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

Application for Federal Assistance SF-424

Version 02

* 1. Type of Submission:	* 2. Type of Application:	* If Revision, select appropriate letter(s):
☐ Preapplication	☒ New	
☒ Application	☐ Continuation	* Other (Specify)
☐ Changed/Corrected Application	☐ Revision	

* 3. Date Received:	4. Applicant Identifier:
09/01/2009	

5a. Federal Entity Identifier:	* 5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:	7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name:	State of New Jersey
* b. Employer/Taxpayer Identification Number (EIN/TIN):	216000928
* c. Organizational DUNS:	807477898

d. Address:

* Street1:	300 Riverview Plaza
Street2:	
* City:	Trenton
County:	
* State:	NJ: New Jersey
Province:	
* Country:	USA: UNITED STATES
* Zip / Postal Code:	08625-0212

e. Organizational Unit:

Department Name:	Division Name:

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

Prefix:	Mr.	* First Name:	Adel
Middle Name:			
* Last Name:	Ebeid		
Suffix:			

Title:	Chief Technology Officer
Organizational Affiliation:	
* Telephone Number:	609-984-4082
Fax Number:	
* Email:	adel.ebeid@oit.state.nj.us

adel.ebeid@oit.state.nj.us

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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.):

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

New Jersey Broadband Mapping Program

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

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Application for Federal Assistance SF-424

Version 02

16. Congressional Districts Of:

* a. Applicant: 12
* b. Program/Project: 1-13

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

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 09/01/2009
* b. End Date: 02/01/2010

18. Estimated Funding ($):

* a. Federal	4,299,881.00
* b. Applicant	1,140,000.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	5,439,881.00

*** 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 .

☐ 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: Mr. * First Name: Adel

Middle Name:

* Last Name: Ebeid

Suffix:

* Title: Chief Technology Officer

* Telephone Number: 609-984-4082 Fax Number:

* Email: adel.ebeid@oit.state.nj.us

* Signature of Authorized Representative: Shelley Bates * Date Signed: 09/01/2009

Authorized for Local Reproduction

Standard Form 424 (Revised 10/2005)
Prescribed by OMB Circular A-102

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

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.

New Jersey Broadband Mapping Program

Project Abstract

New Jersey Governor Jon S. Corzine has designated the New Jersey Office of Information Technology (OIT) as the single eligible entity within the state to receive a grant under the Broadband Mapping Program. As such, OIT proposes a public-private partnership to catalog broadband availability and utilization throughout the state.

Working with the New Jersey based company, Telcordia Technologies, and Rutgers University, OIT will develop and implement broadband data collection and mapping in NJ using a methodology that is efficient and will produce a final product that will be utilized to maximize broadband benefits to the citizens, businesses, and organizations in the state.

Importantly, as a public-private team comprised of leading organizations within the state, this team offers additional value in having numerous established relationships with a wide variety of stakeholder and constituent groups in the state. Also, this collaboration between public and private entities embodies the spirit of the American Recovery and Reinvestment Act by investing in and supporting job creation and employment sustainability within the State of New Jersey.

In this proposal we address key activities of the State Broadband Data and Development Grant Program, providing detailed information on the tasks, methodology and outputs involved in each of the following:

- Gathering comprehensive and verifiable data on broadband availability, adoption, technology, speed, utilization, and spectrum used;
- Delivering detailed broadband data and maps for public dissemination through New Jersey's Geographic Information Network (NJGIN);
- Providing a workable, sustainable framework for updating of broadband access data; and,
- Collaborating with state-level agencies, local authorities, service providers, and other constituencies on the collection and use of the data to promote expanded use of high speed broadband services.

The proposed five-year project budget is $5,439,881.00 which includes a matching in-kind contribution from the State of New Jersey of $1,140,000.00, which represents more than 20% of the total proposed budget as mandated by the NOFA.

Our approach is based on integrating publicly available data from a wide variety of sources to produce up-to-date and granular information with limited or no restrictions on usage or dissemination. With this approach, service provider data, as publicly disclosed, becomes one of many sources of information. This information, which will be gathered using web-based data collection methods including web crawls, can subsequently be enhanced through integration with direct usage data collected via consumer surveys, interactive measuring tools and other methods. Statistical and rule-based techniques of data integration and data reconciliation will be used to integrate the information from disparate sources into a single repository with greater accuracy than any single source. Proprietary data sources will be used in limited circumstances where such data elements are made available from providers and such data are treated with full respect for confidentiality restrictions.

The public nature of the broadband access data used in our approach yields information and maps that can be fully and flexibly integrated into NJGIN, in cooperation with OIT. The result will be a data set that can be exploited in a wide variety of analyses and mash-ups. Most importantly, the granular public information provided by our approach and, in particular, the targeted and detailed household survey data

create a foundation for identifying service availability and gaps and analyzing challenges and opportunities in broadband deployment, adoption and use.

This data accessibility, combined with the skill sets of three well-respected and capable New Jersey-based organizations, will result in a dynamic, flexible, and expandable resource that will provide the greatest value and benefits to the government, citizens, and organizations in the state in extending broadband capabilities to under-served areas, community planning, best practices, policy development, and partnership development.

New Jersey Broadband Mapping Program
Program Narrative

Executive Summary

Broadband is a growing service within the State of New Jersey, but despite that fact, the state has never undertaken an effort to map broadband availability and utilization throughout the state. The NTIA's State Broadband Data and Development Grant Program (Broadband Mapping Program) will enable New Jersey to capture where broadband is available and most importantly determine its utilization (current demand) capacity and future demand for broadband statewide.

Broadband capacity will be a critical component for New Jersey's economic growth and life choices for its citizens and businesses. Telemedicine can prevent or decrease high travel costs, treatment delays and separation from family by bringing high-quality, specialized care to those in need regardless of where they reside in the state. eLearning, which requires quick up- and download speeds, can bring specialized educational classes to areas where it may not be readily accessible.

New Jersey may have significant broadband capacity in that broadband is available via a number of providers. However, broadband utilization rates remain less than 50 percent of the total population. Through the Broadband Mapping Program, New Jersey expects to stimulate broadband demand especially among underserved communities that are in need of affordable, simple and direct online access to social services programs. In addition, affordable broadband will support small business development and improve digital skills among the underserved.

To accomplish this task, New Jersey has assembled a team featuring Telcordia Technologies, Inc., and Rutgers University that possesses the skill set and expertise to complete this project within the timeframe allotted by the NOFA. Additionally, this team is composed of leading organizations from the state's public, private and academic sectors, and will thereby support the spirit of the American Recovery and Reinvestment Act by investing in and supporting job creation and employment sustainability in New Jersey.

In this proposal we address these key activities of the Broadband Mapping Program, providing detailed information on the tasks, methodology and outputs involved in each of the following:

- Gathering comprehensive and verifiable data on broadband availability, adoption, technology, speed, utilization, and spectrum used;
- Delivering detailed broadband data and maps for public dissemination through New Jersey's Geographic Information Network (NJGIN);
- Providing a workable, sustainable framework for updating of broadband access data; and,
- Collaborating with state-level agencies, local authorities and other constituencies on the collection and use of the data to promote expanded utilization of high-speed broadband services.

1 Program Narrative

A team led by the Office of Information Technology (OIT) and consisting of Telcordia Technologies, Inc., and Rutgers University will work collaboratively with the stakeholders and constituencies in New Jersey to:

- Collect comprehensive and accurate New Jersey broadband mapping data;
- Develop an interactive, web-based, highly accessible New Jersey broadband map integrated with the New Jersey Geographic Information Network (NJGIN);
- Maintain and enhance the New Jersey map as part of a national broadband map;
- Deliver fully all required data and information to the NTIA; and
- Conduct planning activities to identify service availability and gaps, analyze problems and increase utilization.

Collaboration with all relevant stakeholders is critical to meet the NTIA requirements and to produce a useful and usable data repository and mapping for New Jersey. The NJ-based team of OIT, Telcordia, and Rutgers spans three critical constituent groups – government, industry and higher education – and positions us ideally for an open and inclusive process within New Jersey.

OIT will be the lead organization in facilitating coordination with state-level organizations, the 21 counties, the 565 municipalities, and related local authorities. OIT will also serve as a facilitator for interactions with community and anchor organizations such as NJ libraries, schools and universities, hospitals and clinics, and other relevant community organizations.

Rutgers Center for Urban Policy Research can augment these interactions particularly through community development organizations in New Jersey cities and will focus on vulnerable populations (e.g. low-income, unemployed, aged). Telcordia and OIT will work together to facilitate coordination with the broad telecommunications industry, including broadband service providers, IT companies, and related infrastructure organizations.

The approach for data collection will focus on publicly available data from providers' websites and utilize web-based methods to gather address-level data on broadband availability, technology, speed, infrastructure, and costs from service providers, residents, businesses, schools, government agencies and other enterprises. This information will be supplemented with proprietary data from the service providers where available to enrich and validate the available information.

However, the vast majority of the data is based on public sources – including availability data and user-reported usage and performance data – and this will be made available to New Jersey state and municipal government agencies and commercial businesses for planning purposes. It will also be available to the public via the NJGIN with web-based, easy-to-use interfaces that will enhance the understanding of New Jersey businesses and residents concerning broadband technology choices, availability, and costs. This methodology is being used in other states and avoids many of the limitations associated with making proprietary data the centerpiece of the

effort.[1] It will enable unrestricted data distribution for information, planning and analysis purposes and will support research studies to develop and assess metrics such as a Broadband Service Penetration Index, Mean Performance Guarantee for Broadband, and Content Availability Score. It will permit data analysis at the most informative levels of aggregation and granularity. It can include multiple criteria for the meaning of "broadband," and analyze a great variety of broadband access technologies without bias or selective reporting. Most importantly, it will provide accurate and comprehensive information, along with analysis, planning and modeling to enable the expansion of high-speed broadband to all un- and under-served constituencies in the state.

We have identified several specific geographic areas that meet either the definition of unserved or underserved, they include: Greenwich, Stow Creek, Estell Manor, Pennsville/Carneys Point, Walpack Township Helmetta and Piscataway Townships. However, this does not provide a full picture of New Jersey's underserved communities. Even in areas appearing to have a significant amount of broadband saturation, especially in some of the large urban areas, there are significant blocks of underserved population who simply cannot afford to take advantage of broadband in their homes. That said, the affordability issue is not limited to private homes. It also affects institutions such as schools, colleges, universities, libraries, hospitals, healthcare providers, community outreach organizations, local governments and public safety. All of the abovementioned anchor institutions are the primary sources of support for vulnerable populations such as low-income persons, the unemployed and the aged.

1.1 Data

Data will be collected in an on-going fashion from multiple, publicly available sources and integrated into a unified picture of broadband capability in New Jersey. Among the data sources that will be used for this purpose are:

- Current New Jersey State and Board of Public Utilities records
- Published federal data, including available data from FCC Form 477 filings
- Public releases of service providers
- Web-information sources suitable for crawling/mining (e.g., service provider sites and access information aggregators)
- End-user forums and feedback
- Internet-based broadband measurements such as the Internet2 open-source speed test (offered through Virginia Tech's eCorridors program), Broadband Census, speedtest.net, and the Measurement Lab initiative of the New American Foundation
- Targeted inspections, possibly including drive tests
- Surveys, both web-based and by telephone,
- Proprietary provider data as available

[1] New Hampshire has designated an organization affiliated with the University of New Hampshire for their Broadband mapping based on a public domain approach. Massachusetts and New York are two states that have used the public demand-side approach. See http://www.massbroadband.org/docs/MBIGISRelease050609L.pdf and http://www.nysbroadband.ny.gov/maps/maps.htm for more information.

A key step in the data collection process will be selecting the appropriate subset of these sources, based on the characteristics of the data, including its timeliness, the level to which it has been or can be verified, its completeness and other similar factors. Publicly available data from the websites of the broadband service providers in the state (see Appendix B for a listing) is one important source. In addition, the set of data sources must provide coverage of the information types requested by the NTIA. The assessment, as shown in Table 1, indicates that public information is available for all of the needed data, from service providers themselves, data aggregators with public Web sites, and trade associations.

Data diversity is a critical attribute for consideration during the source selection process because independent sources can be used to verify and improve on one another. Multiple sources can thus improve both the coverage and the overall quality of the result. Diversity can be leveraged in this way once the commonality between the sources is identified and mappings between the corresponding data models are defined.

A key to proper assessment of the data sources and to their subsequent integration is identifying common definitions among the sources and defining appropriate mappings and transformations between the corresponding data models. Accurate mapping and transformation rules are critical for effective data integration. The mapping and transformation rules will vary significantly with data type (e.g., GIS integration across land bases versus communication technology integration across data rates) as well as by source. Effective data assessment must be based on deep understanding of the source data types and extensive experience with such transformations.

Table 1: Coverage of NTIA Requested Data from Public Sources (See Appendix B for examples of each)

	NTIA Information Elements			
Data Sources	**Service Availability**	**Service Characteristics (speed, etc.)**	**Service Adoption**	**Anchor Institutions**
Service provider Web sites service queries	✓	✓		
FCC 477 data	✓	✓		
Broadband-access integrated information Web sites	✓	✓	✓	
WiFi hotspot location services	✓			
Institutional Associations & State Agencies (e.g., library, hospital, Department of Education etc.)				✓
Cell Tower location (FCC registrations)	✓			
Importance-based sampling and targeted survey instruments		✓	✓	✓

1.1.1 Data Gathering

To efficiently gather data from the identified sources will require substantial automation of the actual data collection process. Useful tools combined with trained data collectors will result in a

process that has the flexibility to deal both with the inevitable variations across sources and also with the mechanization required to retrieve and warehouse large data sets. Telcordia's experience in automating large-scale data reconciliation and transformation projects has given them the proven tools and processes to achieve this degree of automation.

The automation of the data gathering process will result in an easy-to-use operation that can be executed as often as needed for updates and revisions. Initially, however, it is an iterative process, that is followed to ensure the reliability of the operation and the consistency and validity of the data.

As shown in Figure 1, the process is characterized by a series of steps that start well before the production-level operation of the data processing tools. The process begins with the characterization of the data sources, to determine their structure, interfaces, data semantics and context. This information enables the second step, which is to prepare the environment and applications that will support the data processing. The prepared environment is then ready for the development and testing of the tools that will extract, validate, and transform the target data. The testing that accompanies the development aims not only to verify the functionality of the tool, but also to verify the data quality. This step is followed by a series of integrity runs that looks to assess both the robustness of the tool to data variations and to validate the assumptions about the data format, structure and syntax. In this step, the processing rules could be enhanced to identify and correct for data errors and inconsistencies. After successful execution of the integrity runs, the production runs that gather data for loading into the target systems are conducted.

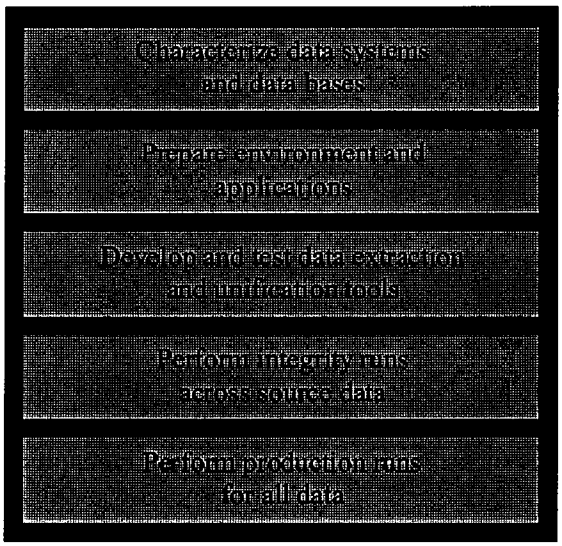

Figure 1. Data collection and transformation process

Note that while this description seems to imply a linear process, in fact the successful data transformation processes are quite iterative,

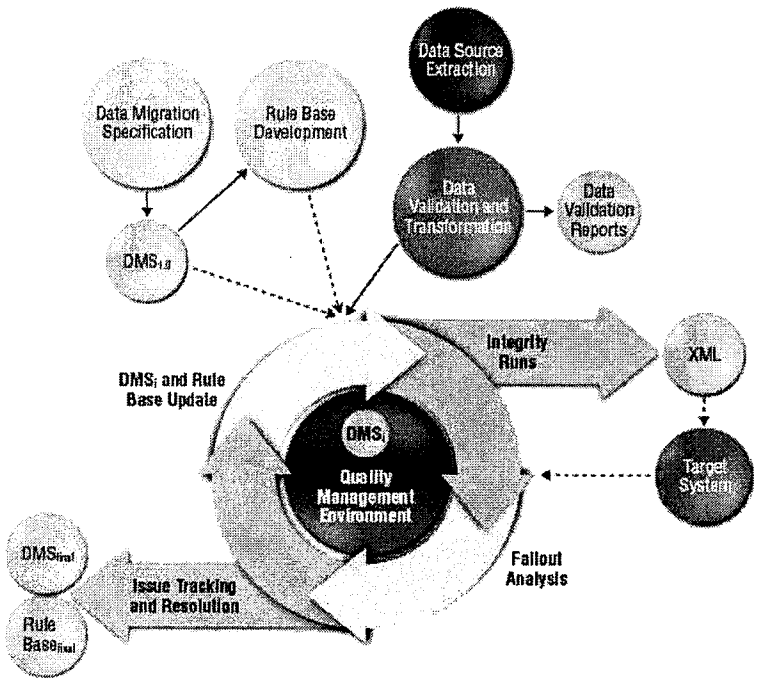

Figure 2. Iterative and Agile Data Transformation Process

in order to handle the variability and dynamic nature of the source data. As shown in Figure 2, a cyclic process centered on quality management is necessary to ensure rapid convergence to an accurate transformation solution.

The following sections describe how this process can be applied to create an effective, efficient and accurate data gathering process for New Jersey broadband data.

In addition, appropriate sampling will be used to collect representative data for testing and to quickly determine the validity of the most recent results. Addresses and phone numbers are the fundamental identifiers for address level availability data. Random generation of addresses or phone numbers not only fails to produce statistically valid results but also requires massive sample size. The approach, based upon combinatorial designs, will be employed to generate the online queries for addresses and/or phone numbers so that an efficient and representative sample can be constructed which in turn allows for the rapid and robust generation of comprehensive testing samples. This capability will be critical in generating the queries to service provider and aggregator web sites to enable quick and statistically accurate data samples on the state of broadband deployment.

Figure 3 illustrates the technique to automate acquisition of data from public sources providing geo-referenced data. The process encapsulates the sources as machine-readable web services and gains full access to the source data without the need for human intervention or human data interpretation. The upper left corner of Figure 3 shows a Web page provided by the a fictional State Department that was automated in order to put place marks within Google Earth at the site of fuel storage sites co-located with cellular broadcast towers. A customized web service reads a series of latitude/longitude/radius triples and then executes a sequence of queries to the site, collecting the resulting list of cell tower sites. Data extraction and transformation operations then pull the required location data from the web page results, generating structured XML data, as shown in the lower left, that can be integrated with data from other sources. The integrated results can then be rendered using the GIS infrastructure as geo-located place marks with corresponding meta-data that is available simply by clicking on the place mark. By standardizing the intermediary data format, the process isolates the data collection from the integration and presentation, and thus can be readily adapted to interact with a wide range of data sources and to support varied applications using the data.

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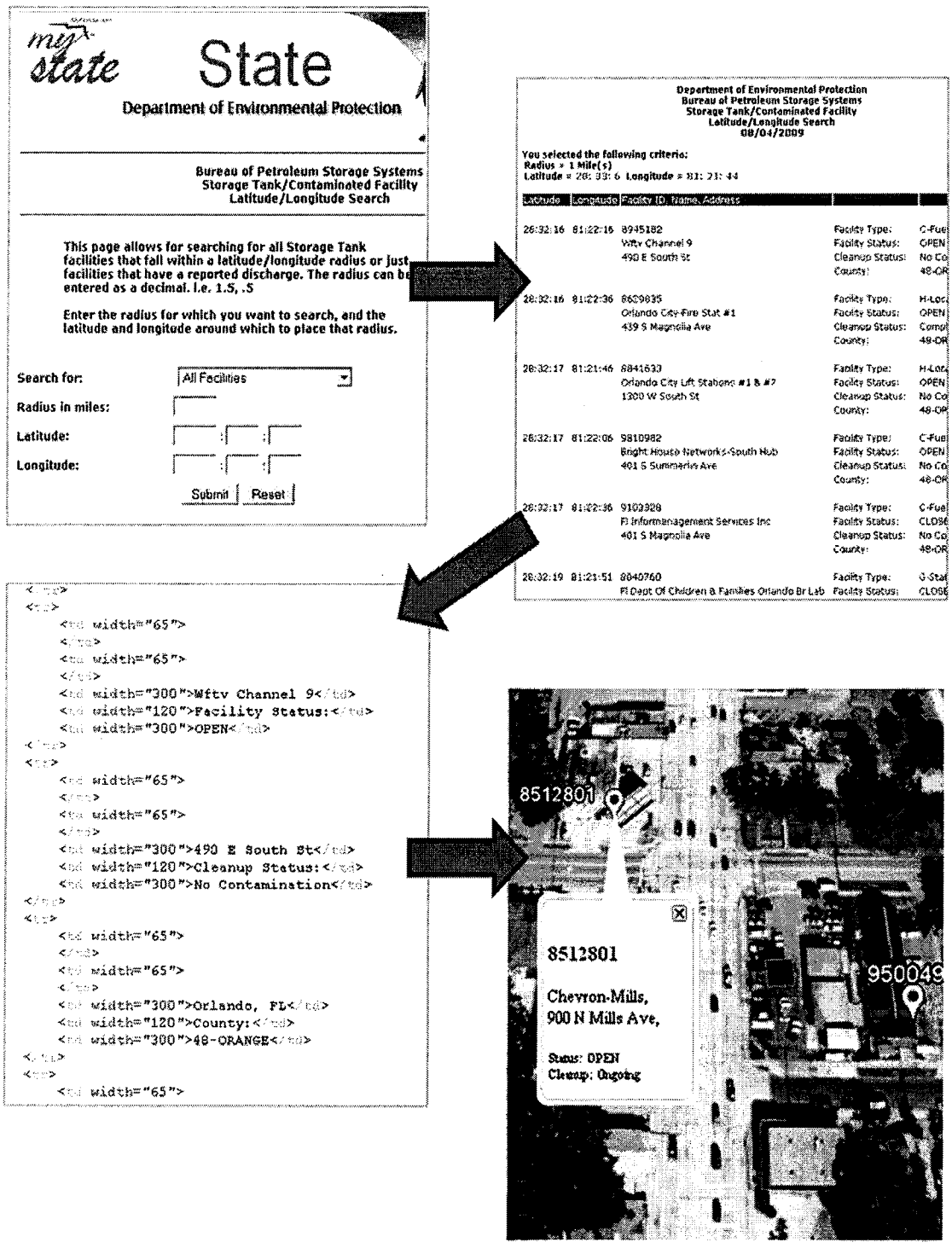

Figure 3: Illustration of Data Collection and Transformation Process

The ability to encapsulate *web data* and expose it as machine-readable *web services* is an important component of our approach. It provides a consistent way to access and integrate diverse data sources, and a way to capture deep understanding of the source data models to allow for data re-use. Every website and page is composed using some logic, and its data adheres to an underlying data model. Automated "mining" of web data requires a description of the reverse process - how desired data can be retrieved from blended presentation content. In this approach, the procedure for web data extraction is defined with XML-based configuration files.[2] Each configuration file describes a sequence of "processors" executing the tasks required to accomplish the final goal. Processors execute in the form of a pipeline, with the output of one chained as input to another. The web data itself is represented in an XML-based format designed specifically to simplify data navigation and queries.

Automated data capture from websites involves the submission of geo-location parameters provided as input and captures the response. The service, then parses the response using the technologies described above to create a structured dataset with appropriate data semantics.

With this approach, public-facing data web sites become machine-interpretable resources that can be called as needed. The results will then be combined with a wide variety of other data sources both web-based and non-web-based since the service maps all sources of information onto a common model. The common model permits synthesis of data from websites with end user data as well as data collected through other sources such as user surveys or wireless drive tests.

1.1.2 Accuracy and Verification

Unifying the data from these disparate sources will require transformation, cleaning and reconciliation of the various source materials. The data must be transformed into a well-defined canonical form that is designed to optimize the efficiency of subsequent data display and analysis, but recognizes the constraints imposed by the source material. The data integration process must take into account the fact that each data source will have its own errors and inconsistencies. The integration operation must therefore provide the means, through automation and augmented human effort, to improve and assure the quality of the data. Reconciliation offers the opportunity to create a unified data set better than any of the constituent sources, by increasing coverage where no overlap exists and enhancing accuracy through rule-based comparison and correction where disparate sources represent the same regions, technologies, or data rates.

A final, quality-control step in the data integration process is post-integration assessment. This assessment must look at the data from various viewpoints, with the aim of identifying regions of weakness or suspicion, correcting data where possible, providing suggestions for fixes where available and identifying those areas where additional investigation is required.

While there are many advantages to a multi-source integration approach, one potential shortcoming is that the amalgamated results may not be trusted by all the interested parties.

[2] Open source tools for Web data extraction, such as WebHarvest, are readily available.

Thus a critical feature of an effective data integration process will be traceability. This traceability must apply to both the data integration process through a well documented and verified development procedure, and in the data itself, where the final data must support back-tracing of results to source material.

1.1.2.1 End User data

Internet-based tools also provide an efficient and effective means of collecting and aggregating demand-side data from end-users. There are several existing public web sites that measure availability, reliability, and user satisfaction with broadband access and can be mined. Notably among these is Broadband Census (www.broadbandcensus.com) which "... is dedicated to providing the most comprehensive public and transparent collection of data about local broadband Speeds, Prices, Availability, Reliability and Competition."[3] There are also a variety of Internet based measurement tools such as the Internet2 open-source speed test (offered through Virginia Tech's eCorridors program), speedtest.net, and the Measurement Lab initiative of the New America Foundation. Each of these provides public information from users on the broadband speed and related performance metrics such as latency, jitter and loss that impact the user experience.

User surveys are another avenue to directly collect user data. We propose to selectively use surveys in a targeted fashion to ensure accuracy of the overall data repository and to focus on critical areas (geographic, demographic, etc.) where the state faces most of their broadband challenges. Customized telephone surveys, led by the Center for Urban Policy Research at Rutgers University, will provide critical insight into actual user experience. The Rutgers University Center for Urban Policy Research, together with the Rutgers University Center for Survey Research, will perform one of the largest surveys ever undertaken of households living within the state. Rutgers will survey a carefully selected set of approximately 3,100 households by phone or 0.1% of the household population of the State.

Information will be obtained on who comprises these households, what broadband, computing and Internet resources are available to them and why they are available: and why they do/do not have current access to broadband at their household. For households with access, questions will probe what system they have, how many supplier changes they have made, and how much they pay for service. Questions will also probe what they use broadband for and whether they believe they are getting what they've paid for.

For those households without access, questions will probe why they do not have access (e.g., cost, lack of interest, not sure how to use) as well as other impediments to gaining such access. In addition, the two subpopulations defined by households with and without access would be compared via socioeconomic characteristics to view important differences by income and education of the household head as well as other variables. These surveys will provide neighborhood level detail on the gaps in broadband access and the reasons for those gaps.[4] All

[3] http://broadbandcensus.com/about-us/

[4] http://news-releases.uiowa.edu/2009/july/072909Chicago-digital-divide.html provides a current example of precisely this kind of work le by researchers from the University of Iowa and addressing disadvantaged neighborhoods in Chicago.

analyses would be subject to statistical tests to ensure both the representativeness and accuracy of the data.

1.1.2.2 Data Integration Tools

Effective data integration will require advanced data transformation and reconciliation tools that support efficient and accurate development and high performance execution. Crucial features of such tools will be support for interactive and rapid development to deal with the plethora of data sources, reusable data transformation and integration components, including data source profiling, data quality analysis, and approximate matching, along with the full suite of standard data base operations.

Telcordia will use its Arroyo Data Transformation Environment, a proven data reconciliation and analysis tool with a methodology that provides the ability to characterize and correct data reconciliation and data quality issues. Arroyo enables definition and customization of the rules needed for data reconciliation including reconciliation across non-flat structures (network graphs, hierarchical directories structures, data models).

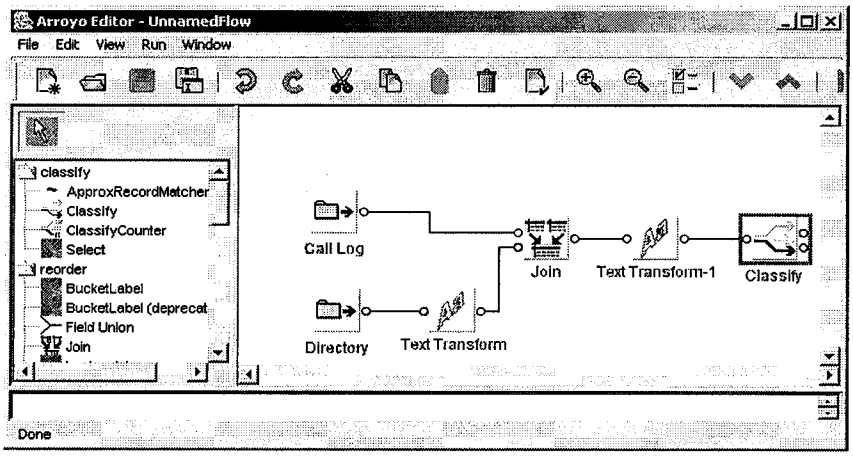

Figure 4. Arroyo Graphical Workbench

There are two major components of Arroyo, the workbench to develop data flows and a runtime engine for execution of the flows developed in the workbench. The workbench is a full featured graphical design environment. The Arroyo runtime engine is used to execute the flows in a production environment.

The Arroyo tool set also provides significant capabilities for defining and implementing data structure and formatting. It provides all the necessary capabilities to unify the data from disparate sources and produce output data that can be fed into GIS systems as well as meet the NTIA's submission requirements.

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1.1.3 Accessibility

The final step in the process is the assimilation of the unified data into an effective GIS-based user environment. This environment must support the tools required for various user activities, from information display to the general public to advanced actuarial analysis. The New Jersey Geographic Information Network (NJGIN) provides an ideal platform on which to construct the broadband data map capabilities. That environment is capable of supporting the appropriate set of data display and analysis tools, including:

- Information layering and selection;
- Measurements, counting and calculations;
- Scale-based detail adaptation; and
- External data integration.

These and related features will provide the basis for constructing the appropriate tools for displaying, investigating and analyzing the unified broadband data and for maintaining the information as a dynamic, flexible, and expandable resource for the state.

Integration of map and survey data is accomplished by geo-referencing these data to Federal Information Processing Standard (FIPS) codes and the NJ State Plane map projection. Survey data will be used in two ways: to create new geographic data objects and to assign attribute values to existing map objects. For example, an application can create a map layer for households sampled in a telephone survey. Households may be located by street address, and this can be used to query another database for approximate latitude and longitude. A point object is created to overlay this map layer on another, e.g., a map of US Census Tracts. This geospatial object provides latitude and longitude along with references to the NJ State Plane projection so that it can be properly located on the map. In this example, census tract boundaries are constructed from lines in the TIGER database via feature files that determine those lines needed to build the map. Census tracts (and other areas, e.g., block groups) are identified by their FIPS codes.

A user of survey data may also assign attribute values to existing geospatial objects. This involves adding data to fields in a database table associated with the object. For example, one might build a table for all responses collected from a survey of subscribers. The responses for each person interviewed would constitute a single record in the database and each record would also store information that could be used to locate the corresponding user, e.g., a street address or phone number. One could then associate a FIPS code with this location data. To determine the percent of interview subjects who had broadband service in a census tract, one would merely tabulate the percent of subjects who reported having it for each tract. These percentages could then be assigned to an attribute field in the census tracts database. This information could be used to prepare summary reports, or it could be used to color polygons in a choropleth map to visually communicate the range and distribution of broadband deployment among census tracts.

Figure 5 shows a sample map that illustrates the kinds of detailed information that will be available and how it might be displayed. This graphic integrates publicly available FCC antenna registry data with artificially generated household data to show regional broadband access by

download speed. Additional map layers and/or attributes could be used to display, analyze and compare other data, such as technologies, upload speeds, take rates and prices. The high degree of spatial resolution of the data, and integration with the full suite of data currently available via NJGIN, will result in a powerful tool for public and private uses.

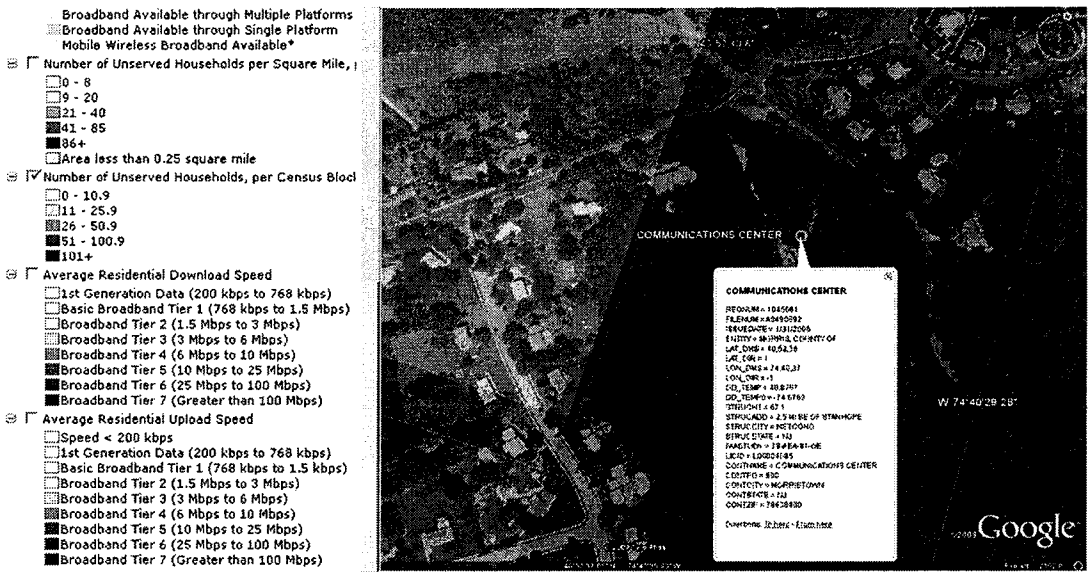

Figure 5: Sample Interactive Map

Proper understanding and experience with the application of the relevant technologies, which is present across OIT, Telcordia and Rutgers, will enable accurate and efficient mapping, geospatial presentation and in-depth analysis of the broadband service data.

1.1.4 Security and Confidentiality

Some of the data collected under this broadband mapping program may be considered highly sensitive or confidential. For example, specific data may have privacy issues such as individual subscription information. In addition, specific revenue or financial data provided by service providers will be treated as confidential information, and will not be made publicly available unless the service provider gives consent. We will protect confidential and proprietary information fully from public disclosure to the extent authorized by applicable law.

The rules-based approach of data synthesis helps to ensure the requisite data privacy and confidentiality through the use of security rules where needed. In addition, all parties has significant experience in handling sensitive and confidential information from service providers, government customers and commercial entities, and have put in place the policies, procedures, and processes to maintain secure and confidential data.

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1.2 Project Feasibility

1.2.1 Applicant Capabilities

1.2.1.1 The Team

The NJ Broadband Mapping effort will be led by the State of New Jersey Office of Information Technology (OIT). The mission of OIT is to work closely with agencies in providing consistent, responsive, high quality information technology services to New Jersey's diverse constituencies, resulting in improved program delivery.[5] As part of our mission, OIT has a critical role in coordinating the use of Geographic Information Systems (GIS) to support decision-making throughout the state. To that end OIT has developed the tool set, New Jersey Geographic Information Network (NJGIN), which provides a searchable catalog of geospatial data in the state, including 19 thematic areas ranging from administrative and political bounds to atmospheric and climatic, business and economic, and utility networks. The NJGIN team also serves to support New Jersey's GIS community through the NJ Geospatial Forum and related GIS events. This approach will use the public domain information from the NJ Broadband Mapping project to enhance the public data repositories available on NJGIN.

Telcordia Technologies, Inc., formerly known as Bellcore, provides software, business operations support, data management, network engineering, professional services and leading-edge research to communications companies and state and federal entities world-wide. From its beginnings as part of Bell Laboratories, through its launch as a stand-alone organization in 1984, and transformation into a public company, Telcordia have been the chief architect of the US telecommunications system and has pioneered many of the innovative network services and technologies used today. Telcordia is widely recognized for its expertise in managing large, complex projects across the full range of network technologies, mobile, fixed, cable and telephony. Headquartered in Piscataway, NJ, and with more than 2,500 professionals and over 1,800 patents issued, Telcordia has the experienced and skilled staff and the methodology and tools to effectively collect, synthesize, and reconcile broadband data and produce maps which are accurate, comprehensive, and transparent.

The Center for Urban Policy Research (CUPR) at the Edward J. Bloustein School of Planning and Public Policy of Rutgers University serves the nation with basic and applied research on a broad spectrum of public policy issues. CUPR is nationally and internationally recognized for its research on community economic development, infrastructure assessment, statistical and geospatial analysis, development impact analysis, environmental impact analysis, state planning, and transportation information systems. As a full-time academic research institution, CUPR has developed a wide array of impact models that have been used in major public policy evaluations throughout the United States. Methodological proficiencies of senior personnel range from survey research, geospatial analysis and GIS, multivariate quantitative modeling, econometric forecasting, and property value analysis to ethnographic and qualitative studies. Core personnel serve as advisors to federal government agencies, state legislatures, governors, administrative

[5] http://www.state.nj.us/it/oit/mission/, Copyright State of New Jersey, 2008.

agencies, and localities nationwide; conduct foundation-sponsored research; and provide outreach to nonprofits and community-based organizations.

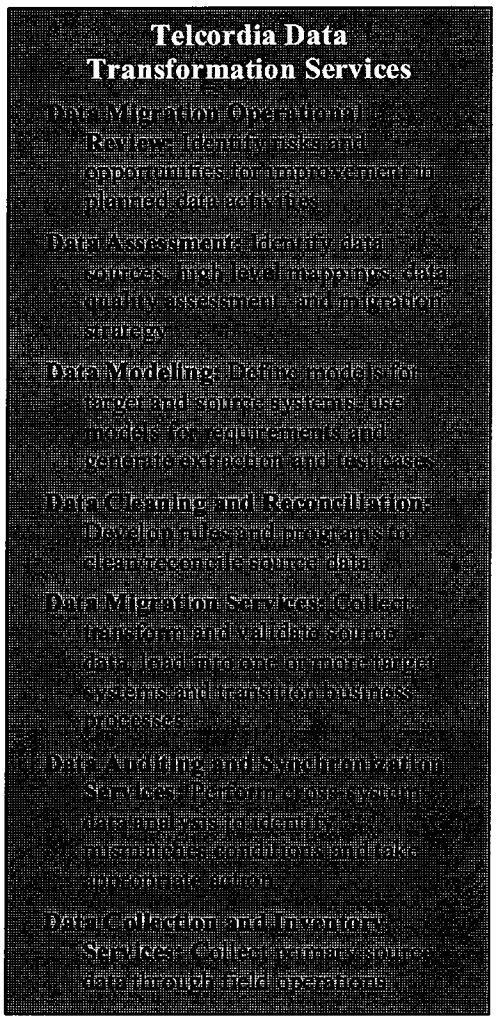
Telcordia and Rutgers key personnel resumes are supplied as an optional attachment.

1.2.1.2 Work Scope for each Team Member

As New Jersey's eligible entity and the prime for this project, the OIT will be responsible for the following activities:

- Oversight and management for the project*
- Definition of baseline NJ GIS data
- Coordination of interactions across government entities to support data gathering, specifically from anchor institutions, county governments, and other government entities
- Working with Telcordia on the mapping requirements
- Integration of public domain data into the existing GIS system
- Supporting public access via NJGIN
- Establishing and managing the ongoing process for data updates
- Coordination with government organizations and stakeholders*

* These activities will also be performed as lead for the Broadband Planning work.



Telcordia Technologies will provide the technical and project leadership for the Mapping work and will be responsible for the following activities:

- Data source analysis, including phased assessment of available data sources as to completeness, accuracy and currency (how up-to-date the information is)
- Data source identification, assessment and integration
- Design, development, testing and delivery of customized, automated data collection system
- Data unification
    i. Format specification and development
    ii. Transformation and merging of data sources
    iii. Data validation and error correction
    iv. Development and testing of rules for data reconciliation
    v. Implementation of data synthesis framework
- Support for GIS mapping including integration with NJ GIN

- Data submission to NTIA, including data preparation and creation of submission materials
- Support for design of targeted surveys aimed at ensuring data completeness

Rutgers will provide survey support for the Mapping work and team with OIT on the Broadband Planning work and will be responsible for the following activities:

- Develop of survey instruments, both web-based and phone-based for targeted end user populations and anchor institutions
- Conduct survey campaigns on broadband availability, adoption and usage, including data collection and management
- Analyze survey results to address critical questions of interest for New Jersey stakeholders
- Model and analyze the best policies and programs for stimulating broadband adoption in the state
- Conduct impact studies to track progress and measure value and benefits.

1.2.2 Relevant Qualifications and Past Experience for Telcordia Technologies

Telcordia has been involved with the data migration services for the past twenty years. The company's experienced and skilled staff has combined with strong project management practices, a proven methodology and toolset to efficiently and effectively deal with the complex problems that arise during data collection and transformation.

The following numbers quantify this experience:

- Over 80% of the staff with 10 or more years of experience in software
- Management team with over 20 years of experience in software on average
- Over 90% of the team with 2 or more years of data migration experience
- Over 30% of the team with 5-20 years of data migration experience
- Research organization with personnel who have expertise in data migration, data quality, distributed systems and data modeling

Telcordia has the ability to perform many types of data transformation and management services from operational reviews to complete migration and field surveys. Following are examples of Telcordia's specific capabilities for performing the NJ Broadband mapping work:

- Telcom Data Consolidation
- ESRI Architecture for Map-Enabled Services
- NJ Fiber Optic Study and Map
- Geospatial Industry Standards and Consortia Participation
- Data Scrubbing, Reconciliation and Quality Projects
- Expert Knowledge of Telecoms Data: COMMON LANGUAGE® Location Codes
- Company has assisted companies in collecting and submitting usage data to the FCC
- Wireless Service Benchmarking

1.2.3 Relevant Qualifications and Past Experience for Rutgers CUPR

The Center for Urban Policy Research is part of a consortium of research institutions that use quantitative information in public policy analysis. CUPR uses GIS in its impact assessments of the State Plan, its costs of sprawl analyses nationwide, and local housing studies for national clients. The CUPR frequently pursues joint efforts with the GIS Center at the Bloustein School to undertake these analyses. CUPR also uses survey analysis to undertake various aspects of its field work. For example, survey analysis has been used in various Community Development studies aimed at increasing understanding of the challenges of disadvantaged urban populations, in impact assessments of state plans and growth management plans and in large infrastructure studies in transportation and other fields. In many of these studies CUPR has joined with the Bloustein Center for Survey Research.

Rutgers University GIS (RUGIS) is a member of The University Consortium for Geographic Information Science (UCGIS). The Rutgers faculty who are affiliated with RUGIS are active in a wide variety of national and international organizations that provide forums for dissemination of research. Rutgers has been a leader in Geographic Information Systems research and education in New Jersey. Computer modeling of transportation and land use has always played a role in the research of the Computer Laboratory in the department of Urban Planning and Policy Development (Bloustein School of Planning). Since 1991 the focus of the Laboratory has progressively shifted toward urban GIS applications. In July of 1995 the Urban Planning lab was provided with a new building and greatly upgraded equipment. The Faculty of the Grant F. Walton Center for Remote Sensing at Cook College and of the Computer Laboratory at Bloustein School have been actively cooperating in research and teaching efforts since 1993. Recent software donations were jointly negotiated by the two departments and several cooperating research proposals are pending. Both departments offer a variety of undergraduate and graduate programs that emphasize the fundamental use of GIS and its many different applications.

The Bloustein Center for Survey Research (BCSR) provides high quality, non-partisan, objective research services to government, academia, the private sector, and non-profit organizations. As a research center of the Edward J. Bloustein School of Planning and Public Policy at Rutgers University, the Center for Survey Research brings together expertise in a wide range of public policy areas with a full complement of research methodologies. BCSR's Policy and Academic Service has a special mission to work directly with Bloustein School faculty and center directors. The directors and senior staff of the Bloustein Center for Survey Research have more than 80 years combined experience conducting survey research. BCSR offers the following services:

- Study Design and Sampling
- Interviewing and Data Collection (telephone, mail, Internet, in-person)
- Questionnaire Design and Question Evaluation
- Focus Group Research and Cognitive Interviewing
- Data Analysis
- Reporting and Presentations
- Survey Research Consultation

The BCSR staff has extensive experience conducting survey research in various public policy fields. The center has conducted needs assessments, program evaluations, tracking studies, and outreach analyses in the following policy areas:

- Business and Economic Planning
- Community Needs and Social Services
- Growth, Development and Environment
- Education and Youth
- Health and Health Care
- Institutional Awareness
- Transportation

1.2.4 Risk Mitigation

A critical capability in successfully managing a project of this type is identifying and managing risks. Some risks, such as imprecisely specified requirements, are common across projects of this type and can be handled through normal and professional project management. Other risks may arise due to the specific elements of the proposed solution and these must be addressed and mitigated in the features, functions and/or architecture of the solution. For this purpose, the specific risks are related to the data access and reliability. Below are the risk mitigation strategies to ensure the full success of the overall project.

- Data Access

  Risk: Because of the team's dependency on open access to data sources, alterations to access in terms of format or function or changes in terms of use or security functionality must be anticipated as part of the methodology.

  Mitigation: We will isolate the data acquisition from the subsequent transformation steps to allow rapid adaptation to changes in the source material. The data acquisition tools are designed to be flexible and adaptable. Traceability will ensure that we have the mechanisms for dealing with data with varying rules of use.

- Data Quality

  Risk: The data from various sources will vary in quality, in terms of accuracy, consistency and validity. As an example, a queried website may promote an advertised quality of broadband for a certain neighborhood, when, in reality, only a subset of the area is covered by that speed of broadband.

  Mitigation: The rules based methodology for integration of data from multiple sources is designed to directly address variability in quality. Confirmation of data accuracy is obtained through samples, surveys, statistical methods, and user feedback on the NJGIN.

1.3 Expedient Data Delivery

In order to support timely delivery of funding under the Recovery Act and the Broadband Data Improvement Act, the State Broadband Data and Development Grant Program sets an aggressive timeline for production and reporting of data. The initial target is to have "a substantially complete set" by November 1, 2009. Initially emphasizing data collection, validation and transformation over data presentation will make it possible, however, assuming rapid approval

and the ability to begin work promptly, to have an initial view of data across a small subset of sources by the November 1 target and a substantially complete set by the February 1, 2010 deadline.

Such rapid processing will be facilitated by the spiral process described above. Following the proverbial 80-20 rule, the first iteration will focus on gaining the bulk of available information from aggregators' web sites and the web sites of the largest of the New Jersey broadband providers. Subsequent iterations will gather additional information from other sources. At the end of each iteration, an assessment step will determine the largest and/or most critical gaps in the information representing broadband availability, and focus the subsequent iteration on closing those gaps.

Figure 6 illustrates a tentative project plan for the initial phase of the project, showing the key steps, the lead organization and an approximate timeline. Given the critical nature of the data sources, their content and quality, the project plan emphasizes the identification, assessment and selection of these sources. The early portion of this assessment will feed an initial data collection effort that will gather high-level statistics and focus on the major service providers. The development of the data gathering automation system is broken into two phases, which separate the data collection from the data unification.

In order to deliver the data to meet the requested timeline, many of the development activities are performed in parallel. As such, the GIS mapping, which will use the results of the data collection and unification is actually developed in parallel. The GIS definitions will be seeded with existing NJGIN data structures and the output will be integrated into the corresponding NJGIN layers for public dissemination using the existing infrastructure. The information gathered from the surveys is fed into the process to allow mid-stream corrections and to ensure appropriate emphasis is placed on critical areas. The end result of these efforts is a fully functional system with the capabilities necessary to perform the data gathering, mapping and submission.

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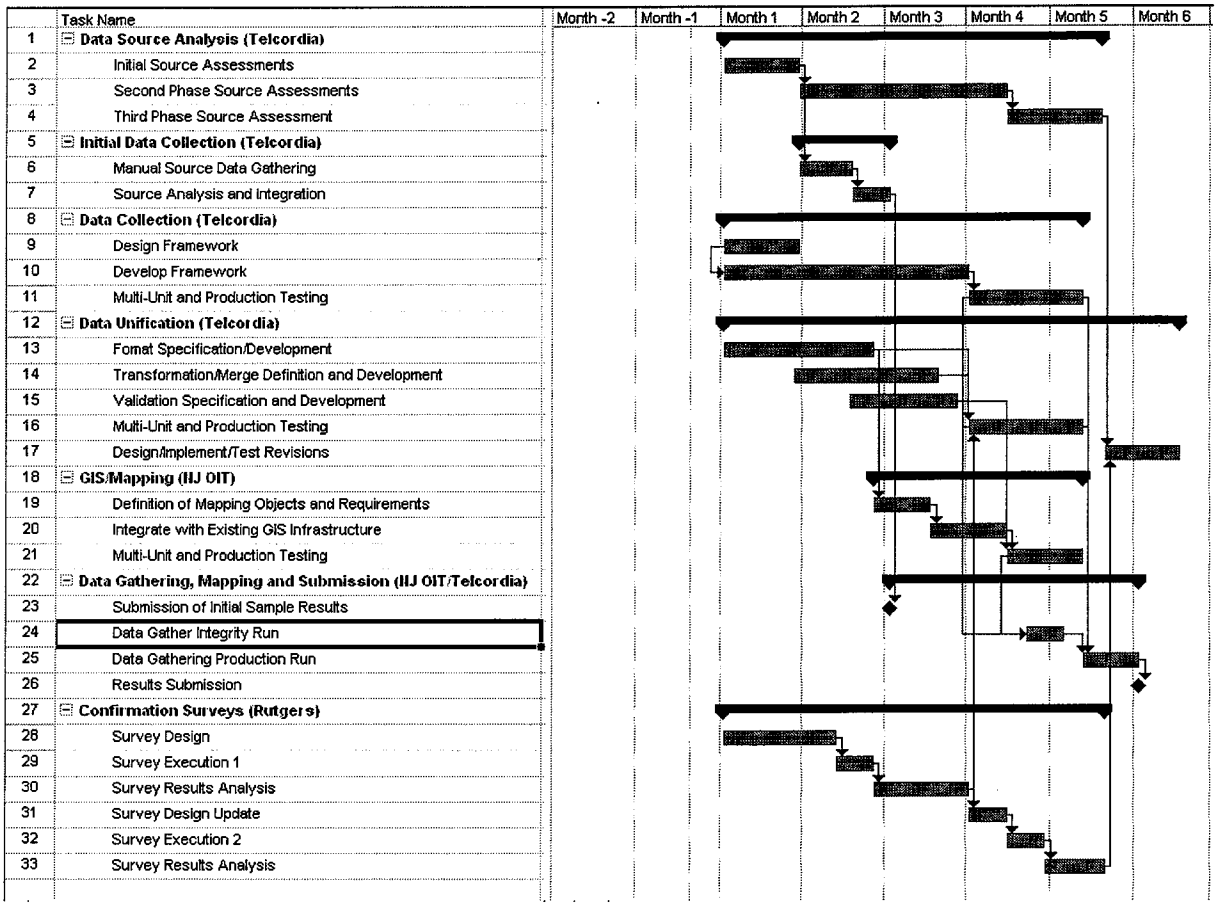

Figure 6: Initial Project Plan

1.4 Process for Repeated Data Updating

The approach to producing a broadband access data map, focusing on the use of public information, is well suited to nearly continuous data collection and update. The automated collection of data from defined sources such as service providers' and aggregators; Web sites lends itself to straightforward repetition. The inclusion of "crowd-sourced" data, telephone surveys and Web-based measurement and information collection, provides an independent means to verify the data and monitor for substantial changes. On-going targeted sample data collection, leveraging the optimized sample capabilities, will enable the monitoring of results for accuracy, consistency and timeliness on a near constant basis.

Although not shown in Figure 6, the gathering operation will be executed repeatedly in order to meet the bi-annual reporting requirements. This process, which will be a joint effort between OIT and Telcordia, will be conducted using a process designed to insure the integrity and timeliness of the data. The process will include the full set of integrity runs as part of the data gathering process to enable identification of any changes to the data sources. Any changes will

be reflected in updates to the corresponding data collection tools. The system design, which isolates collection from unification, will ensure that such changes are localized and efficient. The results of the corresponding production runs will be delivered to NTIA and will be used to update the NJGIN system to incorporate the latest results.

This process and methodology, which has been proven in multiple data collection and transformation engagements, provides the optimal tradeoff between procedural efficiency, information accuracy and data timeliness.

1.5 Planning

Currently, there is significant disparity between broadband accessibility and utilization throughout New Jersey. As a result, the foremost goal for planning would be to determine how to increase broadband utilization among the citizens, businesses and institutions of the state. This is especially relevant since substantial broadband utilization is necessary in order to take better advantage of emerging services in telemedicine, workforce development programs at anchor institutions, and e-learning.

The granular public information provided by this approach and, in particular, the targeted and detailed household survey data create a foundation for identifying service availability and gaps and analyzing challenges and opportunities in broadband deployment, adoption and use. These activities, termed "planning activities" in the NOFA are well suited to the expertise and capabilities of Rutgers CUPR. Rutgers can work with OIT to determine priorities in addressing gaps, develop programs to address these, and conduct the associated studies to monitor and improve program effectiveness. Programs may incorporate discounted access, expanded community-based computer centers, and training programs in target languages.

Effective use of broadband services and applications requires a base of skills including:

- Basics of personal computer use including turning the computer on, logging in, checking for network access, and setting language controls (e.g., English vs. Spanish).
- Basics of Internet access through common browsers such as Internet Explorer and Firefox.
- Basics of internet search via search engines such as Google, Yahoo and Bing.
- How to find information resources on the web and how to understand the sources and validity of the information; particular emphasis may vary based on the specific goals and needs of groups and organizations but may include public health and medical information; employment searches; banking and bill payments; homework help; apartment and house hunting; etc
- Basics of Internet email through free mail sites such as Gmail.
- Basics of social networking and online communities including internet sites that foster community.
- Basics of internet safety including avoiding identity theft, reducing spam, and limiting risks associated with loss of privacy.

Integration of the broadband access data with other relevant geo-referenced data sets will enable critical analyses of financial, technical and social hurdles to broadband adoption. Broadband availability and take rates can be linked with other information in areas such as poverty, education, and employment/unemployment characteristics. It can also be linked with location of service providers as well as proximity to universities or major research centers that regularly employ this technology.

Rutgers University currently has access to all of the residential and nonresidential growth records in the State of New Jersey for the past twenty years. This information is available by municipality and county and can be linked with broadband areas of current and future penetration to view the coincidence of growth and growth enabling technology. This unique data set is only available at Rutgers because of the work it is doing in analyzing the future of the State as contained in its statewide growth plan.

A multilayered GIS map will allow electronic aerial comparisons of data that heretofore have not been available. Multidimensional characteristics and real analyses will be performed via this type of platform.

The goals of the planning work will be support the development of targeted programs to widen the use of proven techniques and provide vulnerable and disadvantaged populations both with the needed skills and with affordable access to the Internet.

2 Economic Impact of Broadband

As part of the New Jersey Broadband Data and Mapping effort, Rutgers Center for Urban Policy Research (CUPR) proposes using its models of New Jersey's economy to examine the benefits of broadband to the state's economy. The introduction of broadband technology has made it possible to transfer massive amounts of data among users at speeds hitherto unimaginable. This increase in the efficiency of data transmission should have reduced the costs of data transmission in terms of both time and money. Establishing solid estimates of the economic benefits from both broadband inclusion efforts (un- and underserved; digital divide) and broadband expansion efforts (higher speed pipes at greater affordability) is critical to understanding how broadband serves as an engine of economic growth.

CUPR currently has two models of the state's economy: R/ECON^{TM} and R/ECON I-O. R/ECON^{TM} is a large scale econometric model of the state's economy. It is composed of more than 300 equations that are solved simultaneously. The equations are based on historical data for New Jersey and the United States.

The heart of the model is a set of equations modeling employment, wages, and prices by industry. In general, employment in an industry depends on demand for that industry's output, and on the state's wages and prices relative to the nation's wages and prices. Demand can be represented by a variety of variables, including (but not limited to) New Jersey personal income, population, sectoral output, or U.S. employment in the sector. Growth in population is driven by total employment in the state and by state prices relative to national prices.

As part of the Broadband effort, the model would be extended to include additional equations related to the information sector. These would include (but not be limited to): employment by sub-industry in the information sector (telecommunications, ISPs, and other). It would also include equations describing average prices of telecommunications services for consumers and businesses (assuming that we can obtain such data). These price equations would be linked into the rest of the model and would have impacts on both consumer spending and industrial output.

Currently communications costs account for just under three percent of consumer expenditures. The model would be used to study the impact of the introduction/spread of broadband on the prices paid by consumers for telecommunications. Given the current spread of broadband, it is then possible to estimate the impact of a further spread on the state's economy.

The other model available from CUPR is R/ECON I-O. This model is an input-output model of the state's economy that includes about 500 industries. It provides a concise and accurate means for articulating the interrelationships among industries. The industry detail provides a consistent and systematic approach and accurately assesses multiplier effects of changes in economic activity. This would be particularly useful in assessing the impacts of further investments in broadband that require construction of facilities in New Jersey on the state's other industries. This kind of analysis could be undertaken for the state as a whole as well as for specific areas in the state.

3 Conclusion

The New Jersey Broadband Mapping Program presents an important opportunity for New Jersey to create a comprehensive map of broadband services and determine its utilization (current demand) capacity and future demand for broadband services statewide. The availability of the information will provide significant outcomes to many segment of the population as well as provide data to create opportunities for broadband planning and economic opportunity.

OMB Approval No. 4040-0006
Expiration Date 07/30/2010

BUDGET INFORMATION - Non-Construction Programs

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. Data Collection		$	$	$ 2,799,988.00	$ 500,000.00	$ 3,299,988.00
2. GIS Mapping				699,985.00	320,000.00	1,019,985.00
3. Web Site Access				299,939.00	240,000.00	539,939.00
4. Broadband Planning				499,969.00	80,000.00	579,969.00
5. Totals		$	$	$ 4,299,881.00	$ 1,140,000.00	$ 5,439,881.00

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SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Data Collection	(2) GIS Mapping	(3) Web Site Access	(4) Broadband Planning	(5)
a. Personnel	$ 118,000.00	$ 235,000.00	$ 176,000.00	$ 59,000.00	$ 588,000.00
b. Fringe Benefits	42,000.00	85,000.00	64,000.00	21,000.00	212,000.00
c. Travel	0.00	0.00	0.00	0.00	
d. Equipment	0.00	0.00	0.00	0.00	
e. Supplies	0.00	0.00	0.00	0.00	
f. Contractual	2,799,988.00	699,985.00	299,939.00	499,969.00	4,299,881.00
g. Construction	0.00	0.00	0.00	0.00	
h. Other	340,000.00	0.00	0.00	0.00	340,000.00
i. Total Direct Charges (sum of 6a-6h)	3,299,988.00	1,019,985.00	539,939.00	579,969.00	$ 5,439,881.00
j. Indirect Charges	0.00			0.00	$
k. TOTALS (sum of 6i and 6j)	$ 3,299,988.00	$ 1,019,985.00	$ 539,939.00	$ 579,969.00	$ 5,439,881.00
7. Program Income	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. Cost Share - Data Collection	$ 500,000.00	$	$	$ 500,000.00
9. Cost Share - GIS Mapping	320,000.00			320,000.00
10. Cost Share - Web Site Access	240,000.00			240,000.00
11. Cost Share - Broadband Planning	80,000.00			80,000.00
12. TOTAL (sum of lines 8-11)	$ 1,140,000.00	$	$	$ 1,140,000.00

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 2,111,180.00	$ 527,795.00	$ 527,795.00	$ 527,795.00	$ 527,795.00
14. Non-Federal	$ 400,000.00	157,000.00	157,000.00	43,000.00	43,000.00
15. TOTAL (sum of lines 13 and 14)	$ 2,511,180.00	$ 684,795.00	$ 684,795.00	$ 570,795.00	$ 570,795.00

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. ARRA State Broadband and Development	$ 300,413.00	$ 308,194.00	$ 316,205.00	$ 324,453.00
17. GIS Mapping	69,934.00	72,037.00	74,199.00	76,425.00
18. Web Site Access	58,187.00	59,937.00	61,736.00	63,588.00
19. Broadband Planning	98,234.00	99,941.00	101,703.00	103,517.00
20. TOTAL (sum of lines 16 - 19)	$ 526,768.00	$ 540,109.00	$ 553,843.00	$ 567,983.00

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges: N/A

22. Indirect Charges: N/A

23. Remarks: Subcontractor cost breakdown has been provided as an attachment in the "Other Attachments Form".

New Jersey Broadband Mapping Program

Budget Narrative

New Jersey is a densely populated state that is essentially starting from scratch in building a broadband map. The approach we will use focuses on the automated collection and integration of publically available data and has been successfully applied in other states for earlier broadband maps as well as in numerous other domains. We believe that this public-domain, demand-side methodology will best ensure that useful and usable information will be available widely to support consumers, businesses, and organizations in our state. Since we are initiating the effort without previous broadband mapping work, it is critical to have a multi-faceted team that covers the full range of necessary competencies and skill sets from data collection and GIS systems to program and policy initiatives and decision support.

The team will be led by OIT with Telcordia Technologies, Inc. as a primary subcontractor. Rutgers University Center for Urban Policy Research (CUPR) will be a subcontractor to Telcordia.

The structure of the team ensures full engagement by the State of New Jersey, and complementary roles for team members. OIT will provide project management oversight, expert analysts in GIS mapping, access to the New Jersey Geographic Information Network, and, importantly, interface and coordination with other New Jersey and local government agencies. Telcordia Technologies will be the technical project lead and will provide technical expertise across the full spectrum of automated broadband data gathering tools and processes, data integration and transformation, and data management for mapping and analysis. Telcordia will also provide statistical and GIS mapping expertise, operations expertise in web site access, and market research experience in broadband planning. Rutgers University CUPR will provide survey research capabilities for data collection, and expertise on community economic development as well as outreach to nonprofits and community-based organizations for broadband planning.

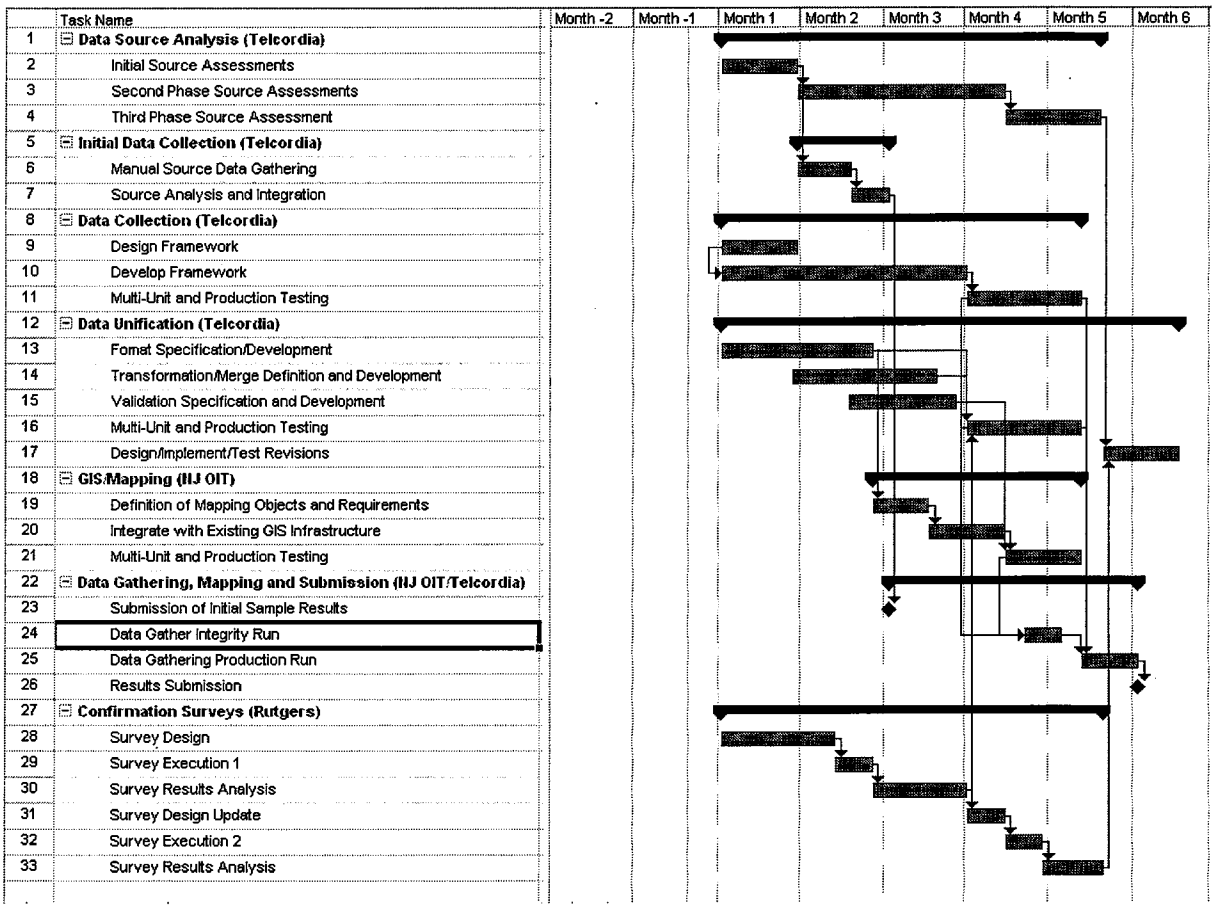
The team proposes the following major tasks and required resources for this project:

Task	Role	Resources
Data Collection	• Data gathering and automation • Data integration, validation and transformation • Run-time tools for data transformation and sampling tools • Methodology and automated systems for date updates and ongoing maintenance	$2.8M

	• Direct-user surveys of broadband availability and usage • Data interpretation for process feedback • Collaboration with NJ stakeholders on data quality and accuracy • Support for data integration with NJGIN	
GIS Mapping	• GIS planning and integration • Data transformation for mapping • Data dissemination • Ongoing data management	$700K
Web Site Access	• Integration with NJGIN • Ongoing Operations and Maintenance • Logs and Reports	$300K
Broadband Planning (SEE SEPARATE NARRATIVE BELOW)	• Identification of barriers to broadband adoption • Creation and facilitation of local technology planning teams • Establishment of computer ownership and Internet access programs	$500K

The following chart illustrates a tentative project plan for the first six months of the project, showing the key steps, the lead organization and an approximate timeline. Given the critical nature of the data sources, their content and quality, the project plan emphasizes the identification, assessment and selection of these sources. The early portion of this assessment will feed an initial data collection effort that will gather high-level statistics and focus on the major service providers. The development of the data gathering automation system is broken into two phases, which separate the data collection from the data unification. In order to deliver the data to meet the requested timeline, many of the development activities are performed in parallel. As such, the GIS mapping, which will use the results of the data collection and unification is actually developed in parallel. The GIS definitions will be seeded with existing NJGIN data structures and the output will be integrated into the corresponding NJGIN layers for

public dissemination using the existing infrastructure. The information gathered from the surveys is fed into the process to allow mid-stream corrections and to ensure appropriate emphasis is placed on critical areas. The end result of these efforts is a fully functional system with the capabilities necessary to perform the data gathering, mapping and submission. With the system in place, the periodic data updates and submissions will require correspondingly less effort over the final four years of the project as reflected in the yearly project budgets for Data Collection and GIS Mapping. Activities supporting Web Site Access are expected to be spread out approximately evenly over the five year period of performance as reflected in the relatively even budget allocation for that task over the five years.



Detailed project plan for first six months

Cost share of slightly more than 20% of the total project cost will be realized by two kinds of contributions from OIT. First, OIT will contribute staff costs (salaries, fringe benefits, etc.) associated with a project manager, two GIS analysts, and a portion of a GIS manager's time. The value of this contribution is an estimated $800,000. Second, OIT will contribute a new County Parcel Database to the project. Construction of this database began with the data that each county in New Jersey had created separately associating individual lots with county tax maps. OIT has funded a project, due for completion in September, 2009, that will enhance and unify this collection of parcel data. Specifically, the new database establishes a common set of county and municipal boundaries, a single database structure, and adjoins street addresses of the

properties to the parcel data. This new data source enables a seamless, nearly statewide data layer that can be used for obtaining address-level information for the first time on any commercial or residential property in the State of New Jersey (with the exception of Essex and Middlesex counties). The value of the contribution to the cost share has been set at $340K, based upon the actual cost of completing the project. Since the project will be completed this month, the data will be current.

Budget Narrative – Broadband Planning

The goals of the broadband planning task will be to support the development of targeted programs to widen the use of broadband applications, and provide vulnerable and disadvantaged populations both with the needed skills and with affordable access to the Internet. The granular public information provided by our approach and, in particular, the targeted and detailed household survey data create a foundation for identifying service availability and gaps and analyzing challenges and opportunities in broadband deployment, adoption and use. These activities are well suited to the expertise and capabilities of Rutgers CUPR. Rutgers can work with OIT and Telcordia to determine priorities in addressing gaps, develop programs to address these gaps, and conduct the associated studies to monitor and improve program effectiveness. Programs may incorporate discounted access, expanded community-based computer centers, and training programs in target languages.

Integration of the broadband access data with other relevant geo-referenced data sets will enable critical analyses of financial, technical and social hurdles to broadband adoption. Broadband availability and take rates can be linked with other information in areas such as poverty, education, and employment/unemployment characteristics. It can also be linked with location of service providers as well as proximity to universities or major research centers that regularly employ this technology.

One specific activity to be undertaken by the Rutgers CUPR will be to use its models of New Jersey's economy to examine the benefits of broadband to the state's economy. The CUPR R/ECON^{TM} model is a large scale econometric model of the state's economy. It is composed of more than 300 equations that are solved simultaneously. The equations are based on historical data for New Jersey and the United States. As part of the Broadband effort, the model would be extended to include additional equations related to the information sector. These would include (but not be limited to): employment by sub-industry in the information sector (telecommunications, ISPs, and other). It would also include equations describing average prices of telecommunications services for consumers and businesses (assuming that we can obtain such data). These price equations would be linked into the rest of the model and would have impacts on both consumer spending and industrial output. Currently communications costs account for just under three percent of consumer expenditures. The model would be used to study the impact of the introduction/spread on broadband on the prices paid by consumers for telecommunications. Given the current spread on broadband, we could then estimate the impact of a further spread on the state's economy.

The broadband planning task will use the output of the data gathering and GIS mapping tasks to develop economic models, which will then suggest how computer ownership and Internet access program will contribute to the State's economy. Our budget for the broadband mapping task anticipates approximately equal expenditures over the five years of the program.

Conclusion

Significant value and benefits for the state of New Jersey will result from improved access to affordable and high-speed broadband and from greater adoption and use of broadband services and applications. The data and mapping that is the focus of this work are therefore useful insofar as they can efficiently and effectively support programs and policies to increase affordability, capability, and adoption helping to meet the needs of various stakeholders in education, business, health care, energy, and government. Our proposed team with partnership among government, industry and academia within the state is the key to maximizing the economic return to the state of New Jersey, and fulfilling the goals of the NTIA State Broadband Data and Development Program.

Subcontractor Name: Telcordia Technologies Award Number: _____

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds: Federal (c)	Estimated Unobligated Funds: Non-Federal (d)	New or Revised Budget: Federal (e)	New or Revised Budget: Non-Federal (f)	New or Revised Budget: Total (g)
1. Data Collection				$2,799,988	$0	$2,799,988
2. GIS Mapping				$699,985	$0	$699,985
3. Website Access				$299,939	$0	$299,939
4. Broadband Planning				$499,969	$0	$499,969
5. Totals		$0	$0	$4,299,881	$0	$4,299,881

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity (1)	(2)	(3)	(4)	Total (5)
a. Personnel	$1,064,947	$287,422	$123,158	$120,536	$1,596,063
b. Fringe Benefits	$184,344	$49,753	$21,318	$20,864	$276,279
c. Travel	$0	$0	$0	$0	$0
d. Equipment	$0	$0	$0	$0	$0
e. Supplies	$0	$0	$0	$0	$0
f. Contractual	$200,000	$0	$0	$200,000	$400,000
g. Construction	$0	$0	$0	$0	$0
h. Other	$0	$0	$0	$0	$0
i. Total Direct Charges (sum of 6a-6h)	$1,449,291	$337,175	$144,476	$341,400	$2,272,342
j. Indirect Charges	$1,350,697	$362,810	$155,463	$158,569	$2,027,539
k. **Totals** (sum of 6i-6j)	$2,799,988	$699,985	$299,939	$499,969	$4,299,881
7. Program Income					$0

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Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8.				$0
9.				$0
10.				$0
11.				$0
12. **Total** (sum of lines 8 - 11)	$0	$0	$0	$0

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$2,111,178	$527,795	$527,795	$527,795	$527,795
14. Non-Federal	$0	$0	$0	$0	$0
15. **Total** (sum of lines 13 and 14)	$2,111,178	$527,795	$527,795	$527,795	$527,795

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. Data Collection	$300,413	$308,194	$316,205	$324,453
17. GIS Mapping	$69,934	$72,037	$74,199	$76,425
18. Website Access	$58,187	$59,937	$61,736	$63,588
19. Broadband Planning	$98,234	$99,941	$101,703	$103,517
20. **Total** (sum of lines 16-19)	$526,768	$540,109	$553,843	$567,983

Section F - Other Budget Information

21. Direct Charges

N/A

22. Indirect Charges

N/A

23. Remarks

Indirects per Forward Pricing Rate Agreement dated 1/31/2009.

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Instructions for the SF-424A

Public Reporting Burden for this collection of information is estimated to average 3.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please do not return your completed form to the Office of Management and Budget; send it to the address provided by the sponsoring agency.

General Instructions
This form is designed so that application can be made for funds from one or more grant programs. In preparing the budget, adhere to any existing Federal grantor agency guidelines which prescribe how and whether budgeted amounts should be separately shown for different functions or activities within the program. For some programs, grantor agencies may require budgets to be separately shown by function or activity. For other programs, grantor agencies may require a breakdown by function or activity. Sections A, B, C, and D should include budget estimates for the whole project except when applying for assistance which requires Federal authorization in annual or other funding period increments. In the later case, Sections A, B, C, and D should provide the budget for the first budget period (usually a year) and Section E should present the need for Federal assistance in the subsequent budget periods. All applications should contain a breakdown by the object class categories shown in Lines a-k of Section B.

Section A. Budget Summary Lines 1-4 Columns (a) and (b)
For applications pertaining to a **single** Federal grant program (Federal Domestic Assistance Catalog number) and **not requiring** a functional or activity breakdown, enter on Line 1 under Column (a) the catalog program title and the catalog number in Column (b).

For applications pertaining to a **single** program **requiring** budget amounts by multiple functions or activities, enter the name of each activity or function on each line in Column (a), and enter the catalog number in Column (b). For applications pertaining to multiple programs where none of the programs require a breakdown by function or activity, enter the catalog program title on each line in **Column** (a) and the respective catalog number on each line in Column (b).
For applications pertaining to **multiple** programs where one or more programs **require** a breakdown by function or activity, prepare a separate sheet for each program requiring the breakdown. Additional sheets should be used when one form does not provide adequate space for all breakdown of data required. However, when more than one sheet is used, the first page should provide the summary totals by programs.

Lines 1-4, Columns (c) through (g)

For new applications, leave Columns (c) and (d) blank. For each line entry in Columns (a) and (b), enter in Columns (e), (f), and (g) the appropriate amounts of funds needed to support the project for the first funding period (usually a year).

For continuing grant program applications, submit these forms before the end of each funding period as required by the grantor agency. Enter in Columns (c) and (d) the estimated amounts of funds which will remain unobligated at the end of the grant funding period only if the Federal grantor agency instructions provide for this. Otherwise, leave these columns blank. Enter in columns (e) and (f) the amounts of funds needed for the upcoming period. The amount(s) in Column (g) should be the sum of amounts in Columns (e) and (f).

For supplemental grants and changes to existing grants, do not use Columns (c) and (d). Enter in Column (e) the amount of the increase or decrease of Federal funds and enter in Column (f) the amount of the increase or decrease of non-Federal funds. In Column (g) enter the new total budgeted amount (Federal and non-Federal) which includes the total previous authorized budgeted amounts plus or minus, as appropriate, the amounts shown in Columns (e) and (f). The amount(s) in Column (g) should not equal the sum of amounts in Columns (e) and (f).

Line 5—Show the totals for all columns used.

Section B. Budget Categories
In the column headings (a) through (4), enter the titles of the same programs, functions, and activities shown on Lines 1-4, Column (a), Section A. When additional sheets are prepared for Section A, provide similar column headings on each sheet. For each program, function or activity, fill in the total requirements for funds (both Federal and non-Federal) by object class categories.

Lines 6a-i—Show the totals of Lines 6a to 6h in each column.

Line 6j—Show the amount of indirect cost.

Line 6k—Enter the total of amounts on Lines 6i and 6j. For all applications for new grants and continuation grants the total amount in column (5), Line 6k, should be the same as the total amount shown in Section A, Column (g), Line 5. For supplemental grants and changes to grants, the total amount of the increase or decrease as shown in Columns (1)-(4), Line 6k should be the same as the sum of the amounts in Section A, Columns (e) and (f) on Line 5.
Line 7—Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount. Show under the program narrative statement the nature and source of income. The estimated amount of program income may be considered by the federal grantor agency in determining the total amount of the grant.

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Section C. Non-Federal Resources

Lines 8-11—Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

Column (a)—Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

Column (b)—Enter the contribution to be made by the applicant.

Column (c)—Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

Column (d)—Enter the amount of cash and in-kind contributions to be made from all other sources.

Column (e)—Enter totals of Columns (b), (c), and (d).

Line 12—Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f) Section A.

Section D. Forecasted Cash Needs

Line 13—Enter the amount of cash needed by quarter from the grantor agency during the first year.

Line 14—Enter the amount of cash from all other sources needed by quarter during the first year.

Line 15—Enter the totals of amounts on Lines 13 and 14.

Section E. Budget Estimates of Federal Funds Needed for Balance of the Project

Lines 16-19—Enter in Column (a) the same grant program titles shown in Column
(a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.
If more than four lines are needed to list the program titles, submit additional schedules as necessary.

Line 20—Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

Section F. Other Budget Information

Line 21—Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

Line 22—Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

Line 23—Provide any other explanations or comments deemed necessary.

FORM **CD-511**
(REV 1-05)

U.S. DEPARTMENT OF COMMERCE

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

State of New Jersey

* AWARD NUMBER

0660-ZA29

* PROJECT NAME

New Jersey Broadband Mapping Program

Prefix: Mr.

* First Name: Adel

Middle Name:

* Last Name: Ebeid

Suffix:

* Title: Chief Technology Officer

* SIGNATURE: Shelley Bates

* DATE: 09/01/2009

DISCLOSURE OF LOBBYING ACTIVITIES

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

Approved by OMB
0348-0046

1. * Type of Federal Action:
- [ ] a. contract
- [x] b. grant
- [ ] c. cooperative agreement
- [ ] d. loan
- [ ] e. loan guarantee
- [ ] f. loan insurance

2. * Status of Federal Action:
- [ ] a. bid/offer/application
- [x] b. initial award
- [ ] c. post-award

3. * Report Type:
- [x] a. initial filing
- [ ] b. material change

4. Name and Address of Reporting Entity:

[x] Prime [ ] SubAwardee

*Name: State of New Jersey

*Street 1: 300 Riverview Plaza Street 2:

*City: Trenton State: NJ: New Jersey Zip: 08625-0212

Congressional District, if known:

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency:
Department of Commerce

7. * Federal Program Name/Description:

CFDA Number, *if applicable:*

8. Federal Action Number, *if known:*

9. Award Amount, *if known:*
$

10. a. Name and Address of Lobbying Registrant:

Prefix *First Name: N/A Middle Name

*Last Name: N/A Suffix

*Street 1 Street 2

*City State Zip

b. Individual Performing Services (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

11. 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:** Shelley Bates

***Name:** Prefix *First Name: Adel Middle Name

*Last Name: Ebeid Suffix

Title: Chief Technology Officer **Telephone No.:** 609-984-4082 **Date:** 09/01/2009

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Standard Form - LLL (Rev. 7-97)

OMB Approval No.: 4040-0007
Expiration Date: 07/30/2010

ASSURANCES - NON-CONSTRUCTION PROGRAMS

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.

* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	* TITLE
Shelley Bates	Chief Technology Officer
* APPLICANT ORGANIZATION	* DATE SUBMITTED
State of New Jersey	09/01/2009

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

RUTGERS
Edward J. Bloustein School
of Planning and Public Policy

Center for Urban Policy Research
Rutgers, The State University of New Jersey
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New Brunswick, New Jersey 08901-1982

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Adel Ebeid
Chief Technology Officer
State of New Jersey
Office of Information Technology
Trenton, NJ 08625

August 4, 2009

Re: NJ Broadband Mapping Proposal for the NTIA "State Broadband Data and Development Grant Program" 0660-ZA29

Dear Mr. Ebeid,

The Rutgers University, Center for Urban Policy.Research (CUPR) is pleased to participate as a member of the Telcordia team under your leadership to successfully meet the goals and requirements of this program to:

(i) Collect comprehensive and accurate state-level broadband mapping data;
(ii) Aid in the development and maintenance of a national broadband map; and
(iii) Provide statewide initiatives directed at broadband planning.

Our participation is focused in the following two areas. First , we will provide support for data integrity, particularly as relates to comprehensiveness including conducting statistically valid end-user surveys to confirm and complete the broadband mapping data. Second, we will provide initiatives for broadband planning and inclusion which are best-in-class and data-driven to deliver maximum economic value and benefits to the state from increased availability, adoption, and use of broadband.

The Rutgers University, Center for Urban Policy Research (CUPR) is ideally suited for these efforts because we have been undertaking data based policy research for close to 45 years. We have the additional resources of the GIS Laboratory and the Center for Survey Research, both at the Bloustein School for Public Policy. Most of the research currently delivered by CUPR has a significant quantitative component and we are working nationally on the largest policy efforts in the country. The research currently being undertaken is determining why families have insufficient housing, why they pay too much in property taxes, and why they cannot keep their jobs. To determine why families don't have access to broadband services and how this impacts on the jobs and well being is exactly the type of statistical research that we do. To actually map this and provide strategies that can combat this lack of

access is an appropriate public policy response. We look forward to undertaking this research and being a member of the Telecordia team.

Robert W. Burchell, Ph.D.
Professor and Director, Center for Urban Policy Research