting the State of Missouri in meeting its broadband infrastructure and service dataset creation and related mapping goals. GeoDecisions' experience in implementing similar engagements provides a clear understanding of the underpinnings of a successful, integrated project.

### Section 3. *Expedient Data Delivery*

The State of Missouri's team understands the project is under a tight deadline and the development of a complete data submission to NTIA must be made on by March 1, 2010, with updates semi-annually on September 1 and March 1 of each subsequent year. The State and its partners are committed to meeting these deadlines.

Paramount to attaining adhering to a strict timelines is communication between partners and their various roles and responsibilities. The consultant will develop an individualized Communication Plan for the entire Broadband Mapping Project. The Plan would confirm the communications requirements in the contract and work order, as well as create a project directory listing with contact information of all stakeholders.

The Plan will determine the information and communication needs of the project stakeholders; who needs what information, when it is needed, how it will be transmitted, and by whom. The Plan will identify the methods that will be used to exchange information necessary to control the project and deliver the scope. For example, it would describe the purpose and scheduling of such elements as: Kick-off meeting, Project team meetings, Steering Committee meetings, Quality gates, Technical review, Knowledge transfer, Presentation of deliverables, and Deliverable acceptance procedures.

The Plan will also address formats and methods for documenting and distributing communication artifacts, such as: Meeting minutes, Monthly Status reports to the State, Final Methodology and Project Written Reports, Work plans, Working papers, and Change management documents.

The Plan will also include a strategy of constant communication and coordination with the NTIA to make certain that NTIA's technical specifications are being followed and that all data will be compatible with the nationwide inventory and map. In addition, the consultant will include collaboration of local governments, universities, and other public institutions into the communication plan to make certain that all stakeholders are identified and mechanisms are established to make certain that stakeholders have opportunities for comment and input.

This is critical because the NTIA has a preference for delivery of a '*substantially complete*' dataset by 11/1/2009. '*Substantially complete*' is defined as including four different measurement parameters:

- 70% of providers.
- 80% of households in the state.
- 90% of households in rural areas (any area, as confirmed by the latest decennial census of the Bureau of the Census, which is not located within: (i) A city, town, or incorporated area that has a population of greater than 20,000 inhabitants; or (ii) an urbanized area contiguous and adjacent to a city or town that has a population of greater than 50,000 inhabitants).
- 95% of community anchor institutions (schools, libraries, medical and healthcare providers, *public safety entities*, community colleges and other institutions of higher education, and other community support organizations and entities).

Specifically, the NTIA sees the potential timing pitfalls of providing a *substantially complete* set of all broadband mapping data by November, 2009. They stated during the webinar on July 24, 2009 (referring to the November 1<sup>st</sup>, 2009 deadline) that "*we know for many of you that is not possible*" and an alternative should be provided. At this time the State of Missouri and its project team will not be able to meet this initial 11/1/2009 deadline. We are also unsure as to the timing and receipt of federal funds to start certain elements of this work.

*Alternative:*

We propose to have all NDAs delivered to the providers and initial contact, discussion and negotiation with the providers taking place well prior to November 1, 2009. In addition, we feel confident that we can use the State's current data to identify coverage of 95% of community anchor institutions by the November 1, 2009 deadline.

For the mapping elements and metrics of percent providers, percent of households in the state, and percent of households in rural areas, our team will work to gather information from providers who come to early agreement on and sign an NDA. The team will begin inputting this data into the database as soon as it is received, so that all the data that can be input by November 1, 2009 will be. At this point a status report against the four metrics of '*substantially complete*' will be provided to NTIA. We anticipate an ability to ascertain information from many of the smaller providers in the State and will have this data available. GeoDecisions, with its St. Louis, MO office and staff, has an existing knowledge base on areas of the State that do not currently have broadband service. Therefore we will have a significant amount of information available and input into the database prior to the initial deadline of November 1, 2009 but cannot guarantee to have a *substantially complete* dataset as defined in the Mapping NOFA.

The consultant will work with State of Missouri and MU to develop and refine the timeline outlined below for each phase of the project while remaining consistent with the State of Missouri and NTIA goals. Many of the components of this project will occur concurrently, helping to keep the project moving forward. This will also keep any setbacks encountered from significantly impacting the overall project schedule.

Timeline to first 'Complete' data Set	Sept	Oct	Nov	Dec	Jan	Feb	March
Task							
Project Administration and Regular Communications among the Team							
Status Reports							
Announcement & Notification of award							
Award documents available and finalized							
Collection of publicly available sources							
Finalization of NDA template for data and information collection request							
Confidential, Non-Disclosure Agreement with Providers distributed and negotiated							
Anchor Institution Inventory and Survey							
Create a Wired/Fixed-Wireless Geographic Statewide Inventory and GIS Ready Dataset							
Identify broadband infrastructure and services							
Create data record formats as specified by NTIA Technical Appendix.							
Develop initial GIS ready datasets							
Perform field verification sampling in fixed-wireless and wired service areas							
Modify Initial geographic statewide inventory dataset							
February 1, 2010 'sustantially complete'							
March 1, 2010 'complete' - V1.0							



other data gathering methods. Our strategy to provide a plan for updating the GIS dataset will include the following steps:

- Design an appropriate platform to ensure that GIS spatial data is easily accessible by appropriate personnel through established, secure networks.
- Design fully integrated workflow diagrams designating GIS dataset updating and maintenance procedures.
- Establish data quality assurance and quality control procedures.
- Document and archive geo-spatial data processing methodologies and workflows.

The consultant will work with the State to make certain that GIS data security mechanisms are in place while allowing updating from offices, remote sites, or mobile workforces in real-time. This will attempt to be fully automated and consistent with our collaboration strategy with broadband providers and internet service providers. The process for assessment, creation, and regular updating of the GIS dataset will include the following steps:

- Mechanisms will be in place for the State of Missouri and its designated stakeholders to continue to receive new information from broadband and internet service providers
- Establishment of multi-level security protocols to insure data integrity and to control and limit access to GIS data

The GIS dataset can have the ability to allow display development by layer either separately or combined to indicate public and private ownership of types of broadband infrastructure.

## ***Section 5. Planning and Collaboration***

### **a) Collaboration**

While the data and mapping plan is focused on the previously successful partnered team of the State, MU, RPCs, and local government as previously outlined in this proposal, the collaboration plan needs to be far reaching and inclusive of a much broader set of interested stakeholders in this process. The GIO will provide the oversight, coordination, and work with the consultants and other partners to make sure introductions have been made appropriately and that the wheel have been greased to the extent possible. The GIO's coordination role will focus on maintaining project continuity, coordinating support and outreach activities, with occasional site visits, as well as rollout / review meetings and reporting. He is to become the 'face' or marketing arm of the program.

State agencies will be asked to cooperate in providing lists of anchor facilities, validating their positional accuracy, and being the conduit (stick or carrot) for the systematic collection of the necessary attribute information for these facilities. Agencies such as Revenue, Public Safety, Social Services, Mental Health, and individuals such as the State Demographer will be of great support and will be able to use the data collected and developed through this proposal. The Department of Economic Development's GIS support group has also wanted to participate in the determination of business and industry aspects of the broadband mapping and analysis. The state's MOREnet group whose responsibility is mandated to support academia and broadband fiber connections across the state for research applications has proven to be very cooperative. The Department of Elementary and Secondary Education as well as the Department of Higher Education are touch points in our efforts to get school children, youth, and young adults to visit Missouri's Speed Site. This could be a huge independent data set that could be used to assess

and validate our mapping and findings. There are still groups that we have to ‘win over’ within the state which we hope the provision of products and information will provide us with an entry point.

A cordial working relationship with the providers is foundational to the success of this mapping and data development effort. The consultant’s having worked with some of these entities before have existing relationships. Since the need for recurring information is a requirement, it is critical to our efforts to maintain confidentiality, trust, and respect of these new partners in mapping.

The MSDIS has an existing data sharing MOU’s with all 16 RPCs since 2004. We will leverage the MSDIS to aid and support coordination activities with local governments, RPCs, and their digital data address holdings. It is imperative that the relationships developed to date are maintained and if possible expanded through this project. We have found that any time you can include local governments at the start of the process, the more successful the process will be. I’m sure the same can be said of providers. We just need to be smart in how we engage and move forward. Local governments with GIS capabilities can provide real opportunities for aiding in the development of address lists, and lists for statistical sampling of their regions. These groups typically have the capability to insert a polygon and generate an address of all known addresses within that region, whether the region is a service area of a provider or a buffered rose for statistical sampling purposes. Currently there are 55 counties in Missouri with developed GIS systems and other 20 under development. While this number (55) only represents 48% of the counties – it is important to note that in almost all cases the more populated counties will have GIS before rural areas. This means that we could probably have over 85% of all addresses digitally BUT the rest in the rural areas are going to be hard to come by and will need to be developed through partnerships to build the common address point base needed to consistently map provider areas.

We also plan on leveraging not only MU student resources but other regional academic institutions as well. These students can play major roles in data collection of both infrastructure information and survey-based information.

## **b) Planning**

### **Proposal Part A: Regional Technology Planning Teams (RTPT)**

#### *BDIA-related purpose*

The following planning proposal to create Regional Technology Planning Teams in each of the State’s 16 Regional Planning Councils will address these specific projects areas identified in the BDIA.

- Identify barriers to the adoption of broadband service and information technology services;
- Create and facilitate by county or designated region in a state, local technology planning teams; and
- Facilitate information exchange regarding use and demand for broadband services between public and private sector users;

#### *The Problem*

There are varying problems, barriers, and opportunities for broadband deployment, adoption, and use across the state. Having RTPTs at the regional level will ensure the State creates a broadband plan that addresses the varying needs throughout the State. For instance, the broadband needs in the State’s more urbanized counties will likely be significantly different from much more rural and sparsely populated counties.

### *The Solution*

Our team members have extensive experience in the area of broadband planning. Specifically, they performed a study with the State of Washington to design a template to create broadband Local Technology Planning Teams (LTPT). Our proposal employs the findings and outcomes from that study to promote a successful regional planning process for the State of Missouri.

The consultants will work with the GIO and the Missouri Association of Councils of Government to create a RTPT in each of the State's 16 regional planning councils (RPCs). Our team will work to leverage existing local efforts and knowledge to create these regional level broadband planning teams. These teams will consist of members representing cross-sections of the community, which may include participation from the following organizations: representatives of business, broadband providers, K-12 education, community colleges and universities, local economic development organizations, health care, libraries, community technology organizations, local governments, tourism, parks and recreation, and agriculture. This list is not exhaustive and each regional group might have other representatives at work in the broadband access arena that can aid with idea generation and problem solving. Overall, each RTPT should be designed to be the most effective at the local level.

These teams will then be given the charge, with support from our consultants, to: (i) conduct a needs assessment; and (ii) develop a strategic plan based on their findings. The consultant will the work with the RTPT to work collaboratively with broadband providers and technology companies across the state to encourage deployment and use, especially in areas not served, through use of local demand aggregation, mapping analysis, and creation of market intelligence to improve the investment rationale and business case.

After considering our experience and the best practices among successful LTPTs in other parts of the country, our team determined that a successful planning project needs to incorporate the following attributes:

- The consultant would provide oversight to the RTPTs to ensure they are most effective by providing an umbrella across all counties which ensures that these regional and local processes are streamlined across the state. Consultant's staff would be dedicated to facilitating the local process and connecting the RTPT to statewide and federal resources – market intelligence, experts, and funding.
- The RTPT members would typically be volunteers from the representative groups that are reimbursed for travel, but not paid to serve on the team.
- The RTPTs would be supported by the consultant who would spend the first meeting training the members of the team on how to accomplish their goals, connecting the team to resources to complete their tasks, assisting with drafting the local technology plan, and working to identify funding sources. Once the plan is in place, the consultant assists in, and supervises, grant writing to secure funds, reports on progress related to meeting identified benchmarks, and calls additional RTPT meetings as needed.
- The RTPT utilizes a set of metrics (or market intelligence) to monitor their own success. These metrics typically include:
  - Availability of broadband
  - Adoption of broadband
  - The goals and levels of achievement of grassroots efforts often related to demand side goals – such as technology literacy, personal computer hardware supply programs and workforce/job training.
  - Unique goals established based on regional and local community planning.

- The work of the RTPTs is typically six to eighteen months. Our team ensures that the work will be completed and a final report will be issued. The RTPTs will likely remain in effect after this time in order to monitor that the established goals are being met.

One of the objectives of the regional technology planning teams will be to identify, and then build upon efforts already in progress, such that each of the regions could move in a coordinated direction much faster than if starting from scratch. The consultant functioning as the coordinator will ensure the following attributes exist in each of the RTPTs:

- Participation by local high-speed internet stakeholders at the county and regional levels.
- Effective and comprehensive needs assessments that drive decision-making.
- Successful strategic planning with measurable outcomes.
- A comprehensive understanding of grassroots and other broadband initiatives locally, regionally, and across the State.

#### *The Outcomes*

The consultants will provide the State with written monthly progress reports, each RTPT's written strategic plan, a consolidated final report, and all required attributes of the Mapping NOFA. These will include regionally based barriers to broadband service adoption and information technology services, regionally based needs and requirements, and the creation and facilitation of RTPT's as described above.

#### *The Cost*

The total cost of this proposal is \$189,543 for Y1 and \$78,437 for Y2. Total cost is \$267,979 for the project.

### **Proposal Part B: Information Infrastructure Summit**

#### *BDIA-related purpose*

The following planning proposal to host an Information Infrastructure Summit will address these specific projects areas identified in the BDIA.

- Identify barriers to the adoption of broadband service and information technology services;
- Collaborate with broadband service providers and information technology companies to encourage deployment and use;
- Facilitate information exchange regarding use and demand for broadband services between public and private sector users;

#### *The Problem*

There is a current focus on "shovel-ready" bricks and mortar projects for economic recovery. However, advancing the Missouri information technology infrastructure will be critical to its success in job creation, job training, planning, monitoring and reporting in the competitive global knowledge-based economy before us. From the expansion of communication broadband capabilities to developing a system for tracking outbreak of diseases such as the H1N1 "Swine Flu," Missouri needs to focus on its current capabilities and future needs for critical information infrastructure. Data systems are needed to link education, economic and workplace data that will allow for tracking teacher effectiveness in student preparation for alignment with employer /

workplace needs. It is all being tied together and the questions keep getting more complex so that the integration and interaction of information from all relevant sources can be applied to the problems before us.

Missouri needs a forum to start the process toward a paradigm shift in how people in academia, business, industry, legislature, government, and even the local citizen think about information technology. Experts in technology, as well as futurists, contend that we are standing on the brink of an information revolution that will rival the industrial revolution by its impact and intensity. However, one stumbling block remains--the lack of planning. This void can be compared to sailing a rudderless ship into the twenty-first century. The broadband mapping and subsequent deployment of all this infrastructure investment is lost until we convince the powers that be that information technology has become foundational infrastructure for our economy, our education, our finance, our security, and many components of our quality life now and into the future. What the broadband deployment represents is our *knowledge infrastructure*, our future. We have to start the dialog in the State of Missouri.

### *The Solution*

As a first step towards building this understanding in Missouri, the various stakeholders and information technology sector experts should develop a program for a statewide summit on ***“Building Missouri’s Information Infrastructure for the 21<sup>st</sup> Century.”*** The event should be hosted by the Missouri CIO or the Governor to give it enough profile to be well attended and attract the media’s attention. Both the Governor and the CIO should speak during the opening session. The summit should have focused technology breakouts such as telemedicine, geospatial and location based services, distance learning, services to citizens, and others that rely on the information infrastructure being created across the state.

A survey will need to be developed and a target audience identified to gather facts about the broader community’s (as represented in the potential participants list below) attitude toward technology change. This includes the attitude of the public, administration, legislators, media, and teachers toward integrating technology into their life. We must also discovery and document the barriers inhibiting change or adoption in the past. We must also assess the computer literacy level of students, parents, business owners, local government employees, and the community at large. We will also gather facts about the status of current technology planning, assuming at least some part of a broadband plan is in effect, and describe the technology infrastructure baseline for the State of Missouri.

Potential presenters and participants for the information infrastructure summit include:

- Director of the Department of Economic Development
- DED, MERIC Director
- Missouri Technology Corporation
- MODOT Director
- Office of Administration IT Director
- Department of Public Safety /Homeland Security
- Department of Agriculture
- Director, Missouri Department of Natural Resources
- Department of Health and Senior Services
- Missouri State CIO
- Missouri State Data Center
- Commissioner of Elementary and Secondary Education
- Commissioner of Higher Education
- MU System CIO
- Missouri State GIO
- OSEDA Director
- MOREnet Director
- MU Telehealth Network
- MU Provost
- MU Vice Provost for Research

- Director Missouri Water Resources Center
- Midwest Research Institute
- Leonard Wood Research Institute
- Danforth Plant Science Center
- Kauffman Foundation
- AT&T
- Centurytel
- News Media
- Sprint/Nextel
- Verizon
- U.S. Postal Service
- Ameren Corporation
- Cerner Corporation
- Banking and Finance sector representatives
- Hospital/medical sector

### Venue

The Kauffman Foundation has expressed interest in providing a venue for the proposed summit. The Capitol Plaza Hotel and the Holiday Inn Executive Center are other potential venues in central Missouri.

### *The Outcomes*

The summit will identify strategies and priorities in order to improve Missouri's critical information infrastructure and the Missouri economy. Such a summit would lead the way for collaboration between and among the institutions of higher education, policy makers, legislators, business, industry and potential investors. Another outcome of the summit would be to help identify issues and gaps to be considered in developing state policy for advancing the critical infrastructure needed for success in the knowledge-based world economy. The summit would also help to organize the relevant stakeholders to identify Missouri's needs and priorities to better compete for Federal economic stimulus dollars.

### *The Cost*

The total cost of this proposal is \$209,932 for a two (2) year research project leading up to and including the summit.

## Letter of State Designation



GOVERNOR OF MISSOURI

JEFFERSON CITY

65102

JEREMIAH W. (JAY) NIXON  
GOVERNOR

P.O. Box 720  
JEFFERSON CITY 65102-0720

August 10, 2009

Edward "Smitty" Smith, Program Director  
State Broadband Data and Development Grant Program  
National Telecommunications and Information Administration  
U.S. Department of Commerce  
1401 Constitution Avenue, N.W. Room 4898  
Washington, DC 20230

Dear Mr. Smith:

This letter is to notify the National Telecommunications and Information Administration (NTIA) that the Office of Administration, Information Technology Services Division, Geographic Information Officer will serve as Missouri's designated single eligible entity under the State Broadband Data and Development Grant Program pursuant to P.L. 110-385 to receive this grant. We expect to work closely with the University of Missouri to fulfill the grant's purpose.

The University of Missouri has aided the State in the past with supporting redistricting efforts in 1990 and 2000, as well as coordinated the voting precinct mapping for the state just this past year in coordination and collaboration with the U.S. Bureau of the Census. These efforts and relationships have forged a strong linkage between the State and its public land grant institution. As well, the University has well-developed relationships with local government entities and their mapping groups that will aid in the validation and verification of these maps so as to provide quality control and an unbiased assessment for the overall project and its partners.

The Geographic Information Officer for the State of Missouri, Mr. Timothy L. Haithcoat, who holds an appointment with the University of Missouri, will provide the oversight and coordination to ensure that the State's obligations made under the State Broadband Data and Development Grant Program will be met in a complete, efficient and timely manner.

Sincerely,

A handwritten signature in black ink, appearing to read "Jay Nixon".

Jeremiah W. (Jay) Nixon  
Governor

[www.governor.mo.gov](http://www.governor.mo.gov)

# BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 4040-0006

Expiration Date 07/30/2010

## SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. State Broadband and Data and Development Grant Program	11.558	\$ 3,952,480.00	\$ 800,000.00	\$ 3,952,480.00	\$ 800,000.00	\$ 4,752,480.00
2.						
3.						
4.						
5. Totals		\$ 3,952,480.00	\$ 800,000.00	\$ 3,952,480.00	\$ 800,000.00	\$ 4,752,480.00

Standard Form 424A (Rev. 7-97)  
Prescribed by OMB (Circular A -102) Page 1

# SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	State Broadband and Data and Development Grant Program				
a. Personnel	\$	\$	\$	\$	\$
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual	3,952,480.00				3,952,480.00
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)	3,952,480.00				\$ 3,952,480.00
j. Indirect Charges					\$
k. TOTALS (sum of 6i and 6j)	\$ 3,952,480.00	\$	\$	\$	\$ 3,952,480.00
7. Program Income	\$	\$	\$	\$	\$

Authorized for Local Reproduction

Standard Form 424A (Rev. 7- 97)  
Prescribed by OMB (Circular A -102) Page 1A

SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. State Broadband and Data and Development Grant Program	\$ <input type="text" value=""/>	\$ <input type="text" value="800,000.00"/>	\$ <input type="text" value=""/>	\$ <input type="text" value="800,000.00"/>
9. <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
10. <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
11. <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
12. TOTAL (sum of lines 8-11)	\$ <input type="text" value=""/>	\$ <input type="text" value="800,000.00"/>	\$ <input type="text" value=""/>	\$ <input type="text" value="800,000.00"/>

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ <input type="text" value="1,438,244.00"/>	\$ <input type="text" value="575,298.00"/>	\$ <input type="text" value="431,473.00"/>	\$ <input type="text" value="215,737.00"/>	\$ <input type="text" value="215,736.00"/>
14. Non-Federal	\$ <input type="text" value="300,000.00"/>	<input type="text" value="120,000.00"/>	<input type="text" value="90,000.00"/>	<input type="text" value="45,000.00"/>	<input type="text" value="45,000.00"/>
15. TOTAL (sum of lines 13 and 14)	\$ <input type="text" value="1,738,244.00"/>	\$ <input type="text" value="695,298.00"/>	\$ <input type="text" value="521,473.00"/>	\$ <input type="text" value="260,737.00"/>	\$ <input type="text" value="260,736.00"/>

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)			
	(b)First	(c) Second	(d) Third	(e) Fourth
16. N/A	\$ <input type="text" value="1,058,357.00"/>	\$ <input type="text" value="616,927.00"/>	\$ <input type="text" value="551,861.00"/>	\$ <input type="text" value="287,092.00"/>
17. <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
18. <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
19. <input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
20. TOTAL (sum of lines 16 - 19)	\$ <input type="text" value="1,058,357.00"/>	\$ <input type="text" value="616,927.00"/>	\$ <input type="text" value="551,861.00"/>	\$ <input type="text" value="287,092.00"/>

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: <input type="text" value=""/>	22. Indirect Charges: <input type="text" value="0%"/>
23. Remarks: <input type="text" value=""/>	

Authorized for Local Reproduction

Standard Form 424A (Rev. 7- 97)  
Prescribed by OMB (Circular A -102) Page 2

## **Planning 1: Regional Technology Planning Teams**

### **Budget Narrative:**

The summit will identify strategies and priorities in order to improve Missouri's critical information infrastructure and the Missouri economy. Such a summit would lead the way for collaboration between and among the institutions of higher education, policy makers, legislators, business, industry and potential investors. Another outcome of the summit would be to help identify issues and gaps to be considered in developing state policy for advancing the critical infrastructure needed for success in the knowledge-based world economy.

### **PERSONNEL**

**Tim Haithcoat, State Project Leader**, is under contract as the State of Missouri's Geographic Information Officer. He will provide project oversight, collaborate with RPC personnel, the consultants, and external stakeholders, and provide review and direction for the effort. The 2-year project's level of effort by year is Y1: .166FTE; Y2: .166FTE. With an annual salary of \$70,012, we are requesting funds by year of: Y1: \$11,669 and Y2: \$12,019.

### **FRINGE BENEFITS**

We have applied the federally negotiated rate of 31.65% for fringe benefits for full-time employees. This number has been increased by 3% each year for subsequent years.

	Year 1	Year 2	Total
Total Salaries	11,669	12,019	23,687
Total Fringe	3,693	3,918	7,611
Total Personnel	15,362	15,937	31,299

### **TRAVEL**

State of Missouri travel will be focused on coordination meetings and participation in local RPC planning meetings for the launch and development of the RTPT program and plans. The State has set aside \$5,000 per year to offset the costs of this travel. Total of \$10,000 for the duration of the project.

### **CONTRACTUAL**

The State of Missouri is planning on using the University of Missouri through an existing MOU to provide the contracting mechanism to engage the consultants GeoDecisions and CBG. Much of the costs associated with this relationship will be engaged in Y1 (\$154,000) and into Y2 (\$50,000) as the consultant disengages and the state RTPT program moves forward. The total contract for the 2 year period is \$204,000.

### **INDIRECT COSTS**

Indirect costs are calculated at the federally negotiated rate of 30% for 'Other Sponsored Activity' of the modified total direct costs. This is calculated by subtracting costs for equipment, tuition, and subcontract costs in excess of \$25,000 for each subcontract, from the total direct costs.

**Project Plan 1: State of Missouri - Regional Technology Planning Teams - Planning**

**PI: Timothy L. Haithcoat - Geographic Information Officer - Missouri**

**A1. Salaries Senior/Key Persons - State of Missouri - ITSD - Contracted**

	Name	Project Role	Enter one only		Y1	Y2	Y3	Y4	Y5	31.65%	32.60%	Fringe Rate
			9-month Salary	12-month Salary						Year 1	Year 2	Total
1	Timothy Haithcoat	PI - GIO		70,012	2.0	2.0				11,669	12,019	23,687
Fringe Benefits										3,693	3,918	7,611
<b>Total Salary Senior/Key Persons State of Missouri - ITSD</b>										11,669	12,019	23,687
<b>Total Fringe Senior/Key Persons State of Missouri - ITSD</b>										3,693	3,918	7,611
<b>Total Salary and Fringe Senior/Key Persons State of Missouri - ITSD</b>										<b>15,362</b>	<b>15,937</b>	<b>31,299</b>

**D1. Travel - State of Missouri - ITSD - Contracted**

Domestic Travel	5,000	5,000	10,000
<b>Total Travel</b>	<b>5,000</b>	<b>5,000</b>	<b>10,000</b>

**F. Other Direct Costs -**

1 Consulting Subcontracts - University of Missouri			
#4 < \$25,000 GeoDecisions/CBG - Regional Technology Planning Teams	25,000	25,000	50,000
#4 > \$25,000	129,000	25,000	154,000
<b>Total Other Direct Costs</b>	<b>154,000</b>	<b>50,000</b>	<b>204,000</b>
<b>Total Direct Costs - University of Missouri - Contracted</b>	<b>154,000</b>	<b>50,000</b>	<b>204,000</b>
<b>Total Direct Costs - State of Missouri - ITSD - Contracted</b>	<b>20,382</b>	<b>20,937</b>	<b>41,299</b>
<b>Modified Total Direct Costs (no equip, partic., subs &gt; \$25, other no F&amp;A, tuit.)</b>	<b>25,000</b>	<b>25,000</b>	<b>50,000</b>
<b>University of Missouri F&amp;A Rates:</b>	MTDC 30.00%	7,500	15,000

## **Planning 2: Information Infrastructure Summit**

### **Budget Narrative:**

The summit will identify strategies and priorities in order to improve Missouri's critical information infrastructure and the Missouri economy. Such a summit would lead the way for collaboration between and among the institutions of higher education, policy makers, legislators, business, industry and potential investors. Another outcome of the summit would be to help identify issues and gaps to be considered in developing state policy for advancing the critical infrastructure needed for success in the knowledge-based world economy.

#### **PERSONNEL**

**Tim Haithcoat, State Project Leader**, is the State of Missouri's Geographic Information Officer. He will provide project oversight, collaborate with State agency personnel, the consultants, MU personnel, and external stakeholders, and provide review and direction for the effort. The 2-year project's level of effort by year is Y1: .083FTE; Y2: .0415 FTE. With an annual salary of \$70,012, we are requesting funds by year of: Y1: \$5,834 and Y2: \$3,005.

**Shannon White, MU - Project Leader**, is the Geospatial Extension Specialist with the Department of Geography. She will provide guidance and oversight for the graduate student, and undergraduate student workers. In addition she will coordinate with the GIO, to develop the program, identify speakers, develop list of invitees, develop promotional materials, and other tasks relevant to the successful completion of the research leading up to the summit as well as the summit itself. The level of effort by year is Y1: .50FTE and Y2: .50 FTE. With an annual salary of \$50,000, we are requesting funds by year of: Y1: \$25,000 and Y2: \$25,750.

**MU - Dianne Roberts, Clerical Project Support Staff**, is an Administrative Associate in the GRC. She will coordinate project fiscal administration with campus personnel and project leaders. The level of effort is .125FTE for Y1 and .166FTE for Y2 of this project. With an annual salary of \$38,989, we are requesting funds by year of: Y1: \$4,874 and Y2: \$5,020.

**MU - Graduate Research Assistant**. They will perform research on the assessment elements of the proposed activity. They will receive \$23,145 for Y1 and \$23,839 for Y2, for 12 calendar months effort (100%). The University considers tuition for GRAs to be a necessary expense to include as a fringe benefit. The current rate is \$307.66 per credit hour. We estimate a total of \$6,769 for 22 credits for the GRA. We are also required to provide health insurance at a cost of \$1,876 per year. These are included in the above total cost figures.

Note: Salaries have been increased by 3% each year for subsequent years.

#### **FRINGE BENEFITS**

We have applied the federally negotiated rate of 31.65% for fringe benefits for full-time employees. This number has been increased by 3% each year for subsequent years.

	<b>Year 1</b>	<b>Year 2</b>	<b>Total</b>
<b>Total Salaries</b>	35,708	33,775	69,483
<b>Total Fringe</b>	11,303	11,010	22,313
<b>Total Personnel</b>	47,011	44,785	91,796

#### **TRAVEL**

1. State of Missouri travel will be focused on program development and meetings for project coordination, review, and management. The State has set aside \$750 in Y1 and \$500 in Y2 for a total of \$1,250 for the duration of the project.
2. The University of Missouri travel will be focused on recruitment, program development, and functions of coordination with the GIO office, the contractors, and other stakeholders. An amount of \$1,500 is set aside for Y1 with this amount decreasing to \$750 in Y2. Total of \$2,250 for the duration of the project.

#### **MU - MATERIALS AND SUPPLIES**

Plotter supplies (ink and paper) for creation of hard copy products for display and presentations. Paper and copying for survey forms and printing of marketing materials, invitations, and communications.

#### **MU- PARTICIPANT COSTS**

We are planning on bringing in up to six (6) guest speakers and have set aside funds to cover a stipend, travel, and subsistence in the amount of \$8,100 Y1. (approx \$1,620 per speaker)

#### **MU - COMPUTER SERVICES**

Computer service costs include computing hours on lab machines used in the GRC in support of the projects objectives, some hardware replacement costs and software costs are built into these numbers. The cost is \$2,000 for Y1 and \$2,000 for Y2. The total of computer service costs is \$4,000 over the duration of the project.

#### **CONTRACTUAL**

The State of Missouri is planning on using the University of Missouri through an existing MOU to provide the contracting mechanism to engage the Meeting Management, Meeting Facilitator, and pay the Hotel Contract. The costs associated with these relationships will be engaged in only Y1 (\$25,500)

#### **INDIRECT COSTS**

Indirect costs are calculated at the federally negotiated rate of 30% for '*Other Sponsored Activity*' of the modified total direct costs. This is calculated by subtracting costs for equipment, tuition, and subcontract costs in excess of \$25,000 for each subcontract, from the total direct costs.

**Project Plan 2: Planning - Information Infrastructure Summit**

**PI: Timothy L. Haithcoat - Geographic Information Officer - Missouri**

**A1. Salaries Senior/Key Persons - State of Missouri - ITSD - Contracted**

		Enter one only				31.65%	32.60%	Fringe Rate
Name	Project Role	9-month Salary	12-month Salary	Y1	Y2	Year 1	Year 2	Total
1 Timothy Haithcoat	PI - GIO		70,012	1.0	0.5	5,834	3,005	8,839
Fringe Benefits						1,847	980	2,826
Total Salary Senior/Key Persons State of Missouri - ITSD						5,834	3,005	8,839
Total Fringe Senior/Key Persons State of Missouri - ITSD						1,847	980	2,826
Total Salary and Fringe Senior/Key Persons State of MO - ITS						7,681	3,984	11,665

**A2. Salaries Senior/Key Persons - University of Missouri - Contracted**

		Enter one only				31.65%	32.60%	Fringe Rate
Name	Project Role	9-month Salary	12-month Salary	Y1	Y2	Year 1	Year 2	Total
1 Shannon White	Proj. Manager		50,000	6.0	6.0	25,000	25,750	50,750
Fringe Benefits						7,913	8,394	16,307
Total Salary Senior/Key Persons University of Missouri						25,000	25,750	50,750
Total Fringe Senior/Key Persons University of Missouri						7,913	8,394	16,307
Total Salary and Fringe Senior/Key Persons Univ of MO						32,913	34,144	67,057

**B2. Other Personnel - University of Missouri - Contracted**

Full-time People									
1	# in this position			12-month sal	Cal mo		Year 1	Year 2	Total
1	Staff	Clerical		38,989	1.5	2	4,874	5,020	9,893
				Fringe Benefits			1,543	1,636	3,179
Part-time People									
1	# in this position								
1		Grad student		14,500	12.0	12	14,500	14,935	29,435
				Medical Insurance	rate		1,876	1,932	3,808
Total Salary Other Personnel University of Missouri							19,374	19,955	39,328
Total Fringe Other Personnel University of Missouri							3,419	3,569	6,987
Total Salary and Fringe Other Personnel University of MO							22,792	23,524	46,316
Total Salary All Personnel University of Missouri							44,374	45,705	90,078
Total Fringe All Personnel University of Missouri							11,331	11,963	23,294
Total Salary and Fringe All Personnel Univ of MO							55,705	57,668	113,373

**D1. Travel - State of Missouri - ITSD - Contracted**

	Domestic Travel		750	500	1,250
	<b>Total Travel</b>		750	500	1,250

**D2. Travel - University of Missouri - Contracted**

	Domestic Travel		1,500	750	2,250
	<b>Total Travel</b>		1,500	750	2,250

**E. Participants Support Costs - University of Missouri - Contracted**

1	Stipends		5,000		5,000
2	Travel		2,500		2,500
3	Subsistence		600		600
	# of participants/trainees	al Participant/Trainee Costs	8,100		8,100

**F. Other Direct Contracted Costs -**

1	Materials and Supplies - University of Missouri		1,250	250	1,500
4	Computer Services - University of Missouri		2,000	2,000	4,000
5	Consulting Subcontracts - University of Missouri				
#1 < \$25,000	Meeting Management		8,500		8,500
#2 < \$25,000	Meeting Facilitator		12,000		12,000
#3 < \$25,000	Hotel contract - meeting room and food		5,000		5,000
8	Rate per credit hour	\$307.66	# credits per GRA	22	
					6,769
					6,972
					13,740
	<b>Total Other Direct Costs</b>		28,750	2,250	31,000

**Total Direct Costs - University of Missouri - Contracted 94,055 60,668 154,723**

**Total Direct Costs - State of Missouri - ITSD - Contracted 8,431 4,484 12,915**

**Modified Total Direct Costs (no equip, partic., subs>\$25, other no F&A, tuit.) 87,286 53,696 140,982**

**University of Missouri F&A Rates: MTDC 26,186 16,109 42,295**

## **Main Mapping 1: Missouri's State Broadband Data and Development Grant Program**

### **Budget Narrative:**

This project will:

- Provide comprehensive and verifiable data meeting the NTIA Program standards as published.
- Provide all data in an accessible and clearly presented manner to NTIA, the public, and State and local governments without unduly compromising this data or the protection of Confidential Information.
- Create a workable and sustainable framework for repeated updating of these data.
- Outline and implement a plan for collaboration with State-level agencies, local authorities, and other constituencies for broadband data collection and mapping.
- Assemble a team with the capacity, knowledge and experience to complete the tasks; and
- Create a hold to a realistic timeline for data delivery.

### **PERSONNEL**

**Tim Haithcoat, State Project Leader**, is the State of Missouri's Geographic Information Officer and works under the Office of Administration, Information Technology Services Division, Office of the Chief Information Officer. He will provide project oversight, collaborate with State agency personnel, the consultants, MU personnel, and external stakeholders, and provide review and direction for the effort. The level of effort will be significant in early project years and taper off as the program is established and processes and protocols are in place. FTE effort by year is Y1: .41FTE; Y2: .41 FTE; Y3: .33FTE; Y4: .25FTE; and Y5: .25FTE. With an annual salary of \$70,012, we are requesting funds by year of: Y1: \$29,172; Y2: \$30,047; Y3: \$24,759; Y4: \$19,126; and Y5: \$19,700. Total funds: \$122,803.

**James Harlan, MU - Project Leader**, is the Program Director for the Geographic Resources Center (GRC), and Sr. Research Specialist. He will provide guidance and oversight for GRC project staff, graduate students, and undergraduate student workers. In addition he will coordinate with the GIO, local government, and other project stakeholders. This position will also support project geographic data acquisition, data development, modeling development, QA/QC assessment of consultant data layers, and management. The level of effort will be significant in early project years and taper off as the program is established and processes and protocols are in place. FTE effort by year is Y1: .75FTE; Y2: .50 FTE; Y3: .33FTE; Y4: .33FTE; and Y5: .33FTE. With an annual salary of \$57,390, we are requesting funds by year of: Y1: \$43,043; Y2: \$29,556; Y3: \$20,295; Y4: \$20,904; and Y5: \$21,531. Total funds: \$135,328.

**MU - Project Technical Staff** is a Geographical Information Systems Specialist in the GRC. This position will support project geographic data acquisition, data development, accuracy assessment, survey development, and geospatial analysis and management. The level of effort is 1.00FTE for the duration of this project. With an annual salary of \$32,000 we are requesting funds by year of: Y1: \$32,000; Y2: \$32,960; Y3: \$33,949; Y4: \$34,967; and Y5: \$36,016. Total funds: \$169,892.

**MU - Project Technical Staff** is a Geographical Information Systems Specialist in the GRC. This position will provide web site design, development, and support. As well, the position will create cartographic products for distribution and review in support of the project. The level of effort is .25FTE for the duration of this project. With an annual salary of

\$32,000, we are requesting funds by year of: Y1: \$8,000; Y2: \$8,240; Y3: \$8,487; Y4: \$8,742; and Y5: \$9,004. Total funds: \$42,473.

**MU – Dianne Roberts, Clerical Project Support Staff**, is an Administrative Associate in the GRC. She will coordinate project fiscal administration with campus personnel and project leaders. The level of effort is .25FTE for the duration of this project. With an annual salary of \$38,989, we are requesting funds by year of: Y1: \$9,747; Y2: \$10,040; Y3: \$10,341; Y4: \$10,651; and Y5: \$10,971. Total funds: \$51,749.

**MU - Graduate Research Assistant.** They will perform research on the assessment elements of the proposed activity. They will receive \$23,145 for Y2 and \$23,839 for Y3, for 12 calendar months effort (100%). The University considers tuition for GRAs to be a necessary expense to include as a fringe benefit. The current rate is \$307.66 per credit hour. We estimate a total of \$6,769 for 22 credits for the GRA. We are also required to provide health insurance at a cost of \$1,876 per year. These are included in the above total cost figures.

Note: Salaries have been increased by 3% each year for subsequent years.

#### **FRINGE BENEFITS**

We have applied the federally negotiated rate of 31.65% for fringe benefits for full-time employees. This number has been increased by 3% each year for subsequent years.

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total Salaries	136,781	132,752	120,175	101,800	104,632	596,141
Total Fringe	38,601	38,010	34,781	32,645	34,633	178,669
Total Personnel	175,382	170,762	154,957	134,445	139,264	774,810

#### **TRAVEL**

1. State of Missouri travel will be focused on coordination, field validation, NDA development, data sharing, and meetings for project coordination, review, and management. We expect some travel to be associated with NTIA project meetings at some point as well for national coordination and sharing. The State has set aside \$5,000 per year to offset the costs of this travel. Total of \$25,000 for the duration of the project.
2. The University of Missouri travel will be focused on sampling, field data collection, and functions of coordination with the GIO office, the contractors, and other stakeholders. An amount of \$3,500 is set aside for Y1 with this amount decreasing to \$2,000 in Y2, and \$1,500 for each of the subsequent years. Total of \$10,000 for the duration of the project. Total travel for both State and MU is \$35,000.

#### **MU - MATERIALS AND SUPPLIES**

Plotter supplies (ink and paper) for creation of hard copy products for display and presentations. Paper and copying for survey forms and printing of marketing materials.

#### **MU - COMPUTER SERVICES**

Computer service costs include computing hours on lab machines used in the GRC in support of the projects objectives, some hardware replacement costs and software costs are built into these numbers. The significant push in the first year to create initial products and in year to

test and validate all aspects of the products results in a higher cost of \$15,500 for Y1 and \$12,000 for Y2. Subsequent costs drop off to \$8,500 (Y3), \$7,000 (Y4), and \$7,000 (Y5). The total of computer service costs is \$50,000 over the duration of the project.

#### **CONTRACTUAL**

1. The State of Missouri will execute subcontracts with Missouri-based GIS companies or local government partners to develop address point databases for targeted counties within the State of Missouri. These point address databases are foundational to the accurate portrayal and assessment of broadband provision in the state. The State is seeking to spend a total of \$300,000 in federal funds while matching that amount with \$650,000 of State funds. The expenditure by year is Y1: \$225,000 (all State); Y2: \$325,000 (\$225,000 State: \$100,000 Fed); Y3: \$300,000 (\$200,000 State: \$100,000 Fed); Y4: \$100,000 (all federal); and Y5: \$0.
2. The State of Missouri will also keep on contract ESRI for support and contractual services in support of the broadband data development, mapping program, and website development support through its existing agreement for such services in the amount of \$25,000 for each of the first two years, for a total of \$50,000. This also will be used as the final portion of state match.
3. The State of Missouri is planning on using the University of Missouri through an existing MOU to provide the contracting mechanism to engage the consultants GeoDecisions and CBG. These costs include: management costs, QA/QC, communications, and NDA activities (\$474,565); Broadband Mapping elements (\$170,480); Field Verification (\$193,830); Website development and transfer (\$196,520); and, Materials, supplies, and travel costs (\$82,000).

Much of the costs associated with this relationship will be engaged in Y1 (\$873,525) and into Y2 (\$381,321) with subsequent years being substantially lower (Y3: \$171,471; Y4: \$130,730; and Y5: \$89,988) as the consultant disengages and the state program takes over. The total contract for the 5 year period is \$1,647,035.

#### **INDIRECT COSTS**

Indirect costs are calculated at the federally negotiated rate of 30% for 'Other Sponsored Activity' of the modified total direct costs. This is calculated by subtracting costs for equipment, tuition, and subcontract costs in excess of \$25,000 for each subcontract, from the total direct costs.

#### **PLANNING COSTS**

Planning Budgets and Narratives attached separately for the Regional Technology Planning Teams (\$260,299) and the Information Technology Summit (209,932). Total budget for Planning Grant is \$470,231.

#### **Match Requirement:**

The required 20 percent match for the \$3,952,480 grant request is calculated to be approximately \$800,000. This amount is included as part of a \$40,000,000 line in House Bill No. 21 that has been appropriated by the 95<sup>th</sup> General Assembly of Missouri's State Legislature to be used a cost match for these broadband technology opportunities.

**Project Map 1: State of Missouri - State Broadband Data and Development Grant Program**

**PI: Timothy L. Haitcoat - Geographic Information Officer - Missouri**

Organizational DUNS: 605735351 Name of Organization: Office of Administration - Information Technology Services Division

**A1. Salaries Senior/Key Persons - State of Missouri - ITSD - Contracted**

Name	Project Role	Enter one only		Y1	Y2	Y3	Y4	Y5	31.65%	32.60%	33.58%	34.58%	35.62%	Fringe Rate
		9-month Salary	12-month Salary						Year 1	Year 2	Year 3	Year 4	Year 5	
1 Timothy Haitcoat	PI - Manager		70,012	5.0	5.0	4.0	3.0	3.0	29,172	30,047	24,759	19,126	19,700	122,803
			Fringe Benefits						9,233	9,795	8,313	6,615	7,018	40,973
Total Salary Senior/Key Persons State of Missouri - ITSD									29,172	30,047	24,759	19,126	19,700	122,803
Total Fringe Senior/Key Persons State of Missouri - ITSD									9,233	9,795	8,313	6,615	7,018	40,973
Total Salary and Fringe Senior/Key Persons State of Missouri - ITSD									38,404	39,842	33,072	25,741	26,717	163,776

**A2. Salaries Senior/Key Persons - University of Missouri - Contracted**

Name	Project Role	Enter one only		Y1	Y2	Y3	Y4	Y5	31.65%	32.60%	33.58%	34.58%	35.62%	Fringe Rate
		9-month Salary	12-month Salary						Year 1	Year 2	Year 3	Year 4	Year 5	
1 James Harlan	Proj. Manager		57,390	9.0	6.0	4.0	4.0	4.0	43,043	29,556	20,295	20,904	21,531	135,328
			Fringe Benefits						13,623	9,635	6,815	7,230	7,670	44,972
Total Salary Senior/Key Persons University of Missouri									43,043	29,556	20,295	20,904	21,531	135,328
Total Fringe Senior/Key Persons University of Missouri									13,623	9,635	6,815	7,230	7,670	44,972
Total Salary and Fringe Senior/Key Persons University of Missouri									56,665	39,191	27,110	28,133	29,201	180,300

**B2. Other Personnel - University of Missouri - Contracted**

Full-time People														
2 # in this position		12-month sal	Cal mo						Year 1	Year 2	Year 3	Year 4	Year 5	Total
1	Staff	Clerical	38,989	3.0	3	3	3	3	9,747	10,040	10,341	10,651	10,971	51,749
			Fringe Benefits						3,085	3,273	3,472	3,684	3,908	17,422
1	Staff	Technical	32,000	3.0	3.0	3.0	3.0	3.0	8,000	8,240	8,487	8,742	9,004	42,473
			Fringe Benefits						2,532	2,686	2,850	3,023	3,207	14,299
1	Staff	Technical	32,000	12.0	12.0	12.0	12.0	12.0	32,000	32,960	33,949	34,967	36,016	169,892
			Fringe Benefits						10,128	10,745	11,399	12,093	12,830	57,195
Part-time People														
1	Grad student		14,500	0.0	12	12				14,500	14,935			29,435
			Medical Insurance	rate					\$1,876	1,876	1,932			3,808
2	Undergrad	no fringe	hourly rate	9.5	780	390	390	390	14,820	7,410	7,410	7,410	7,410	44,460
Total Salary Other Personnel University of Missouri									64,567	73,150	75,122	61,770	63,401	338,010
Total Fringe Other Personnel University of Missouri									15,745	18,580	19,653	18,800	19,945	92,724
Total Salary and Fringe Other Personnel University of Missouri									80,312	91,730	94,775	80,571	83,346	430,734
Total Salary All Personnel University of Missouri									107,610	102,706	95,417	82,674	84,932	473,338
Total Fringe All Personnel University of Missouri									29,368	28,215	26,468	26,030	27,615	137,686
Total Salary and Fringe All Personnel University of Missouri									136,978	130,920	121,885	108,704	112,547	611,034

**D1. Travel - Contracted**

Domestic Travel	8,500	7,000	6,500	6,500	6,500	35,000
<b>Total Travel</b>	8,500	7,000	6,500	6,500	6,500	35,000

**F. Other Direct Contracted Costs -**

1 Materials and Supplies - University of Missouri	1,200	750	750	750	750	4,200
4 Computer Services - University of Missouri	15,500	12,000	8,500	7,000	7,000	50,000
5 Consulting Subcontracts - State of Missouri - ITSD						
#1 State-based address points mapping - STATE		100,000	100,000	100,000		300,000
#2 State-based address points mapping - STATE MATCH						750,000
#3 ESRI Consulting - STATE MATCH						50,000
6 Consulting Subcontracts - University of Missouri						
#4 < \$25,000 GeoDecisions/CBG - NDA; Project Mgmt; QC; Communications	25,000	25,000	25,000	25,000	25,000	125,000
#4 > \$25,000	337,165	112,400				449,565
#5 > \$25,000 GeoDecisions/CBG - Broadband Mapping	170,480					170,480
#6 > \$25,000 GeoDecisions/CBG - Field Verification	145,380	48,450				193,830
#7 > \$25,000 GeoDecisions/CBG - Website Development and Transfer	147,520	49,000				196,520
#8 > \$25,000 GeoDecisions - Years 2-5		137,966	137,966	97,225	56,483	429,640
#9 > \$25,000 GeoDecisions/CBG - Materials, Supplies, Travel, Accomodations, etc.	47,980	8,505	8,505	8,505	8,505	82,000
8						
Rate per credit hour \$307.66 # credits per GRA 22 # GRAs 1		6,769	6,972			13,740
<b>Total Other Direct Costs</b>	890,225	494,071	280,721	238,480	97,738	2,001,235

**Total Direct Costs - University of Missouri - Contracted 1,027,203 624,981 402,606 347,184 210,285 2,612,269**

**Total Direct Costs - State of Missouri - ITSD - Contracted 46,904 146,842 139,572 132,241 33,217 498,776**

**Modified Total Direct Costs (no equip, partic., subs>\$25, other no F&A, tuit.) 178,678 422,752 249,163 241,454 145,297 1,237,344**

**University of Missouri F&A Rates: MTDC 30.00% 53,603 126,826 74,749 72,436 43,589 371,203**

**State provided 20% match to the federal funds 300,000 225,000 150,000 125,000 800,000**

**Planning - RTPT - ITSD & Geodecisions/CBG 181,862 78,437 0 0 0 260,299**

**Planning - Summit - ITSD & University of Missouri 128,671 81,261 0 0 0 209,932**

0 0 0



GOVERNOR OF MISSOURI

JEFFERSON CITY

65102

JEREMIAH W. (JAY) NIXON  
GOVERNOR

P.O. Box 720  
(573) 751-3222

August 10, 2009

Edward "Smitty" Smith, Program Director  
State Broadband Data and Development Grant Program  
National Telecommunications and Information Administration  
U.S. Department of Commerce  
1401 Constitution Avenue, N.W. Room 4898  
Washington, DC 20230

Dear Mr. Smith:

This letter is to notify the National Telecommunications and Information Administration (NTIA) that the Office of Administration, Information Technology Services Division, Geographic Information Officer will serve as Missouri's designated single eligible entity under the State Broadband Data and Development Grant Program pursuant to P.L. 110-385 to receive this grant. We expect to work closely with the University of Missouri to fulfill the grant's purpose.

The University of Missouri has aided the State in the past with supporting redistricting efforts in 1990 and 2000, as well as coordinated the voting precinct mapping for the state just this past year in coordination and collaboration with the U.S. Bureau of the Census. These efforts and relationships have forged a strong linkage between the State and its public land grant institution. As well, the University has well-developed relationships with local government entities and their mapping groups that will aid in the validation and verification of these maps so as to provide quality control and an unbiased assessment for the overall project and its partners.

The Geographic Information Officer for the State of Missouri, Mr. Timothy L. Haithcoat, who holds an appointment with the University of Missouri, will provide the oversight and coordination to ensure that the State's obligations made under the State Broadband Data and Development Grant Program will be met in a complete, efficient and timely manner.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeremiah W. Nixon", written over a horizontal line.

Jeremiah W. (Jay) Nixon  
Governor

## CERTIFICATION REGARDING LOBBYING

Applicants should also review the instructions for certification included in the regulations before completing this form. Signature on this form provides for compliance with certification requirements under 15 CFR Part 28, 'New Restrictions on Lobbying.' The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Commerce determines to award the covered transaction, grant, or cooperative agreement.

**LOBBYING**

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 15 CFR Part 28, for persons entering into a grant, cooperative agreement or contract over \$100,000 or a loan or loan guarantee over \$150,000 as defined at 15 CFR Part 28, Sections 28.105 and 28.110, the applicant certifies that to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying,' in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure occurring on or before October 23, 1996, and of not less than \$11,000 and not more than \$110,000 for each such failure occurring after October 23, 1996.

**Statement for Loan Guarantees and Loan Insurance**

The undersigned states, to the best of his or her knowledge and belief, that:

In any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying,' in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure occurring on or before October 23, 1996, and of not less than \$11,000 and not more than \$110,000 for each such failure occurring after October 23, 1996.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above applicable certification.

**\* NAME OF APPLICANT**

Missouri Office of Administration

**\* AWARD NUMBER**

N/A

**\* PROJECT NAME**

N/A

Prefix:

\* First Name:

Middle Name:

Connie

\* Last Name:

Suffix:

Qutami

\* Title:

ASIII

\* SIGNATURE:

Connie Qutami

\* DATE:

08/14/2009

## DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

Approved by OMB  
0348-0046

<b>1. * Type of Federal Action:</b> <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	<b>2. * Status of Federal Action:</b> <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	<b>3. * Report Type:</b> <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
<b>4. Name and Address of Reporting Entity:</b> <input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee * Name: MO Office of Administration, Information Tech Services Div * Street 1: 301 W. High St., HST Room 280    Street 2: PO Box 809 * City: Jefferson City    State: MO: Missouri    Zip: 65102-0809 Congressional District, if known:		
<b>5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:</b>   		
<b>6. * Federal Department/Agency:</b> Department of Commerce	<b>7. * Federal Program Name/Description:</b>  CFDA Number, if applicable:	
<b>8. Federal Action Number, if known:</b> 	<b>9. Award Amount, if known:</b> \$	
<b>10. a. Name and Address of Lobbying Registrant:</b> Prefix:    * First Name: N/A    Middle Name: * Last Name: N/A    Suffix: * Street 1:    Street 2: * City:    State:    Zip:		
<b>b. Individual Performing Services</b> (including address if different from No. 10a) Prefix:    * First Name: N/A    Middle Name: * Last Name: N/A    Suffix: * Street 1:    Street 2: * City:    State:    Zip:		
<b>11.</b> Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.  * Signature: Connie Qutami * Name: Prefix:    * First Name: Connie    Middle Name: * Last Name: Qutami    Suffix: Title:    Telephone No.:    Date: 08/14/2009		

Authorized for Local Reproduction  
Standard Form - LLL (Rev. 7-97)

### ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

**NOTE:** Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

<p><b>* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL</b></p> <p>Connie Qutami</p>	<p><b>* TITLE</b></p> <p>ASIII</p>
<p><b>* APPLICANT ORGANIZATION</b></p> <p>Missouri Office of Administration</p>	<p><b>* DATE SUBMITTED</b></p> <p>08/14/2009</p>

Standard Form 424B (Rev. 7-97) Back