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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:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify)

* 3. Date Received: 08/14/2009

4. Applicant Identifier:

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: Rural Economic Development Center, Inc.

* b. Employer/Taxpayer Identification Number (EIN/TIN): 56-1552375

* c. Organizational DUNS: 085300486

d. Address:

* Street1: 4021 Carya Drive
Street2:
* City: Raleigh
County: Wake
* State: NC: North Carolina
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 27610-2914

e. Organizational Unit:

Department Name:

Division Name: The e-NC Authority

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

Prefix: Ms.
* First Name: Jane
Middle Name: Smith
* Last Name: Patterson
Suffix:

Title: Executive Director, The e-NC Authority

Organizational Affiliation:

* Telephone Number: 919-250-4314
Fax Number: 919-250-4325

* Email: jpatterson@e-nc.org

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Application for Federal Assistance SF-424

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9. Type of Applicant 1: Select Applicant Type:

M: Nonprofit with 501C3 IRS Status (Other than Institution of Higher Education)

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.):

All 100 of North Carolina's counties

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

North Carolina Broadband-Rigor in Mapping (NC BRIM)

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

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16. Congressional Districts Of:

* a. Applicant: 13
* b. Program/Project: NC-all

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

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 10/15/2009
* b. End Date: 10/15/2014

18. Estimated Funding ($):

* a. Federal	3,157,931.00
* b. Applicant	719,252.00
* c. State	0.00
* d. Local	0.00
* e. Other	99,290.00
* f. Program Income	0.00
* g. TOTAL	3,976,473.00

*** 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: Ms. * First Name: Susan
Middle Name: Ellis
* Last Name: Dunn
Suffix:

* Title: Vice President, Finance and Administration

* Telephone Number: 919-250-4314 Fax Number: 919-250-4325

* Email: sdunn@ncruralcenter.org

* Signature of Authorized Representative: Susan Dunn * Date Signed: 08/14/2009

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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.

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. Planning		$	$	$ 434,799.00	$ 116,449.00	$ 551,248.00
2. Mapping				2,723,132.00	702,093.00	3,425,225.00
3.						
4.						
5. Totals		$	$	$ 3,157,931.00	$ 818,542.00	$ 3,976,473.00

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Prescribed by OMB (Circular A -102) Page 1

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY (1) Planning	(2) Mapping	(3)	(4)	Total (5)
a. Personnel	$ 85,567.00	$ 1,029,164.00	$	$	$ 1,114,731.00
b. Fringe Benefits	23,982.00	301,696.00			325,678.00
c. Travel		14,000.00			14,000.00
d. Equipment					
e. Supplies		18,000.00			18,000.00
f. Contractual	316,985.00	1,341,758.00			1,658,743.00
g. Construction					
h. Other	22,000.00	77,313.00			99,313.00
i. Total Direct Charges (sum of 6a-6h)	448,534.00	2,781,931.00			$ 3,230,465.00
j. Indirect Charges	102,714.00	643,294.00			$ 746,008.00
k. TOTALS (sum of 6i and 6j)	$ 551,248.00	$ 3,425,225.00	$	$	$ 3,976,473.00
7. Program Income	$	$	$	$	$

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. Planning	$ 77,467.00	$	$ 9,794.00	$ 87,261.00
9. Mapping	239,549.00		65,844.00	305,393.00
10.				
11.				
12. TOTAL (sum of lines 8-11)	$ 317,016.00	$	$ 75,638.00	$ 392,654.00

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 1,562,431.00	$ 546,851.00	$ 400,728.00	$ 312,486.00	$ 302,366.00
14. Non-Federal	$ 392,654.00	137,429.00	117,796.00	78,531.00	58,898.00
15. TOTAL (sum of lines 13 and 14)	$ 1,955,085.00	$ 684,280.00	$ 518,524.00	$ 391,017.00	$ 361,264.00

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. Planning	$ 2,400.00	$ 55,232.00	$ 2,400.00	$ 55,232.00
17. Mapping	474,543.00	473,694.00	480,656.00	477,231.00
18.				
19.				
20. TOTAL (sum of lines 16 - 19)	$ 476,943.00	$ 528,926.00	$ 483,056.00	$ 532,463.00

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges: 3,230,465.00

22. Indirect Charges: 746,008.00

23. Remarks:

Project Abstract

The North Carolina Broadband Rigor in Mapping (NC BRIM) project proposes to utilize an innovative, multi-modal approach to collect comprehensive and accurate state-level mapping data. This will ultimately lead to highly accurate state-level broadband maps, which will be vital toward the development and maintenance of a national broadband map. The planning component of the project focuses on statewide initiatives designed to encourage broadband availability, uptake and use by North Carolina's citizens and businesses. Full project details are contained within the executive summary and narrative section of the application package.

The work in the initial year (2001) of the e-NC Authority demonstrates that, currently with roughly the same staff as 2001-2002, the e-NC Authority can complete successfully the proposed workload that is laid out in this federal grant application. In addition to this federal grant application of $3,157,931, there will be anticipated unobligated funding available to meet non-match operational expenditures of $2,343,248.

NC Broadband Rigor in Mapping (NC BRIM)
Program Narrative August 14, 2009

Executive Summary – North Carolina Broadband – Rigor in Mapping (NC BRIM)
Since 2001, the e-NC Authority has acted on its legislative mandate to develop and maintain a map that depicts that status of broadband availability in the state (http://www.e-nc.org/ARRA_Underserved/NC_Underserved_rural_CB081009.pdf). The map evolved over time from a static, county-based representation that was updated annually to its current interactive format. Today, this broadband map provides users with information on the availability of DSL, cable-modem and wireless broadband services at the address level in a GIS-based searchable format. While advances in the technology used to develop, display and update the map have made it more generally useful, problems in the collection and verification of underlying provider-supplied information continue to limit its true value. Inconsistencies in the type, accuracy, completeness and currency of information supplied by some providers make it difficult to determine with sufficient confidence true levels of connectivity access. If using the current approach, it will be extremely difficult to meet the objectives specified in the Broadband Data Development Program for semi-annual submission of comprehensive and granular updates to populate a national broadband map.

The e-NC Authority (through its fiscal administrator, the N.C. Rural Economic Development Center) respectfully requests a grant of $2,723,132 from the National Telecommunications and Information Administration (NTIA) to test and validate an alternative approach to broadband data collection through a highly structured experimental protocol. Matching in-kind contributions of $702,093 (20.5 percent) have been identified. Promising third-party Web-enabled data mining methods will develop and deliver a map and underlying data to the NTIA by Nov. 1, 2009. Data collected using this method will be augmented with wireless access data gathered using GIS-based technology and field sampling. Results will be tested and validated through comparisons between two approaches that are more conventional: new or existing data supplied by providers, and data collected directly from citizens and businesses through telephone surveys and/or field census that will begin in the fourth quarter of 2009. Monthly meetings between the e-NC Authority and its corporate, university and nonprofit partner organizations will facilitate information exchange and assessment.

Expert outside evaluators skilled in mathematical modeling will join partnering organizations and the e-NC Authority in spring 2010 to evaluate the results of this experiment. They will recommend an optimal method or combination of methods the state will use to supply data to NTIA going forward. Representatives of the NTIA and FCC will be invited to participate in this data confab. At a minimum, NC BRIM will improve the state's broadband map. Realistically, it may provide a national model for acquisition of connectivity data that is accurate, current, comprehensive and verifiable through a process that is transparent, expedient and cost effective.

Both the process employed and the data collected through March 2010 will directly enhance capacity at state and local levels to plan BTOP initiatives to encourage broadband availability, uptake and use by citizens and businesses. It will complement an extensive middle-mile request being submitted by MCNC and facilitate a request that the e-NC Authority will submit to the NTIA and FCC to pilot an adaptation of the Lifeline/Link-Up programs to provide broadband. Support would also be provided to establish a high-level North Carolina Broadband Innovation Group (NC BIG) to engage government and private sector leaders in efforts to optimize broadband planning and investments.

The –NC Authority requests for mapping $2, 723,132 in federal dollars that will be matched in-kind with $702,093 from the e-NC Authority for a total mapping project costs of $3,425,225.

The Need for Better Information

The connectivity vision for North Carolina is this: adequate universal access and sound polices to ensure on-going investments that will develop and deliver innovative applications and services at competitive speeds and bandwidth to tech-savvy end users. This is the vision that will deliver sustainable competitiveness in the 21st century. The need to stimulate realization of this vision is critical – North Carolina is being slammed by record-setting budget deficits that reflect a 20+ percent decline (more than $4 billion) in state revenues over the past fiscal year. The state is further stressed by high population growth fueled by an influx of economic refugees: North Carolina currently ranks tenth in population with projections that it will rank as seventh within 15 years. In June 2009, the state had the nation's seventh highest unemployment rate at 11.2 percent.

The N.C. General Assembly had the foresight to recognize early on that broadband Internet had to be part of the strategy to move the state forward. During the last 8 years, the state has invested more than $9.27 million in efforts to connect rural North Carolina and expand the use of broadband Internet. This sum was augmented with $30 million donated by a nonprofit, MCNC, $2 million from private foundations and $2 million in grants from federal agencies. Telecommunication providers worked cooperatively with the e-NC Authority to make high-speed Internet services available to North Carolina citizens, particularly those in rural areas where challenges to broadband access are many. Despite significant progress, recent citizen surveys found that overall broadband uptake by North Carolina citizens residing in rural counties is only 34 percent[1]. Preliminary research conducted by the e-NC Authority since February 2009 reveals that 6 of the state's 100 counties contain unserved (Exhibit 1) and 60 have underserved (Exhibit 2) census blocks and that all of these 66 counties are rural. Rural connectivity challenges in North Carolina are truly significant; more than 49 percent of the state's citizens live in rural counties, making North Carolina home to the second largest number of rural citizens in the country.

Progress has been significant but the need to make further investments in broadband infrastructure, and in planning and demand stimulating programs, must be made to reach vulnerable popuations that are not yet online is pressing. It is in the public's best interest that state and federal broadband investments be based on information that is complete, verifiable and current, and that the methods used to obtain that information be rigorous, transparent and reproducible. The e-NC Authority has designed an 8 month research and development effort that is the core activity of the broadband mapping request detailed in the following sections. Please note that specific aspects of the project workplan and partnership agreements are not finalized.

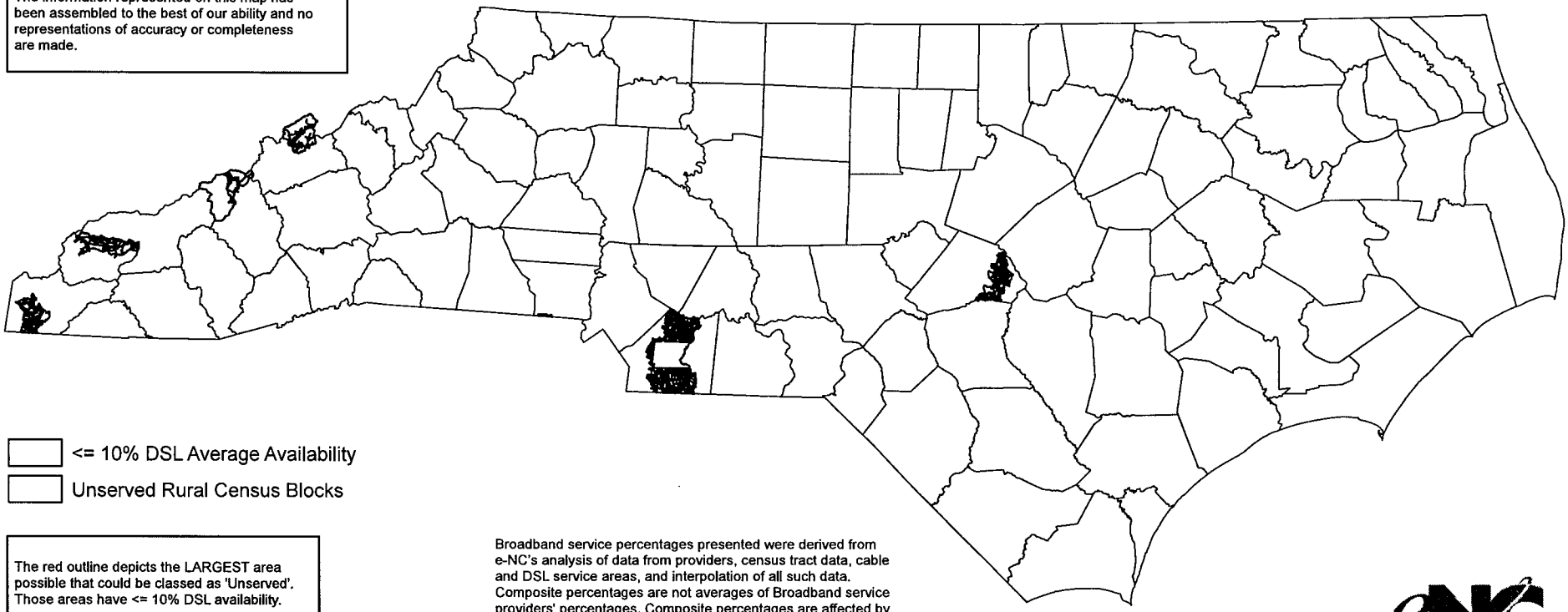
[1] North Carolinians Online Tracking Home Computers and Internet Access in North Carolina Citizens Surveys 1999 to 2008. November 2008. Dr. Ken Wilson, East Carolina University. Accessed at www.e-nc.org

Exhibit 1

North Carolina Unserved Rural Census Blocks
<=10% DSL and Without Cable Modem Service

The information has been collected by the e-NC Authority as a convenience to parties who have interest in applying for ARRA Broadband grants.

The information represented on this map has been assembled to the best of our ability and no representations of accuracy or completeness are made.



<= 10% DSL Average Availability

Unserved Rural Census Blocks

The red outline depicts the LARGEST area possible that could be classed as 'Unserved'. Those areas have <= 10% DSL availability.

Census Blocks that have some cable modem service or that are not fully contained within the red outline were removed.

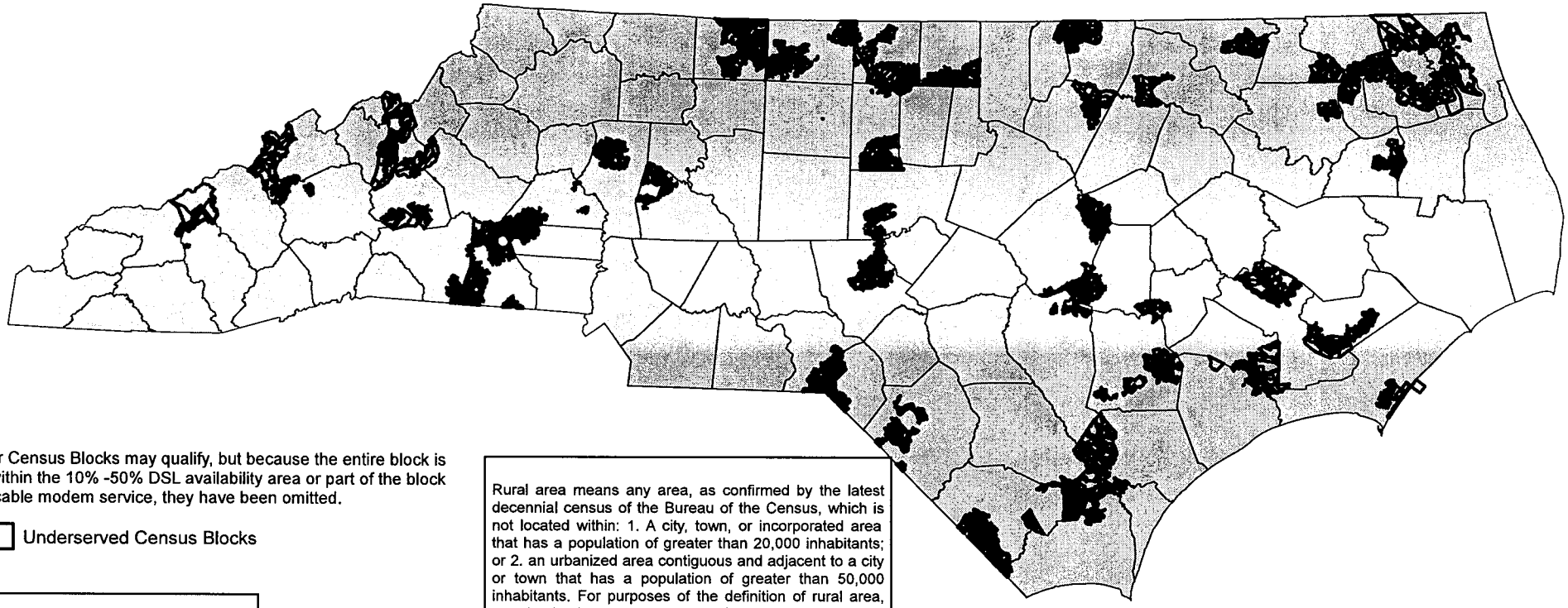
The Rural/Non-Rural definition was then applied to the set to get the final result.

Broadband service percentages presented were derived from e-NC's analysis of data from providers, census tract data, cable and DSL service areas, and interpolation of all such data. Composite percentages are not averages of Broadband service providers' percentages. Composite percentages are affected by overlapping service areas, population and housing reporting data, geographical variations and other variables.

Data current as of December 31, 2007.

8/10/09

Underserved Rural Census Blocks
10% - 50% DSL and Without Cable Modem Service



Other Census Blocks may qualify, but because the entire block is not within the 10% -50% DSL availability area or part of the block has cable modem service, they have been omitted.

Underserved Census Blocks

The information has been collected by the e-NC Authority as a convenience to parties who have interest in applying for ARRA Broadband grants.

The information represented on this map has been assembled to the best of our ability and no representations of accuracy or completeness are made.

Rural area means any area, as confirmed by the latest decennial census of the Bureau of the Census, which is not located within: 1. A city, town, or incorporated area that has a population of greater than 20,000 inhabitants; or 2. an urbanized area contiguous and adjacent to a city or town that has a population of greater than 50,000 inhabitants. For purposes of the definition of rural area, an urbanized area means a densely populated territory as defined in the latest decennial census of the U.S. Census Bureau.

Broadband service percentages presented were derived from e-NC's analysis of data from providers, census tract data, cable and DSL service areas, and interpolation of all such data. Composite percentages are not averages of Broadband service providers' percentages. Composite percentages are affected by overlapping service areas, population and housing reporting data, geographical variations and other variables.

Data current as of December 31, 2007.

8/10/09

1. **Data**

(a) Data Gathering

NC BRIM is designed to optimize the broadband data collection and mapping process employed by the e-NC Authority. The method employed since 2002 has involved informed manipulation of data supplied directly to the e-NC Authority by broadband service provider companies. Results obtained thusly have been validated at the margin by results extrapolated from consumer surveys that were part of the semi-annual N.C. Citizens Online study conducted by Dr. Ken Wilson, professor at East Carolina University. Data gathered is used by the e-NC Authority in meeting its legislative mandate to provide annual broadband status reports to the N.C. General Assembly and to guide the e-NC Authority in the strategic allocation of limited broadband infrastructure incentive funds that it managed toward the most unserved/underserved communities.

Description of existing data collection methodology – The e-NC Authority has gathered high-speed Internet access data (HSIA) from all telcos and cable companies in North Carolina since 2002. Fixed wireless data has also been collected but not included in calculations because it was unreliable. Satellite companies would not provide data. The e-NC Authority has posted on its Web site an annual 100 County Report (2002 through 2007) that names the providers serving each county, their area of service and a composite percentage of cable/telco HSIA for each county. The e-NC Authority utilizes data that companies provide to the FCC on the required 477 forms as baseline information for the state's broadband map. While some providers were consistently forthcoming, others proved increasingly reluctant to provide the requested data, despite the e-NC Authority having agreed to terms of non-disclosure. As a result, the existing data collection process has become an extremely labor- and time-intensive endeavor yielding results that are often incomplete and difficult to verify. The e-NC Authority welcomes the opportunity presented by NTIA through the State Broadband Data Program (SBDP) to explore new options for improving all aspects of North Carolina's broadband mapping efforts.

Promising alternative data sources – The e-NC Authority has identified two promising approaches to obtaining high-value broadband data that we propose to test over the first 8 months of the project: (1) Web-enabled data mining, and (2) radio wave propagation models for existing mobile and fixed wireless broadband. Both methodologies utilize innovative technologies and proprietary processes that will deliver high-value results, as demonstrated in preliminary data capture experiments. Both methodologies have the advantage of not requiring the input of providers, thus avoiding the compliance and delay issues that have impeded previous collection efforts. At this point, it appears possible that the full spectrum of data specified in Appendix A, Technical Appendix of the SBDP NOFA could be satisfied using one or both of the methods.

Research Protocol – NC BRIM will identify, test and validate an optimal methodology to gather and verify North Carolina broadband data. Data collected through three distinct modalities – technology-enable independent market data, provider-supplied market data, and consumer-provided empirical data will be compared head-to-head and cross-validated. Research faculty at four leading academic institutions will assist the e-NC Authority in evaluating the results of these various modalities against the content and timing requirements of the FCC and NTIA. The methodology employed to extract data for each modality and the milestones for the proposed

evaluation are described below. The flow of activities in the project work plan is captured in the timeline that is found in *Section 3. Expedient Data Delivery.*

Independent technology-enabled data collection

(1) Leading-edge **Web-enabled data mining** techniques will be applied to extracting data sets that reveal information needed to satisfy NTIA's specified data mapping requirements. Companies under consideration for this initiative have years of experience providing telcos and cable companies with strategic intelligence reports about their competitors. This solution is inherently provider neutral and accountable in that it involves complex proprietary "deep Web crawling" algorithms. This technique, in conjunction with comprehensive telecom omnibus survey research, will capture all provider data[2]. The e-NC Authority will work directly with the selected data mining company to ensure that the information obtained meets state and national mapping requirements. Data from a first pull will be used to satisfy the Nov. 1, 2009 delivery goal, with both the process and product of this approach carefully evaluated and refined over coming months to ensure that the final data set delivered to NTIA on or before Feb. 1, 2010 is complete and accurate.

(2) **Radio wave wireless propagation** studies using proprietary models will be used to identify regions in the state that are unserved or underserved by fixed and/or mobile wireless Internet services. The model will use high spatial resolution Digital Elevation Models derived from statewide Light Elevation and Ranging (LIDAR) and empirical formulas to capture the effect of natural terrain, vegetation, vegetation interference and the behavior of radio waves in space. All geospatial data sets will be converted to the WGS 1984 geographic coordinating system. An assessment and validation of the model will be accomplished through signal strength data collected from drive tests and field sampling subjected to statistical analysis, in order to both calibrate and determine the overall accuracy of the modeling process. The nature of the methods and results will be provided through metadata using the Federal Geospatial Data Content (FGDC) standards.

Provider-supplied market data – The e-NC Authority will communicate with all providers in the state about the national broadband mapping effort and the role that the e-NC Authority, acting on behalf of the state, has in supplying broadband service information to the NTIA over the next 5 years. Providers will be encouraged to voluntarily submit requested data directly to the e-NC Authority. Appropriate arrangements will be made and agreements reached regarding the treatment of confidential information, in compliance with state laws *(see Section 1(d) Data Security and Confidentiality)*, and the requirements noted in the filing of the Broadband Mapping NOFA in the Federal Register.

[2] For example, the data mining approach should deliver the following fields of information on each provider in the state: market, company, offer id, offer brand name, monthly charge, setup charge, additional promotional value standard monthly charge, standard setup charge, term commitment, downstream speed, upstream speed, e-mail accounts, Web storage (MB), virus protection, firewall, parental controls, pop-up blocker, spam filter, 24/7 customer support and offer notes.

Consumer-Supplied Data – Empirical citizen and business consumer data will be obtained through an extrapolated census in select counties and through an online survey and data analysis platform, both of which can capture information from citizens and businesses.

(1) Extrapolated census – This will be a multi-partner initiative that actually serves several purposes within the broader North Carolina broadband stimulus strategy. The e-NC Authority conducts regular statewide citizen surveys that query people on the availability of computers and the Internet in their homes and communities, and about their attitudes and usage characteristics of the Internet (see the description in the Planning Narrative that accompanies this document). Although these surveys do not target businesses, they can serve as a model for survey efforts that will be part of the data gathered to validate the mapping methodologies. From previous citizen surveys, the e-NC Authority has learned that carefully crafted stratified random sampling is a cost-effective means of gathering usable information. Dr. Ken Wilson, a faculty member at East Carolina University who designed and managed four preceding citizen surveys, will join Dr. Nick Didow of the Kenan Institute for Private Enterprise at UNC-Chapel Hill in creating a survey instrument and a stratified random sample design. The sample will be comprised of a small number of counties whose collective profiles along a specified spectrum of attributes[3] adequately mirror the profile of the state as a whole. Intensive sampling results from these counties will be extrapolated to the entire state, using established statistical techniques. Information from this census will inform the various components of the state's broadband planning efforts.

Three regional nonprofits engaged in community and economic development will be recruited as partnering local survey centers. A local team leader and seven surveyors will be hired for 8 and 6 weeks, respectively for each location, creating at least 24 much-needed jobs in counties with double-digit unemployment. Work-study students and displaced workers will be targeted for these positions. This effort will provide support for the nonprofits and build market research capabilities in regions that lack a major research university presence.

(2) E-Solutions online survey and data analysis – Tentative agreements are being explored with potential corporate partners specializing in econometric analysis and broadband network deployments. These firms have proprietary benchmarking survey and data analysis platforms to collect data directly from individual businesses, organizations, institutions and households. Private data collected directly from users is the most robust method for developing relative analysis of broadband uses and benefits. Results from businesses are often the missing element that this data pull will overcome. This effort and its broader applications in planning initiatives is described more fully in the attached

Technical Advisory Group (TAG) – Principals from each partnering organization and contractor will join the e-NC Authority and the evaluators in a monthly virtual meeting to facilitate project coordination and information flow. The e-NC Authority will ask representatives from the state's Center for Geographical Information, Geographical Information Coordinating Council, MCNC and others with a vested interest in broadband networks to join the group. This core group will advise the e-NC Authority through the data gathering and analysis portions of the

[3] . For example, the sample will be carefully constructed to accurately reflect the rurality, ethnic diversity, age, education, income, employment, telephone service and industry mix characteristics of the state overall,

project. TAG will transition in composition and focus to provide support to regional planning efforts as the overall mapping and planning project moves into the second year.

Data Confab – In April 2010, the e-NC Authority will convene a summit discussion of NC BRIM. Principals from each partnering organization and contractor will join the evaluation team and the e-NC Authority in a robust shake down session to evaluate the relative merits of the various data gathering methods used in the preceding months. The evaluators will have all results in advance of this meeting and will be prepared to lead the discussion. This discussion will roll into a process for developing a recommend best practice of gathering broadband mapping for North Carolina. The e-NC Authority will invite program officers and principals from the NTIA and FCC to attend the summit and participate in discussions.

Project Evaluation –Four individuals with strong knowledge of research design, data analysis and modeling and broadband deployment issues in North Carolina have tentatively agreed to consult with the e-NC Authority in the assessment of NC BRIM results. They include Dr. Edward Feser, professor and head of Urban and Regional Planning and professor of Agricultural and Consumer Economics at the University of Illinois-Champaign-Urbana, Dr. Nick Dominic, a specialist in mathematical modeling at UNC-Charlotte, Dr. Anthony Esterline of the School of Engineering at N.C. A&T State University and Dr. Ken Wilson will of East Carolina University. This expert team will work with the e-NC Authority to finalize the research design, will participate with the Technical Advisory Group in the data confab in April where NC BRIM results will be analyzed and will contribute to development of the final recommendations and project report that will be submitted to the NTIA in July 2010.

(b) Accuracy and Verifiability

One of the major problems with the mapping efforts to date has been the inherent difficulty of verifying data accuracy reported by providers and inconsistent definitions of service among the different categories of providers, e.g., cable companies and telcos. Compliance with requests for data vary widely among the individual providers and the time required to obtain the data can mean that it is obsolete before it is imported to the map. NC BRIM focuses on testing promising methods of data acquisition that bypasses providers to obtain some, or possibly all, of the mapping information required by NTIA. A three-pronged approach that is described in Section 1 (a) Data Gathering, will be used to obtain at least the following five distinct data sets: (1) Web-enabled data mining; (2) GIS-enabled wireless propagation studies that will be internally-validated by field studies and surveys; (3) empirical business and community anchor data obtained directly from end-users; (4) empirical citizen end-user data obtained directly through statistically-valid survey sampling; and (5) provider data obtained directly through their online input to the e-NC Authority's *Service Provider Update* application or in response to regular information update requests. These data will be used to develop maps that will undergo a rigorous examination of data gathering methodology by the NC BRIM Technical Advisory Group and four independent evaluators that are expert in the fields of database design and analysis, predictive mathematical modeling, econometrics and statistical interpretation during March and April 2010.

(c) Accessibility

Since 2002, the e-NC Authority has maintained reports and maps depicting broadband availability at the country level that is available to the public at www.e-nc.org. This information has been kept as current as the information in-hand allows. The e-NC Authority anticipates that with the application of data gathering tools and methods developed during the NC BRIM project, the data on the North Carolina map will never be more than 6 months old. The data layers available on the state map will match those available on the national map, with the possible addition of other layers and details needed to support applications and broadband planning efforts that are specific to North Carolina.

To ensure ongoing quality of data and presentation, the e-NC Authority utilizes a nationally respected professional GIS company to manage its Web site, develop data layers and assist in analyzing the data underlying the mapping layers. This firm has agreed to provide all services needed to convert data gathered for the purposes of developing and maintaining the North Carolina broadband map to NTIA's specifications.

Beyond general availability, the e-NC Authority's staff regularly assists citizens and businesses with customized mapping information searches. For example, more than 60 hours of the e-NC Authority's staff time has been donated to individuals, corporations, local governments and other state governments since February 2007 in support of their BTOP applications.

(d) Security and Confidentiality

Information received by public agencies in North Carolina is generally available under the N.C. Public Records Act. This act is codified as N.C. Gen. Stat. 132- 1 et seq. Proprietary information, such as trade secrets, is excluded from the publicly available information. Trade secrets are governed by N.C. Gen. Stat. 66-151 et seq. Parties providing such proprietary information are required to mark their information appropriately to ensure that public agencies are aware of the nature of the information upon receipt. Such knowledge then allows agencies to segregate proprietary information from public disclosure. This also will allow the e-NC Authority to meet the confidentiality requirements of the grant agreement.

2. **Project Feasibility**

(a) Applicant Capabilities

Standard Form 424A, presented below as Exhibit 3, provides a detailed budget narrative that describes and justifies NC BRIM costs and identifies the sources and amounts of match provided to the project by partnering organizations. It is important to note that despite fiscal reductions mandated by the constrained state budget, the e-NC Authority and its various university partners have offered to donate significant allowable administrative costs in-kind to NC BRIM. They recognize the critically important role that broadband access plays in supporting their missions and in providing the resources students need to prepare for higher education and workforce training. Preliminary discussions with potential corporate partners indicate that some of them are willing to consider donating a portion of the fair market value of their services to NC BRIM as an in-kind contribution.

(b) Applicant Capacity, Knowledge and Experience

Building on a record of foresight and success – North Carolina is an object lesson of the idea of states being laboratories of innovation. The e-NC Authority is proposing that the NTIA fund what is in essence a research project designed to identify and validate innovative methods and tools that can be used going forward to obtain broadband data in a cost-effective manner that optimizes accuracy, timeliness, transparency and usefulness. The e-NC Authority's ability to deliver the promised results is supported by the state's record of innovative accomplishments in the networking arena, many of which were led by individuals who and organizations that will collaborate in NC BRIM. Consider the following:

- Starting in 1969, the N.C. General Assembly gave the Department of Adminstration the authority to establish a coordinated system for transmission of information by communication between agencies and to provide equipment, personnel and systems for that purpose. Today, the state chief information officer acts as a general coordinating authority for all telecommuncations matters relating to the internal management and operation of most state agencies. The Office of Information Technology Services (ITS) provides central telephone system and telecommunication network services to approximately 110,000 telephones, data services with network connectivity to more than 2,535 locations, and Local Area Network support to approximately 7,000 users. ITS provides telecommunications services to state agencies, local governments, schools, libraries, health clinics and employment offices in all of North Carolina's 100 counties.

- In the early 1980s, North Carolina was the first state to deploy a digital network that aggregated demand and charged one price for all of its subdivisions to transmit information regardless of geography.

- In the mid-1980s, North Carolina was one of the first states to develop a private network to share content and information among the research universities of its state university system.

- In the mid-1990s, the state collaborated with telecommunications companies (as an anchor tenant) to deploy the N.C. Information Highway – at that time the world's largest publicly-switched broadband network.

- In the mid-1990s, the N.C. Information Highway development led to the further development and deployment of the North Carolina Research and Education Network (NCREN) to service the research and education needs of the 16-campus University of North Carolina system, Duke University and Wake Forest University. This network today has evolved and grown to serve the Internet and Intranet needs of all of K-20 education entities in the state.

- In 2000, the N.C. General Assembly established the Rural Internet Access Authority (now the e-NC Authority) through Senate Bill 1343, Session Law 2000-149. The bill created this organization to study, develop and report on North Carolina's telecommunications infrastructure and to create digital literacy programs and broadband applications to ensure that all North Carolina citizens could learn to use Internet

resources to enhance access to the world's economic, educational and health resources. The e-NC Authority has also worked to increase broadband technology deployment to all areas of the state. The e-NC Authority has become a globally recognized advocate and ombudsman for broadband deployment and education of citizens on the benefits of broadband use.

- In 2003, the e-NC Authority successfully managed one of the largest awards made by NTIA's Technology Opportunities Program, the Local e-Government Utilization Project (LEG-UP), which shepherded 55 local governments to fully e-government functionality through a competitive grant process that delivered training, high-speed Internet connectivity, equipment, interactive Web sites and at least one transactional application.

A uniquely qualified team – The e-NC Authority's primary strength is its committed and experienced staff of eight professionals. This group will comprise the core NC BRIM team (see the following section, "Feasibility" for brief staff skill statements). Their skills, experience and interests complement one another and collectively cover the tasks to be accomplished. The e-NC Authority staff has already invested weeks of in-kind contribution of time, technical assistance and mapping expertise to organizations and governments in North Carolina that are preparing applications for BTOP and BIP. Augmenting this team will be select contractors and a NC BRIM Technical Advisory Group, which consists of principles from collaborating corporations, research institutions and relevant state agencies.
Leading the team will be **Jane Smith Patterson**, executive director of the e-NC Authority. Patterson has more than 30 years of expertise in the information technology and telecommunications fields – spanning government, private industry and educational sectors. She has deployed networks, applications and designed state and private sector information technology infrastructure and organizations. Patterson is an elected fellow of the National Academy of Public Administration. She previously served as an appointed member and committee co-chair of Applications of Pres. Bill Clinton's U.S. National Infrastructure Advisory Council.

Deborah Watts brings more than 20 years of experience in designing, implementing and evaluating complex research and development projects. She designed and managed the $1.5 million LEG-UP project awarded by the Technology Opportunities Program of the NTIA. Watts will be responsible for coordinating the comparative assessment of data development approaches during the first year of the project.

Joanna Wright adds extensive experience in information management design and operations. As the e-NC Authority's resident GIS manager, Wright will ensure that maps developed through NC BRIM meet specifications of the NTIA and are useful to the citizens of North Carolina.

Building on almost 32 years with Sprint as a network design planner in all aspects of telecommunications infrastructure and 5 years developing the e-NC Authority's current proprietary infrastructure audit methodology, **Charles Pittman** is uniquely capable of providing real-time insight into the validity of results from various infrastructure audit methods being tested during the first year of NC BRIM.

This work will be complemented by **Richard Kelly**, with 34 years of experience in telecommunications/data and video networking including several years with North Carolina's Information Technology Services (ITS). Kelly's experience with ITS gives him the intimate knowledge necessary to focus on the status of infrastructure in North Carolina's anchor institutions (as defined in the BIDA NOFA).

Angie Bailey, assistant director of the e-NC Authority, will oversee the planning process and manage fiscal and contractual projects in cooperation with the financial team of the N.C. Rural Economic Development Center (The Rural Center)*. This will ensure that all work remains compliant with federal fiscal guidelines.

Carol Torian brings 8 years in data management and community development efforts to the coordination and implementation of associated planning initiatives, thereby working closely with the e-NC Authority team on project management. Torian will work in tandem with both the mapping and planning projects to provide data management oversight.

Cary Edgar serves as the e-NC Authority's director of communications, bringing almost 10 years of experience in internal and external communications in corporate, nonprofit and agency environments. Edgar will manage effective external communication with the public about mapping efforts and the planning initiatives. Outreach materials will also be developed to engage the interest of groups targeted by both the associated planning and mapping initiatives.

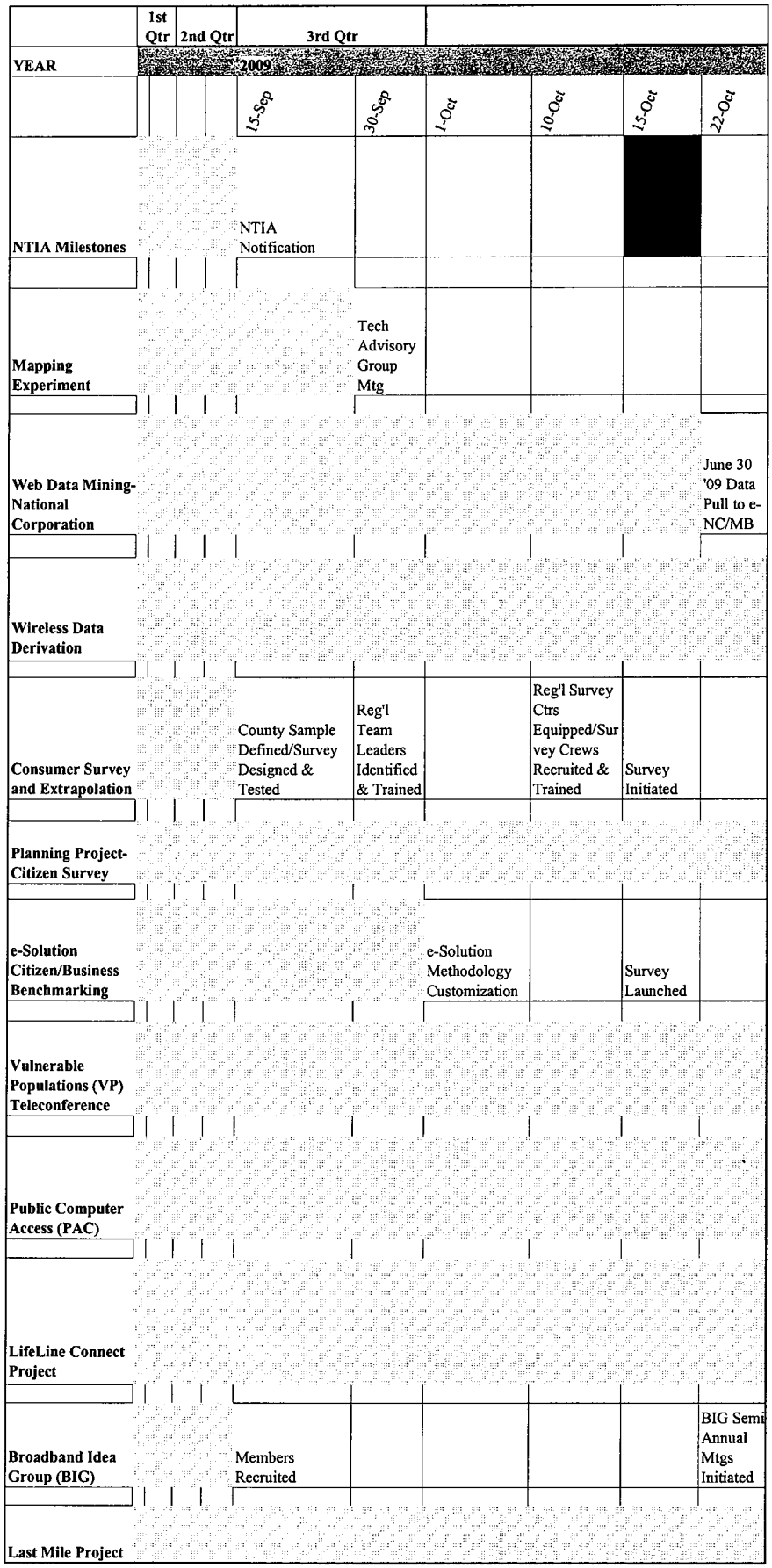
* The Rural Center serves as the appointed fiscal agent for the e-NC Authority. In that capacity, the Rural Center will contract with the NTIA for the NC BRIM project. Rural Center Vice President of Finance Susan Dunn and her staff will provide expert accounting and audited budget reports.

3. Expedient Data Delivery

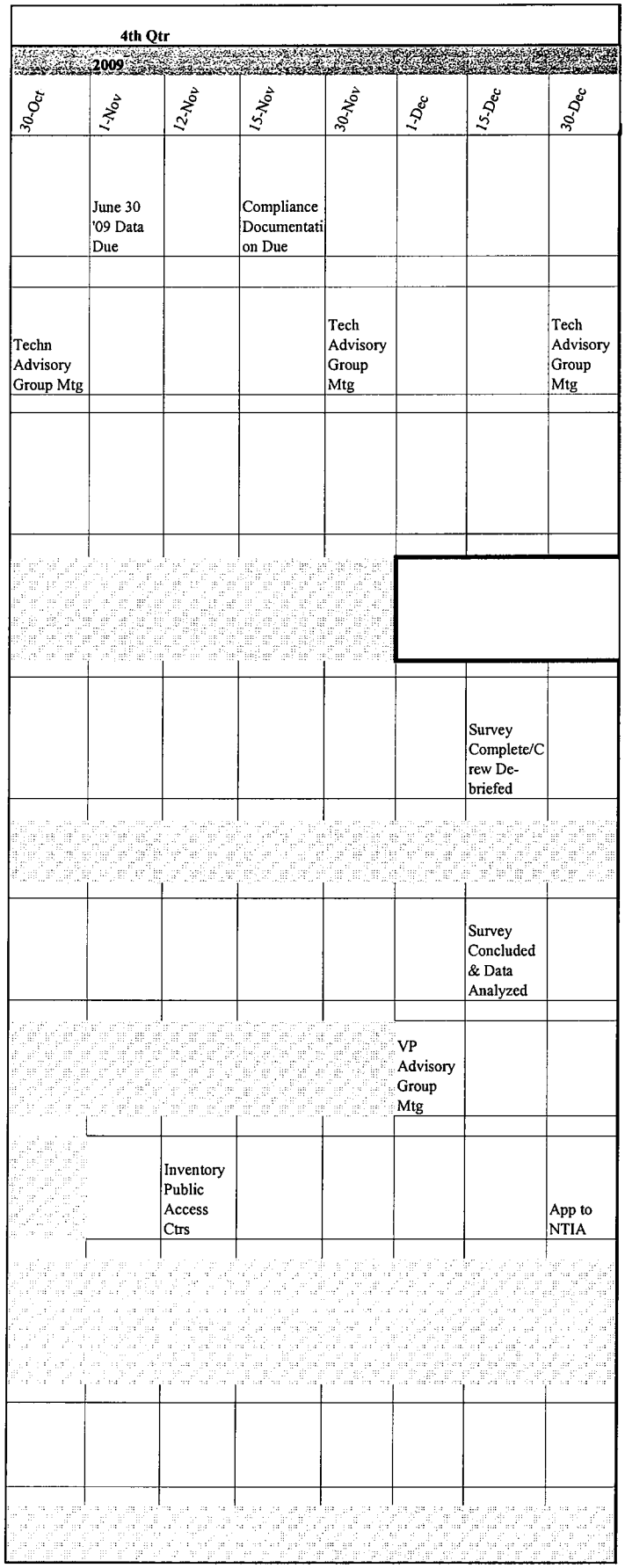
The e-NC Authority is committed to delivering data on time – The NC BRIM project will allow the e-NC Authority to prototype a Web-extraction methodology for the purposes of broadband mapping. This methodology has as a major advantage the purported ability to deliver comprehensive information in a manner that is up-to-date, cost-effective and time efficient. If this approach produces the expected results, it will allow the e-NC Authority to deliver a preliminary North Carolina broadband data set to the NTIA on Nov. 1, 2009 that is substantially complete, as specified in the State Broadband Data Program NOFA. This first data set will consist primarily of information extracted from the Web that will depict the status of broadband availability in North Carolina as of June 30, 2009. The final data set for June 2009 and a preliminary data set for December 2009 will be delivered to the NTIA on or before Feb. 1, 2010 using the same methodology. A final data set for Dec. 31, 2009 will be delivered to the NTIA on or before March 1, 2010. Data sets delivered on Feb. 1, 2010 and March 1, 2010 will supplement those extracted from the Web with results of the radio-wave propagation studies of fixed and mobile wireless that have been empirically validated, as well as any voluntary service provider updates.

Contingency plan – The e-NC Authority recognizes that it is critical that the NTIA and FCC have credible state data to use in developing the national broadband plan and map. To allow for an unlikely worst-case event that the novel Web-enabled data derivation model being tested through NC BRIM does not deliver acceptable results, the e-NC Authority has developed a contingency plan to meet the ambitious timeline established by the NTIA for this effort. If this is the case, the e-NC Authority will deliver a map derived from the expert manipulation of what data we have on-hand, including empirical broadband census and wireless propagation field studies, provider-supplied data and other information. In all cases where statistical extrapolation, time series analysis and other modeling methods are employed, standard acceptable practices will be followed.

Project Timeline – Exhibit 3 presents a detailed project work plan that specifies a schedule for major project milestones and related tasks. Information is provided for the full 5 years covered by this grant, data acquisition and the mapping effort, and for and the planning activities described in a separate narrative.


1st Qtr
2nd Qtr
3rd Qtr
YEAR
2009
15-Sep
30-Sep
1-Oct
10-Oct
15-Oct
22-Oct
NTIA Milestones
NTIA Notification
Mapping Experiment
Tech Advisory Group Mtg
Web Data Mining-National Corporation
June 30 '09 Data Pull to e-NC/MB
Wireless Data Derivation
Consumer Survey and Extrapolation
County Sample Defined/Survey Designed & Tested
Reg'l Team Leaders Identified & Trained
Reg'l Survey Ctrs Equipped/Survey Crews Recruited & Trained
Survey Initiated
Planning Project-Citizen Survey
e-Solution Citizen/Business Benchmarking
e-Solution Methodology Customization
Survey Launched
Vulnerable Populations (VP) Teleconference
Public Computer Access (PAC)
LifeLine Connect Project
Broadband Idea Group (BIG)
Members Recruited
BIG Semi Annual Mtgs Initiated
Last Mile Project

North Carolina Broadband - Rigor in Mapping (NC BRIM) Timeline Exhibit 3



1st Qtr										
15-Jan	28-Jan	30-Jan	31-Jan	1-Feb	15-Feb	16-Feb	26-Feb	1-Mar	15-Mar	30-Mar
			NTIA Qtrly Report 4th Q '09	Substantially Complete Dec. 31 '09 Data Due						
	Tech Advisory Group Mtg						Tech Advisory Group Meeting			Tech Advisory Group Meeting
Dec. 31 '09 Data Pull to e-NC/MB										
				Radio Propagation Data Collected						
Data Compiled & Analyzed										
	VP Mtgagenda/ program created							VP Mtg invites mailed		
								Develop & Launch Update Grant Program		
Planning Effort Initiated/Pilot Counties Selected								App to NTIA/State & Nat'l Partnerships Formalized		
									BIG Semi-Annual Mtg	
Initial Planning						Last Mile Mtg				

2nd Qtr								
15-Apr	16-Apr	30-Apr	12-May	1-Jun	10-Jun	15-Jun	25-Jun	30-Jun
		NTIA Qtrly Report 1st. Q '10						
Data Confab (1 Day)	Data Confab (1/2 day)							
						June 30 '10 Data Pull to e-NC/MB		
Validation via Drive Test & Field Sampling								
			Vulnerable Populations Teleconference Mtg					
		Agreement due/Launch Lifeline Digital Literacy Effort in PAC						
				NTIA Notification	**Training of Local Intake Agencies**			Participants Recruited and Service Initiated (ongoing)

3rd Qtr					4th Qtr			
30-Jul	31-Jul	1-Sep	15-Sep	30-Sep	31-Oct	1-Nov	30-Nov	15-Dec
	NTIA Qtrly Report 2nd. Q '10	June 30 '10 Data Due			NTIA Qtrly Report 3rd. Q '10			
						Maps & Report Submitted		
		2010 Survey Design Updated/Tested	Survey Initiated		Survey Completed		Data Analyzed	
Otrly PAC Use Report Due					Otrly PAC Use Report Due			
					Qtrly LifeLine Conn Report Due			
				BIG Semi-Annual Mtg				

1st Qtr						2nd Qtr		3rd Qtr				4th Qtr
2011												
12-Jan	15-Jan	31-Jan	1-Feb	1-Mar	15-Mar	30-Apr	15-Jun	31-Jul	1-Sep	15-Sep	30-Sep	31-Oct
		NTIA Qtrly Report 4th Q '10		Dec. 30 '10 Data Due		NTIA Qtrly Report 1st. Q '11		NTIA Qtrly Report 2nd. Q '11	June 30 '11 Data Due			NTIA Qtrly Report 3rd. Q. '11
	Dec. 31 '10 Data Pull to e-NC/MB						June 30 '11 Data Pull to e-NC/MB					
	Otrly PAC Use Report Due					Otrly PAC Use Report Due		Otrly PAC Use Report Due				Otrly PAC Use Report Due
	Qtrly LifeLine Conn Report Due					Qtrly LifeLine Conn Report Due		Qtrly LifeLine Conn Report Due				Qtrly LifeLine Conn Report Due
						BIG Semi-Annual Mtg					BIG Semi-Annual Mtg	
Request to NC Legislatu			Last Mile Roundup									

1st Qtr				2nd Qtr		3rd Qtr				4th Qtr	
15-Jan	31-Jan	1-Mar	15-Mar	30-Apr	15-Jun	31-Jul	1-Sep	15-Sep	27-Sep	31-Oct	30-Nov
	NTIA Qtrly Report 4th Q. '11	Dec. 31 '11 Data Due		NTIA Qtrly Report 1st. Q. '12		NTIA Qtrly Report 2nd. Q '12	June 30 '12 Data Due			NTIA Qtrly Report 3rd. Q. '12	
Dec. 31 '11 Data Pull to e-NC/MB					June 30 '12 Data Pull to e NC/MB						
							Survey Design Updated/	Survey Initiated		Survey Completed	Data Analyzed
Otrly PAC Use Report Due				Otrly PAC Use Report Due		Otrly PAC Use Report Due				Otrly PAC Use Report Due	
Qtrly LifeLine Conn Report Due				Qtrly LifeLine Conn Report Due		Qtrly LifeLine Conn Report Due				Qtrly LifeLine Conn Report Due	
				BIG Semi-Annual Mtg					BIG Semi-Annual Mtg		

North Carolina Broadband - Rigor in Mapping (NC BRIM) Timeline

1st Qtr				2nd Qtr		3rd Qtr			4th Qtr	1st Qtr				
[redacted]										2014				
15-Jan	31-Jan	1-Mar	15-Mar	30-Apr	15-Jun	31-Jul	1-Sep	30-Sep	31-Oct	15-Jan	31-Jan	1-Mar	15-Mar	30-Apr
	NTIA Qtrly Report 4th Q. '12	Dec. 31 '12 Data Due		NTIA Qtrly Report 1st. Q. '13		NTIA Qtrly Report 2nd. Q. '13	June 30 '13 Data Due		NTIA Qtrly Report 3rd. Q. '13		NTIA Qtrly Report 4th Q '13	Dec. 31 '13 Data Due		NTIA Qtrly Report 1st. Q. '14
31 '12 Data Pull to e-NC/MB					30 '13 Data Pull to e-NC/MB					Dec. 31 '13 Data Pull to e-NC/MB				
[redacted]														
Otrly PAC Use Report Due				Otrly PAC Use Report Due		Otrly PAC Use Report Due			Otrly PAC Use Report Due	Otrly PAC Use Report Due				Otrly PAC Use Report Due
Qtrly LifeLine Conn Report Due				Qtrly LifeLine Conn Report Due		Qtrly LifeLine Conn Report Due			Qtrly LifeLine Conn Report Due	Qtrly LifeLine Conn Report Due				Qtrly LifeLine Conn Report Due
				BIG Semi-Annual Mtg				BIG Semi-Annual Mtg						BIG Semi-Annual Mtg

2nd Qtr			3rd Qtr						4th Qtr			
2014												
15-Jun	1-Jun	15-Jun	31-Jul	1-Aug	31-Aug	1-Sep	15-Sep	30-Sep	1-Oct	15-Oct	31-Oct	30-Nov
			NTIA Qtrly Report 2nd. Q '14			June 30 '14 Data Due					NTIA Qtrly Report 3rd. Q '14	
June 30 '14 Data Pull to e-NC/MB												
	Survey Design Update	Survey Initiated		Survey Completed		Data Analyzed						
			Otrly PAC Use Report Due									
			Qtrly LifeLine Conn Report Due									
								BIG Semi-Annual Mtg				

4. Process for Repeated Data Updating

Contracted Data Services – The e-NC Authority will contract with selected data services corporations to provide data directly. The process ultimately adopted for obtaining mapping data for North Carolina will have been validated and certified by the NC BRIM Technical Advisory Group in April 2010. This time frame will allow for the June 30, 2010 data pull. This process will be shared with and approved by the NTIA.

Service Provider Update (SPU) – Since 2002, the e-NC Authority has made information regarding the availability of broadband Internet available to the public in reports and maps that are accessible online (www.e-nc.org). While the data displayed is better described as "most recent" rather than "current," the e-NC Authority has developed an innovative and award-winning[4] Service Provider Update (SPU) Web application that allows providers to update information pertaining to their service areas using a password-protected portal that avoids disclosure of proprietary information. The e-NC Authority commits to retaining this functionality and linking information input through the SPU to the state map displayed on NC BRIM's enhanced map. The e-NC Authority will continue to promote use of this tool to broadband service providers throughout the state.

5. Planning and Collaboration

The e-NC Authority has in place **statutory requirements** ensuring that the N.C. General Assembly and the governor's office are kept apprised of the organization's operations, fiscal status and programmatic activities. It is also part of the e-NC Authority's legislative mandate to keep citizens informed about the status of broadband in the state. Annual updates are made to the broadband census that forms the basis of the state broadband map maintained on the e-NC Authority Web site. The e-NC Authority has been in full compliance with these requirements since being established in 2001.

The **15-member governing commission** that guides the e-NC Authority's work is a vital asset to planning and collaboration efforts. Appointed by the governor and N.C. General Assembly, commissioners are chosen for their expertise and leadership in technology, education, public policy, and economic and community development. Commissioners represent rural and urban communities and volunteer their time in service of the board. Membership of the commission is structured to ensure liaison with key constituencies that include the N.C. General Assembly, N.C. Department of Commerce, N.C. Association of County Commissioners, N.C. League of Municipalities, ITS, community development corporations, broadband service providers, University of North Carolina system, the N.C. Justice System and others. The e-NC Authority is able to call on both current and past commissioners in its efforts to ensure that plans and programs remain reflective of the needs and desires of the state's citizens.

An open source environment – The e-NC Authority maintains an open-source attitude toward programs and practices, regularly sharing intellectual property and resources with other states to foster an operating environment of continuous improvement and collaboration. This does not conflict with the ability to maintain confidential proprietary information, as required in

[4] The Authority's Service Provider Update Web application received the 2007 Techie award from Grassroots.org and the Nonprofits Technology Network Group

collaborations and information sharing specified in Section 1 (d) Security and Confidentiality, of this narrative. The e-NC Authority also maintains professional communications efforts that utilize both traditional and emerging Web-enabled tools to keep public and private partners, government leaders at the local, state and federal levels and the citizens and businesses of North Carolina informed on issues related to broadband and technology-led economic and community development.

Office of Recovery and Investment

In the spring of 2009, the Office of Recovery and Investment developed a broadband working group to discuss the SDDP NOFA and broadband stimulus funds. Subsequently, the Office of Recovery and Investment (OERI) developed a ARRA Broadband Initiatives Management Strategy for North Carolina (July 28, 2009). It noted, among other items, that

1. The mapping format will satisfy the proprietary needs of private providers as related to customer records: assure that the mapping system can meet FCC mapping standards and be provided at a reasonable cost where appropriate to retain contracting services.
2. The e-NC Authority is designated to submit a grant application for comprehensive planning and needs analysis including the mapping element.
3. An Advisory Committee on State Broadband needs analysis will be established to review and evaluate the overall needs assessment process. Members will be appointed by the Governor with recommendations from the e-NC Authority. The Committee will advise the Governor and the e-NC Authority. The Committee will adhere to Open meetings law.

The e-NC Authority chair responded to the Office of Recovery and Investment that it would adhere to the requirements by the Office (OERI) in the Management Strategy Memorandum (July 28, 2009).

Application Review

Federal Notices Of Funds Availability indicates that the Governor's Office will be provided an opportunity to evaluate qualified proposals submitted in the state. This process allows the Governor to prioritize applications which meet the greatest needs for broadband services, and address provision of matching funds.

The e-NC Authority is designated to provide the administrative support for the applications review process. The e-NC Authority Board of Directors will establish a special working group to participate in this process. Membership will be approved by the Governor. The Committee will adhere to open meetings law.

The e-NC Authority will make its recommendations to the Governor, through The Office of Economic Recovery and Investment.

Synergy of NC BRIM and the proposed planning effort – Efforts to develop an accurate and comprehensive state broadband map are critical to the success of related initiatives described in the attached planning narrative. Populations targeted for the proposed Lifeline Online program and communities targeted for infrastructure development through the proposed Last Mile RoundUp will be identified by the maps developed through NC BRIM. To incubate a new generation of broadband leaders in the state and to further facilitate communication and collaboration with government leaders and key constituents, the e-NC Authority will form the N.C. Broadband Idea Group (NC BIG) as a high-level advisory group.

Executive Summary: Planning to Capture the Promise of Broadband
Through its development of a state authority in 2000, the e-NC Authority, North Carolina has worked diligently to define the parameters of broadband deployment and use. Building on its e-Communities program, digital literacy initiatives were carried out through public computer programs and followed up by an NTIA TOP program to jump-start local government transactional Web sites. In 2008, the e-NC Authority revisited all of these initiatives by holding meetings with citizens and communities. Guided by a major environmental scanning project and followed up by a citizen survey, the e-NC Authority developed a high-level 10-year plan.(http://e-nc.org/pdf/e-NC_Internet_Action_Plan.pdf). In this plan, the directive was established that communities must delve down and take the planning and engagement efforts back to a grassroots level. ***The e-NC Authority, through its fiscal administrator the N.C. Rural Center, requests a planning grant of $434,799 in federal dollars to be matched by $116,449 in-kind contributions for a total planning grant of $551,248.***

Research conducted by the e-NC Authority in 2008 determined that the number of access lines in the state is declining. Current investment by major telecommunications carriers is insufficient to extend broadband to rural and underserved communities. A 9 year high statewide unemployment rate continues as June figures show that some North Carolina counties have unemployment rates that exceed 17 percent. North Carolina has the seventh worst unemployment rate in the country. High unemployment leaves communities vulnerable; they must have a broadband lifeline to pull them out of the current recession. Carefully targeted policy changes and incentive funding is required to ensure that underserved areas obtain broadband connectivity and the support they need to sustain community and economic growth.

The e-NC Authority proposes to reach out to businesses and households with a multi-pronged program that will further stimulate demand for broadband, economic growth and job creation. **Awareness training and support** will target community anchor institutions and organizations serving vulnerable populations, while a **statewide interactive virtual forum** will directly target and engage these populations. An action-focused report will measure usage of broadband by businesses, institutions, households and organizations, while identifying barriers and gaps that will be useful in defining local or regional broadband initiatives. These survey results will guide **design of a new Last Mile Broadband Project to** reach unserved/underserved communities.

Having previously developed 137 public access centers, the e-NC Authority will revisit and assist in refurbishing these centers. An effort to plan and **pilot the transition of FCC's LifeLine Program to a Lifeline Online Program** will be facilitated by **centralized training centers** established at the revitalized public access centers. Here, students can re-enter the education arena and access advanced programs at community colleges by using North Carolina's virtual education portal, the e-Learning Program (http://www.nctraining.ncgov.com/). Citizen surveys will then track and inform our progress.

Outreach will be conducted to state leaders to join the N.C. Broadband Idea Group (NC BIG) – a **leadership development initiative** expanding intellectual undergirding for creative projects that will capture the promise of broadband for all North Carolina citizens. Ranked 49th in education in 1969, North Carolina reinvented itself to be a knowledge leader. Planning / doing / assessing...and then revising with new lessons-learned – this is the e-NC Authority's mantra.

PLANNING
NARRATIVE

Background. Like so many other states, North Carolina has suffered under the recent economic downturn. Perhaps the greatest economic problems developed from the late 1990s to 2007 when jobs were lost in furniture, textiles, apparel and tobacco factories. Driven by this statewide economic tsunami, many different groups are assessing what to do to turn the economic tide. Since 1960, North Carolina has invested in education and technology to move it from ranking 49th in the country in economic power at that time to among the top 20 states today in terms of economic indices. North Carolina counties vary greatly in fiscal capacity. To economic and community development planners, it has become obvious that the use of broadband connectivity will be essential for its citizens and businesses to make a successful transition into a new information economy.

Beginning in the late 1990s, policy bodies began focusing on how to turn the economic tide in North Carolina. Just as education was the lever to move North Carolina's economy forward from 1960, now it is proposed that technology is the lever to make the tide turn. Three influential groups issued reports in 1999 that pointed to North Carolina's need for advanced information technology as the foundation for economic growth. The reports included *Falling Through the Net* by the U.S. Department of Commerce, a series of *Vision 2030* reports by the N.C. Board of Science and Technology, and *Choices for a New Century* by the N.C. Rural Economic Development Center. Though issued by different entities, the reports carried a common theme: to prosper as people and strengthen our economy, North Carolinians must have access to Internet opportunities. Global market forces and emerging high-value applications in health, services, and education/training are raising the ante, making high-speed broadband increasingly vital to rural communities. Resounding support for these goals was offered again in 2000 in a report issued by the N.C. Rural Prosperity Task Force, calling for the development of affordable, high-speed Internet access for all North Carolinians.

Empirical evidence generated from technology-based economic development programs funded by the ARC, the U.S. Economic Development Administration, the Bureau of Indian Affairs and other funders in North Carolina and across the country pointed to one factor as being absolutely critical to the success of such efforts – local leadership and involvement. More specifically, successful efforts to achieve local connectivity access and adoption are inextricably linked with grassroots efforts, led by local champions who reflect the needs, values and relations that exist within a particular community. Analyses recently released by the National Research Council point to demand generation at the local level as one of the most effective mechanisms for speeding broadband deployment and the development of innovative applications that it will deliver.

In finding that local leadership, North Carolina looked around to find someone to help it begin to focus on recharging the rural economy. Erskine Bowles, former chief of staff to Pres. Bill Clinton came home to North Carolina to lead the Task Force on Rural Prosperity. This task force, a statewide initiative, moved forward to engage North Carolina towns and cross-roads in a discussion of activities that would create new economies. One of the final three recommendations was to develop a program to address broadband access.

Thus, the state decided to develop a state authority that would focus on broadband – a decision that grew from the recognized need that an entity was needed to objectively assess North Carolina's rural connectivity and develop a sustainable strategy to address service and knowledge gaps that emerge from that evaluation. Results emerging from technology and resources audits, and from utilization surveys conducted underscored the dire state of connectivity in North Carolina's counties. All of this documented the need for a strategic, integrated approach to improve the situation.

Broadband Authority Established. In 2000, the Rural Internet Access Authority (RIAA) was established by the N.C. General Assembly. In a true public/private partnership, the Microelectronics Center of North Carolina (MCNC) voted to give the RIAA $30 million. These funds provided monies for the organization's operations over the next five years. Not until 2005 did the N.C. General Assembly provide any operational funding to the RIAA.

In a really innovative move, the N.C. General Assembly also set up a legislative mandate that the RIAA would be housed and staffed by the N.C. Rural Economic Development Center (Rural Center). Although the staff had responsibility for the management of the RIAA, all were considered to be employees of the Rural Center. The staff did not report to the Rural Center board but was instead guided by a commission named by the governor, the N.C. House of Representatives and the N.C. Senate. Moreover, the RIAA contracted with the Rural Center for it to serve as its working fiscal agent. This allowed the RIAA to provide incentives funding to all potential providers of broadband – private, nonprofit and government bodies. Using the Rural Center as the RIAA's fiscal agent also allowed for significant flexibility in terms of state contracting. The RIAA was therefore able to move forward in agile fashion, transforming the ideas of citizens on broadband faster than would have been able if the organizational were housed inside state government.

In 2003, the RIAA changed its name to the e-NC Authority after establishing a Web domain name that was in conflict with that of the Recording Industry Association of America. In 2005, the N.C. General Assembly also mandated that the e-NC Authority work with not only rural communities but also economically distressed urban areas. The e-NC Authority has since worked in a totally inclusive fashion during its 8 years of operation. It has worked to build capacity of communities to advocate and plan for themselves, while seeking outside technical assistance as needed.

The first program, after the mapping and planning efforts in 2001, was initiated in 2002 – constituting an "e-Communities" effort to develop groups of citizens to advocate for broadband access in each individual county. All of North Carolina's 83 rural counties participated in the e-Communities program by focusing on the development of e-Champions (local leaders) and steering committees that reflected the diversity of that individual area. Funds were provided for digital literacy training of the team and each county team worked for eight months to produce a strategic plan that would engage their community and provide the groundwork for expanded broadband access. The e-Communities team provided an assessment of that area's broadband connectivity and its readiness for new technology by developing a digital literacy training program and opening a public access center within the community.

The e-NC Authority's first broadband mapping program was completed in November 2001. Since that time, seven annual maps have been produced with collections of data. The latest map resides on the e-NC Authority's Web site (http://e-nc.org/2008Maps.asp). During the e-NC Authority's operation, seven Business and Technology Telecenters have opened statewide in economically distressed communities. These Telecenters serve to transform their local rural (and often agricultural) economies into places where technology thrives and citizens have free or low-cost tools available to aid entrepreneurship. A student TechForce was also initiated in 2001 to work with young people in 34 of the most distressed counties. Additional programs included digital literacy grants to organizations that would seed regional training programs and an assessment of business and agricultural communities training and infrastructure need. Finally, in 2002, the e-NC Authority finished an assessment of all 100 North Carolina counties and initiated an incentives program where more than $11 million was distributed. Altogether, the e-NC Authority has distributed more than $23 million into rural communities through our broadband program.
North Caroling is the tenth largest state in the United States with the second largest rural population (U.S. Census Bureau http://quickfax.census.gov/9fd/states/37000.html). North Carolina's broadband programs have accomplished enormous deployment growth – moving from 36 percent of households with high-speed Internet access in 1999 to 70 percent access today (Citizen Survey 2008), p.10). In rural households, that growth in the same period has jumped from 26 percent to 66 percent. As North Carolina continues to move forward, the e-NC Authority is striving toward a goal of 90 percent of households having access to high-speed broadband Internet access within 5 years.

Operations of the e-NC Authority – Inclusiveness and Collaboration
The e-NC Authority has governing commissioners that reflect geographic diversity in the state. Commissioner membership is established by statute and by ex-officio status. It is difficult for the e-NC Authority to be reflective of race and sex in these circumstances because all commissioners are appointed. In the future, in an effort to be more **inclusive** in planning, the e-NC Authority will work with task forces upon which membership will be open to a general call to citizens across North Carolina. These task force groups will be accessible to all through the use of audio- and video-conferencing. Voting on the task forces will be by consensus unless it is a monetary process to select grantees. There is no difference between a governing commissioner and a non-commissioner, unless the e-NC Authority asks for recommendations on monetary distributions for grants. Then, commissioners and task force members must vote according to the e-NC Authority's bylaws. Because of this policy, the e-NC Authority has not had problems with past grant distributions and more people have been involved in planning efforts.

The e-NC Authority has a proven ethics policy. Each commissioner must file a statement of any potential conflict of interest and abstain from voting upon related measures. This has been very useful through the distribution of more than $35 million in grants. Prior to every commissioner meeting, the ethics policy is read. In addition, commissioners must participate in ethics training.

A policy of **collaboration** is important when attempting to transform communities and counties in a state. Working through the next several years, the e-NC Authority plans to assemble a group of leaders to assist with the transformation of leadership in communities. Past experience has proven that good, educated and effective leadership determines whether a project will be

successful. This is precisely the reason why the e-NC Authority will create a **North Carolina Broadband Idea Group (NCBIG)**. This group will be representative of North Carolina's diversity. Meeting regularly, it is anticipated that NCBIG will facilitate greater education on the need for broadband while building leadership in all rural communities to enhance movement toward greater deployment. Their ideas in program scope, design and speed for community transformation will guide the e-NC Authority in future initiatives. This group will also provide ideas and advice to the e-NC Authority commission on proposed programmatic initiatives. They in turn will learn a great deal more about broadband and its economic and social impact – thus informing their effectiveness in their home communities.

Reflecting the needs and interests of North Carolina citizens will allow the e-NC Authority to move forward in better service to the state. In this regard, one tool has been the citizen surveys administered four times over the past nine years. This survey will be administered again in the future in an effort to inform and improve planning efforts.

Problem-Extend broadband to the remaining households-34% in Rural NC and 26% in Urban NC

The citizen survey provides the e-NC Authority with another tool to track service availability and determine where service gaps are, while also assisting in the analysis of issues that the organization normally addresses. These four intensive household telephone surveys conducted by East Carolina University in 1999, 2002, 2004 and 2008 show that North Carolinians are using the Internet in ever-increasing numbers. However, the data also shows that approximately 34 percent of North Carolina's rural households are not online. ***The citizen surveys show, for example, that the most vulnerable populations in North Carolina are citizens over age 69, those with household incomes below $25,000 and Native Americans. These vulnerable populations are at greater risk than Hispanic, African-American or other ethnic Americans in digital literacy and connectivity. (Citizen Survey 2008)***

Citizen Survey The e-NC Authority intends to use the citizen survey and the attendant dynamic mapping program to determine the areas that are most unserved and underserved (See maps in Exhibit 1 and 2). The Citizen Survey has documented the progress of our citizens in home computer ownership and Internet access, where they are using these tools and how they are using them for the past 9 years. Citizen surveys will be conducted again in 2010, 2012 and 2014 to track and inform the progress of the planning and mapping programs. These surveys provide useful and valid information to local and state decision makers for planning and program development purposes related to computer and Internet access. (See www.e-nc.org for more information on the Citizen Surveys-Click on what is being done and then Click on research.)

This information will enable the e-NC Authority to plan and design a number of proposed projects in our communities. The Virtual Forum for Vulnerable Populations, Lifeline Online, Last Mile RoundUp and a new Regional Business Online Forum will round out task forces at work these next few years. Past successes have led the European Commission to select the e-NC Authority as one of the world's top 30 programs in moving broadband digital literacy forward (European Commission's "Supporting Digital Literacy: Public Policies and Stakeholders' Initiatives," 2009). Over 464 programs that the European Commission identified were peer-reviewed and narrowed down to the final selection of the noted 30.

The e-NC Authority demonstrates with the material in the paragraphs below on outreach to the community anchor institutions the NTIA NOFA count as important to have access to broadband. Also important to note that this is and has been the ongoing mission of the e-NC Authority. This organization develops networks and programs to create the capacity for groups to have greater broadband connectivity, but then backs out of the process so that the bidding party can run programs independently for long-term sustainability. The e-NC Authority also tries to leave programs with advisory bodies that can provide continued oversight and guidance. Overall, this helps to train citizens in monitoring and then fulfilling the unique digital needs of their own communities, homes, businesses and education institutions.

The e-NC Authority has worked with all of North Carolina's Regional Economic Development Partnerships. These partnerships are directly responsible for economic development programs in their regions. As members of the N.C. Economic Development Association, the e-NC Authority also provides technological information and advice to many of the companies in these regions. The e-NC Authority has cooperated with bodies in these seven regions on grants and planning for broadband deployment to businesses and citizens.

The N.C. Farm Bureau, N.C. Department of Agriculture and U.S. Department of Agriculture have been instrumental in working with the e-NC Authority to reach agricultural communities in North Carolina. Many small farmers have struggled with the demise of the tobacco industry. An effort to develop value-added agriculture has been an important part of recent initiatives at e-NC's Business and Technology Telecenters. In particular, Foothills Connect (www.foothillsconnect.com) has a major program teaching organic methods and marketing tools for e-commerce to area farmers. This initiative, the Farmers Fresh Market Program (http://www.farmersfreshmarket.org/) enables farmers to gain technological skill and sell products at wholesale prices to high-end restaurant chefs in a nearby urban market. The important point is that in one county alone more than 60 farmers are now making a substantial part of their yearly income from these new methods. In a related initiative, the e-NC Authority has also written and distributed manuals about Webcasting and adapting businesses for e-commerce.

The e-NC Authority's executive director has served several years as a member of the N.C. Indian Affairs Commission. In this capacity and through other means, the e-NC Authority has reached out to the Cherokee Tribe to assist their citizens on Internet access, on and off the boundary. North Carolina has the fifth largest population of Native Americans of any U.S. state and the largest Native American population east of the Rockies. Recently, the e-NC Authority has been made aware of an interest of the Native Americans for assistance on their new Indian Health Board.

A new Education Network in North Carolina is working to connect all schools with 1 Gigabyte per second to the Local Education Agency and at least 100 Megabytes to every school in the district. This was designed by staff from the e-NC Authority at the request of the N.C. General Assembly. Working with the current governor, who was previously lieutenant governor, North Carolina's schools, community colleges, public universities and most of the private colleges and universities are now sharing a high bandwidth statewide education network. The School

Connectivity Initiative was designed so that the local area network for schools would be bid out, with the private sector primarily responding.

A second statewide network that is under development is the new N.C. Telehealth Network (NCTN). Working with county health departments and free medical clinics, more than 210 public health and medical sites will shortly be on a new statewide network. The FCC's Rural Health Pilot Project is funding $12.1 million for this over five years. The second phase of this project will connect more than 104 public, nonprofit hospitals. The e-NC Authority is currently designing the third phase for connectivity initiatives to 10,000 private doctors, which will enable them to fulfill the requirements of the Federal Stimulus Health IT program. The e-NC Authority expects to file for funding assistance from the NTIA BTOP for that third phase.

The e-NC Authority is in the process of talking with state librarians about refurbishment of their computer public access sites and developing a program to request funding. Initially, the e-NC Authority assisted with the establishment of 137 public Internet access centers in North Carolina. Planning activities spoken of later in this application will enable the e-NC Authority to move ahead with an effort to re-identify the public access centers, seek funds to replenish their computer equipment and then provide them a network plan for greater bandwidth connectivity at a reasonable price.

The e-NC Authority was selected to develop a plan for information and computer technologies with the military's new Base Realignment and Closure (BRAC) region at Fort Bragg, N.C. Shortly, this base will be home to the largest collection of military flag officers in the U.S. Army command (outside of the Pentagon). This seven county region has been through a major strategic planning process and the e-NC Authority assisted retired US Air Force General Paul Dordal and the BRAC Task Force in the assessment of broadband bandwidth and information and communications technologies needed to fill gaps in the area. A needs assessment of public safety infrastructure in the region was also provided at that time.

Among more common community institutions are now groups such as North Carolina's state Center for Geographical Information Analysis (CGIA) and the Geographical Information Coordinating Council. The e-NC Authority has worked with these groups for more than 8 years. The CGIA will be an advising partner in the mapping proposal. Equally important are the private sector groups involved in mapping. A number of these national groups will work with the e-NC Authority in this planning and mapping project, which will enable the CGIA to develop a broader constituency of peers.

The e-NC Authority has worked with high-tech companies such as CISCO, IBM, RedHat, Microsoft, Quintiles and myriad telecommunications providers. These providers included large ILECs, CLECs, telephone cooperatives, cable companies and government and community run network providers. Three of the e-NC Authority's eight staff members worked with providers to deploy the state's first digital network. One staff member was an employee of North Carolina's largest rural ILEC provider and two others were employees of the provider's anchor tenant, the state of North Carolina. The e-NC Authority has also provided funding to numerous providers who bid on telecommunication deployment projects in North Carolina.

The Planning Project

Mapping for Service Availability and Gaps

The e-NC Authority proposes to develop five programs during the five years of the grant, in addition to providing the ongoing assessment and ***mapping for service availability and gaps.*** The e-NC Authority also proposes to develop the most cost effective method to stay vigilant about bandwidth speeds needed to maintain dynamic growth within the state's telecommunications infrastructure – both public and private. ***This Broadband Rigor in Mapping (BRIM) initiative is defined in the mapping narrative.***

Analysis to Inform Planning

The e-NC Authority's Technical Advisory Committee for the BRIM mapping initiative will combine with commissioners and staff members to **analyze any problems** that might arise related to broadband deployment. In the BTOP grant initiatives, the Office of Recovery and Investment through **Gov. Beverly Perdue will give the e-NC Authority her priorities** on the BTOP grants applications. The e-NC Authority will also work with the many grants that have been submitted to the NTIA BTOP NOFA that will provide middle- and last-mile efforts. The e-NC Authority would particularly find projects such as MCNC's Middle Mile Project, ERC's Middle Mile Project in the west and the wireless initiatives of MAIN to be important to North Carolina's overall broadband deployment picture. The e-NC Authority will also be monitoring deployment of new broadband access to six counties where Verizon and CenturyLink have signed incentive program contracts for this year. **The e-NC Authority's Last Mile RoundUp noted below for second and third year planning, and an assessment of North Carolina's broadband in the second pull of data due to NTIA in March and September 2010 will enable a better ascertainment of the opportunities for further deployment strategies to reach unserved and underserved communities.**

The e-NC Authority's 10-year Plan: Capturing the Promise

Two goals set by the e-NC Authority in *Capturing the Promise: A 10-Year Action Plan Using Broadband Internet to Increase North Carolina's Competitiveness and Sustainability in the Global Economy* are as follows: 5 Mbps symmetrical to all households in four years, and 100 Mbps symmetrical to all households in 10 years. A third goal is to seek the help of the NTIA and FCC in adapting the traditional Lifeline program to address broadband access in a new initiative called Lifeline Online.

How Will We Move Forward?

Proposed Solutions

The first year's planning initiative is to continue the assessment program begun 9 nine years ago of broadband availability and use in North Carolina. Over five years the e-NC Authority expects to use task forces populated by citizens, businesses and anchor institutions to explore broadband supply and demand issues. These task forces will ultimately carry out the goals of state and national broadband initiatives. Proposed projects for task forces to work on, led by the e-NC Authority, are as follows: Virtual Forum on Vulnerable Populations, e-Solutions & Technology Teams, Public Computer Access Centers Revisited, Regional Business Online Forum (RBOF), Lifeline Online and the Last Mile RoundUp.

Virtual Forum for Vulnerable Populations
In the first full planning year, the e-NC Authority plans to develop a virtual forum for vulnerable populations identified by the citizen surveys. The e-NC Authority will ask the N.C. Indian Affairs Commission, NAACP, Community Development Corporation Initiative, Latino Coalition, AARP, Senior Citizens Centers and the N.C. Center for Justice to work together to design a Virtual Forum on Vulnerable Populations. The goal of this forum is to create a new statewide program that will increase Internet usage of vulnerable populations to use of the Internet. For African-Americans, this would realize an achievement of moving from 79% to 95%. Penetration of the Internet in African American households is 60%. A goal of 90% would be a challenge but one necessary for full participation in the knowledge economy.

e-Solutions & Technology Teams
A major part of the planning initiative is the focus on businesses and underserved communities. An assessment will be done on successful strategies for regional development, focusing on supporting economic development and job creation through the adoption of broadband and broadband-enabled applications. This work will focus on specific sectors in order to leverage broadband and information communications technologies enabling local businesses to open new markets, improve operational efficiencies and increase overall competitiveness. The resulting benefits translate into increased productivity and competitiveness while also creating jobs and enhanced educational opportunities. This will result in measurable economic growth for the region. The national corporation that is selected to work on this project will work directly with the project leader and the research director.

Public Computer Access Centers Revisited
Over the past 8 years, the e-NC Authority developed a public computer center program as part of the e-Communities initiative referenced earlier. It is time to renew the equipment in these facilities. Communities have often worked tirelessly to sustain successful operations, so equipment refurbishment is a harder task for them to accomplish. In addition, the e-NC Authority will plan to work with the State of North Carolina's Library System (encompassing partial support for local county libraries) to determine the full view of needs and priorities.

Regional Business Online Forum (RBOF)
This project will provide a plan to develop a Regional Business Online Forum. Working with the N.C. Economic Development Commissions and local chambers of commerce, the e-NC Authority proposes a new Web-based resource. Plans derived from the task force would drive the design and implementation guidelines of this new forum. The mentoring that is needed for businesses to successfully use the Internet in everyday practice would be a significant factor in the sustainability of this program.

Lifeline Online
Lifeline/Link-Up
The current federal Lifeline program provides up to $10 per month for telephone service in the primary residence of a qualified subscriber. The Link-Up program gives up to half of the initial installation fee for a traditional, wire line telephone or the activation fee for a wireless telephone (up to $30). To be eligible for Lifeline and Link-Up programs, a subscriber must have an income at or below 135 percent of the federal poverty level or participate in one of the following

programs: Medicaid, Food Stamps, Supplemental Security Income, Federal Public Housing Assistance (Section 8), Low-Income Home Energy Assistance Program, Temporary Assistance to Needy Families, or the National School Lunch Program's Free Lunch Program.[1] North Carolina beneficiaries cannot, however, use their income or participation in the Free Lunch Program for Lifeline/Link-Up program eligibility.[2] The state of North Carolina contributes an additional $3.50 per beneficiary family, bringing total monthly savings for North Carolina beneficiaries to as much as $13.50.[3]

In 2007, the federal Lifeline program served 6,947,355 households, and the Link-Up program helped connect 1,495,935.[4] In December 2008, 125,870 North Carolina households were receiving Lifeline benefits and 12,015 received the Link-Up subsidy that year.[5] According to the N.C. Department of Health and Human Services, 1,360,652 state residents (roughly 544,000 households) received Food and Nutrition Services (FNS) benefits (formerly Food Stamps) in March 2009.[6] Because the N.C. Utilities Commission uses the FNS program as a primary means for confirming Lifeline/Link-Up program eligibility, 544,000 is a good baseline measurement for eligible NC households.[7] The current Lifeline/Link-Up programs therefore serve roughly 125,000 of 544,000 eligible households (23 percent) in North Carolina.

In 2008, a proposal from acting FCC Chairman Michael J. Copps suggested a pilot program costing $300 million over 3 years. His plan would offer half the cost of broadband service installation (including the cost of a desktop, laptop, or mobile device) up to $100 and $10 per month toward access fees for each participating household (in addition to the $10 per month for traditional phone service from the current Lifeline program). His pilot would also work through currently-designated carriers, but they should offer download and upload speeds of at least 768 kbps and 200 kbps, respectively.

The e-NC Authority proposes working with a task force to further develop a pilot program in North Carolina, in partnership with the FCC. The task force would be working on this in 2010 with implementation projected for 2011. Telecommunications providers who have successfully worked with this program in the past would be asked to serve as part of the task force.

Last Mile RoundUp

Working with a broad group of communities that are unserved and underserved, the e-NC Authority will assess where the least-served counties are after the December 2009 broadband access data pull, e-Solutions & Technology Teams review in 2009-2010, the planning group for

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[1] "Lifeline and Link-Up: Affordable Telephone Service for Income-Eligible Consumers," Federal Communications Commission, 29 May 2009 <http://www.fcc.gov/cgb/consumerfacts/lllu.html>.

[2] *Semi-Annual Report of the Lifeline/Link-Up Task Force*, NCUC Docket No. P-100 Sub 133f, 15 January 2009 <http://ncuc.commerce.state.nc.us/cgi-bin/webview/senddoc.pgm?dispfmt=&itype=Q&authorization=&parm2=ZAAAAA61090B&parm3=000111995, p.2.

[3] *Universal Service Monitoring Report*, p. 2-9.

[4] *Id.*, p. 2-7.

[5] *Semi-Annual Report of the Lifeline/Link-Up Task Force*, p. 1.

[6] *North Carolina Food and Nutrition Services Participation Report*, NC Department of Health and Human Services, 29 April 2009 <http://www.ncdhhs.gov/dss/stats/docs/F&NS_Participation_FFY2009_Q2.pdf>. This report uses 130% of the federal poverty level as its eligibility threshold. The report also separates its count by county.

[7] *Semi-Annual Report of the Lifeline/Link-Up Task Force*, p. 2.

the Vulnerable Populations and the 3rd quarter 2010 citizen survey. This will determine what is left to be accomplished. By that point, the e-NC Authority would have also seen the result of incentive-funded deployment to CenturyLink and Verizon for six unserved and underserved counties. The e-NC Authority would work with all North Carolina counties to develop strategic plans, proposals and funding strategies to improve broadband deployment and use.

Anticipated Outcomes for Planning

The NTIA charged applicants to be bold and chart ambitious goals to move the country toward ubiquitous access over the next five years. The e-NC accepts this challenge and offers the following outcomes as the anticipated improvements for broadband access in North Carolina. The 2008 Citizen Survey will provide the baseline against which progress will be measured in subsequent surveys conducted in 2010, 2012 and 2014. The e-NC looks forward to partnering with the NTIA to launch this statewide broadband transformation.

- North Carolinians will increase their use of the Internet anywhere to 95%.
- Programs Identified above will increase the deployment of broadband within 5 years at speeds higher than defined in the NOFA to at least 90% of the households in North Carolina. Senior citizens above age 69 will increase their percentage of use to 70% within this 80% overall.
- African American's will increase their household use from today 60% to 90%.
- Native American's will increase their use from 43% to 90%.
- Hispanic Americans will increase their use from 52% to 90%.
- Other ethnic population groups will have been identified with goals established.
- Vulnerable populations will increase their use of the Internet from households to 90%.
- LifeLine Online will be a reality for citizens who meet the guidelines of the FCC program.
- Telehealth and Education networks and portals will be available and tracked for use.
- Statewide Public Safety Network will be completed.
- Counties will be empowered to advocate for continued upgrading of their broadband networks and have a technology team sanctioned by their local governing authority.
- At least two Smart Grid Networks will have been established in NC

- The e-NC Authority goals of 5% megabytes symmetrical to the home by 2014 and by 100 megabytes to the home in 2019 will be in planning or defined or being deployed in many communities.

Budget Detail
Mapping - Year 1
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
a. Personnel			
1. Project director	$ 12,019	$ 18,028	$ 30,047
2. Research director	$ 16,546	$ -	$ 16,546
3. Telecom specialist 1	$ 48,167	$ 24,084	$ 72,251
4. Telecom specialist 2	$ 14,825	$ 7,412	$ 22,237
5. GIS specialist 1	$ 37,500	$ 12,500	$ 50,000
6. GIS specialist 2	$ 12,042	$ 24,084	$ 36,126
7. Data coordinator	$ -	$ 13,090	$ 13,090
8. Communications liaison	$ -	$ 2,526	$ 2,526
9. Project coordinator	$ -	$ 9,301	$ 9,301
Total	$ 141,099	$ 111,025	$ 252,124
b. Fringe benefits			
1. Project director	$ 2,388	$ 3,581	$ 5,969
2. Research director	$ 5,386	$ -	$ 5,386
3. Telecom specialist 1	$ 13,641	$ 6,821	$ 20,462
4. Telecom specialist 2	$ 3,060	$ 1,530	$ 4,590
5. GIS specialist 1	$ 13,500	$ 4,500	$ 18,000
6. GIS specialist 2	$ 2,426	$ 4,852	$ 7,278
7. Data coordinator	$ -	$ 4,966	$ 4,966
8. Communications liaison	$ -	$ 896	$ 896
9. Project coordinator	$ -	$ 3,065	$ 3,065
Total	$ 40,401	$ 30,211	$ 70,612
c. Travel			
1. Staff mileage	$ 2,000	$ -	$ 2,000
3. Others' mileage	$ 2,000	$ -	$ 2,000
3. Lodging	$ 2,000	$ -	$ 2,000
Total	$ 6,000	$ -	$ 6,000
d. Equipment			
e. Supplies			
1. Laptops	$ 4,000	$ -	$ 4,000
2. Software	$ 10,000	$ -	$ 10,000
Total	$ 14,000	$ -	$ 14,000
f. Contractual			
Data collection process and analysis			
1. National data corporation	$ 75,000	$ -	$ 75,000
2. University of NC - Greensboro	$ 259,692	$ 64,828	$ 324,520
3. University of NC – Chapel Hill	$ 145,674	$ -	$ 145,674
4. Field contractors	$ 26,280	$ 45,000	$ 71,280

5. East Carolina University	$	6,096	$	1,016	$ 7,112
6. External evaluators	$	15,000	$	-	$ 15,000
7. IT/Database manager	$	75,000	$	-	$ 75,000
8. Database hosting	$	6,250	$	-	$ 6,250
Mapping process					
1. National GIS company	$	98,298	$	-	$ 98,298
2. Ctr for Geographic Info&Analysis	$	5,000	$	-	$ 5,000
3. Web hosting – GIS site	$	6,000	$	-	$ 6,000
Total	$	718,290	$	110,844	$ 829,134
[illegible]					
[illegible]					
1. Purchased data	$	4,200	$	-	$ 4,200
2. Food & facilities	$	3,000	$	-	$ 3,000
3. Pre-Award costs	$	-	$	53,313	$ 53,313
Total	$	7,200	$	53,313	$ 60,513
[illegible]					
[illegible]					
1. Indirect on project expenditures	$	286,718	$	-	$ 286,718
Total	$	286,718	$	-	$ 286,718
[illegible]	$	1,215,709	$	305,393	$ 1,519,102

Budget Detail
Mapping - Year 2
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
[illegible]			
1. Project director	$ 12,019	$ 6,009	$ 18,028
2. Research director	$ 6,618	$ 3,309	$ 9,927
3. Telecom specialist 1	$ 48,167	$ 24,084	$ 72,251
4. Telecom specialist 2	$ 14,825	$ 7,412	$ 22,237
5. GIS specialist 1	$ 37,500	$ 12,500	$ 50,000
6. GIS specialist 2	$ -	$ -	$ -
7. Data coordinator	$ -	$ 13,090	$ 13,090
8. Communications liaison	$ -	$ 2,526	$ 2,526
9. Project coordinator	$ -	$ 6,201	$ 6,201
Total	$ 119,129	$ 75,131	$ 194,260
[illegible]			
1. Project director	$ 2,388	$ 1,194	$ 3,582
2. Research director	$ 2,154	$ 1,077	$ 3,231
3. Telecom specialist 1	$ 13,641	$ 6,821	$ 20,462
4. Telecom specialist 2	$ 3,060	$ 1,530	$ 4,590

5. GIS specialist 1	$ 13,500	$ 4,500	$ 18,000
6. GIS specialist 2	$ -	$ -	$ -
7. Data coordinator	$ -	$ 4,966	$ 4,966
8. Communications liaison	$ -	$ 896	$ 896
9. Project coordinator	$ -	$ 2,044	$ 2,044
Total	$ 34,743	$ 23,028	$ 57,771
[illegible]			
1. Staff mileage	$ 2,000	$ -	$ 2,000
Total	$ 2,000	$ -	$ 2,000
[illegible]			
[illegible]			
[illegible]			
Data collection process and analysis			
1. National data corporation	$ 50,000	$ -	$ 50,000
2. East Carolina University	$ 6,096	$ 1,016	$ 7,112
3. IT/Database manager	$ 37,500	$ -	$ 37,500
4. Database hosting	$ 6,000	$ -	$ 6,000
			$ -
Mapping process			$ -
1. National GIS company	$ 20,725	$ -	$ 20,725
2. Web hosting – GIS site	$ 6,300	$ -	$ 6,300
Total	$ 126,621	$ 1,016	$ 127,637
[illegible]			
[illegible]			
1. Purchased data	$ 4,200	$ -	$ 4,200
Total	$ 4,200	$ -	$ 4,200
[illegible]			
[illegible]			
1. Indirect on project expenditures	$ 88,674	$ -	$ 88,674
Total	$ 88,674	$ -	$ 88,674
[illegible]	[illegible]	[illegible]	[illegible]

Budget Detail
Mapping - Year 3
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
[illegible]			
1. Project director	$ 12,019	$ 6,009	$ 18,028
2. Research director	$ 6,618	$ 3,309	$ 9,927
3. Telecom specialist 1	$ 48,167	$ 24,084	$ 72,251
4. Telecom specialist 2	$ 14,825	$ 7,412	$ 22,237
5. GIS specialist 1	$ 37,500	$ 12,500	$ 50,000

6. GIS specialist 2	$ -	$ -	$ -
7. Data coordinator	$ -	$ 13,090	$ 13,090
8. Communications liaison	$ -	$ 2,526	$ 2,526
9. Project coordinator	$ -	$ 6,201	$ 6,201
Total	$ 119,129	$ 75,131	$ 194,260
[redacted]			
1. Project director	$ 2,388	$ 1,194	$ 3,582
2. Research director	$ 2,154	$ 1,077	$ 3,231
3. Telecom specialist 1	$ 13,641	$ 6,821	$ 20,462
4. Telecom specialist 2	$ 3,060	$ 1,530	$ 4,590
5. GIS specialist 1	$ 13,500	$ 4,500	$ 18,000
6. GIS specialist 2	$ -	$ -	$ -
7. Data coordinator	$ -	$ 4,966	$ 4,966
8. Communications liaison	$ -	$ 896	$ 896
9. Project coordinator	$ -	$ 2,044	$ 2,044
Total	$ 34,743	$ 23,028	$ 57,771
[redacted]			
1. Staff mileage	$ 2,000	$ -	$ 2,000
Total	$ 2,000	$ -	$ 2,000
[redacted]			
[redacted]			
[redacted]			
Data collection process and analysis			
1. National data corporation	$ 50,000	$ -	$ 50,000
2. East Carolina University	$ 6,096	$ 1,016	$ 7,112
3. IT/Database manager	$ 37,500	$ -	$ 37,500
4. Database hosting	$ 6,000	$ -	$ 6,000
			$ -
Mapping process			$ -
1. National GIS company	$ 19,762	$ -	$ 19,762
2. Web hosting – GIS site	$ 6,615	$ -	$ 6,615
Total	$ 125,973	$ 1,016	$ 126,989
[redacted]			
[redacted]			
1. Purchased data	$ 4,200	$ -	$ 4,200
Total	$ 4,200	$ -	$ 4,200
[redacted]			
[redacted]			
1. Indirect on project expenditures	$ 88,474	$ -	$ 88,474
Total	$ 88,474	$ -	$ 88,474
[redacted]			

Budget Detail
Mapping - Year 4
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
a. Personnel			
1. Project director	$ 12,019	$ 6,009	$ 18,028
2. Research director	$ 6,618	$ 3,309	$ 9,927
3. Telecom specialist 1	$ 48,167	$ 24,084	$ 72,251
4. Telecom specialist 2	$ 14,825	$ 7,412	$ 22,237
5. GIS specialist 1	$ 37,500	$ 12,500	$ 50,000
6. GIS specialist 2	$ -	$ -	$ -
7. Data coordinator	$ -	$ 13,090	$ 13,090
8. Communications liaison	$ -	$ 2,526	$ 2,526
9. Project coordinator	$ -	$ 6,201	$ 6,201
Total	$ 119,129	$ 75,131	$ 194,260
b. Fringe benefits			
1. Project director	$ 2,388	$ 1,194	$ 3,582
2. Research director	$ 2,154	$ 1,077	$ 3,231
3. Telecom specialist 1	$ 13,641	$ 6,821	$ 20,462
4. Telecom specialist 2	$ 3,060	$ 1,530	$ 4,590
5. GIS specialist 1	$ 13,500	$ 4,500	$ 18,000
6. GIS specialist 2	$ -	$ -	$ -
7. Data coordinator	$ -	$ 4,966	$ 4,966
8. Communications liaison	$ -	$ 896	$ 896
9. Project coordinator	$ -	$ 2,044	$ 2,044
Total	$ 34,743	$ 23,028	$ 57,771
c. Travel			
1. Staff mileage	$ 2,000	$ -	$ 2,000
Total	$ 2,000	$ -	$ 2,000
d. Equipment			
e. Supplies			
1. Laptops	$ 4,000	$ -	$ -
Total	$ 4,000	$ -	$ 4,000
f. Contractual			
Data collection process and analysis			
1. National data corporation	$ 50,000	$ -	$ 50,000
2. East Carolina University	$ 6,096	$ 1,016	$ 7,112
3. IT/Database manager	$ 37,500	$ -	$ 37,500
4. Database hosting	$ 6,000	$ -	$ 6,000
			$ -
Mapping process			$ -
1. National GIS company	$ 20,748	$ -	$ 20,748

2. Web hosting – GIS site	$ 6,946	$ -	$ 6,946
Total	$ 127,290	$ 1,016	$ 128,306
[redacted]			
[redacted]			
1. Purchased data	$ 4,200	$ -	$ 4,200
Total	$ 4,200	$ -	$ 4,200
[redacted]			
[redacted]			
1. Indirect on project expenditures	$ 90,118	$ -	$ 90,118
Total	$ 90,118	$ -	$ 90,118
[redacted]	[redacted]	[redacted]	[redacted]

Budget Detail
Mapping - Year 5
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
[redacted]			
1. Project director	$ 12,019	$ 6,009	$ 18,028
2. Research director	$ 6,618	$ 3,309	$ 9,927
3. Telecom specialist 1	$ 48,167	$ 24,084	$ 72,251
4. Telecom specialist 2	$ 14,825	$ 7,412	$ 22,237
5. GIS specialist 1	$ 37,500	$ 12,500	$ 50,000
6. GIS specialist 2	$ -	$ -	$ -
7. Data coordinator	$ -	$ 13,090	$ 13,090
8. Communications liaison	$ -	$ 2,526	$ 2,526
9. Project coordinator	$ -	$ 6,201	$ 6,201
Total	$ 119,129	$ 75,131	$ 194,260
[redacted]			
1. Project director	$ 2,388	$ 1,194	$ 3,582
2. Research director	$ 2,154	$ 1,077	$ 3,231
3. Telecom specialist 1	$ 13,641	$ 6,821	$ 20,462
4. Telecom specialist 2	$ 3,060	$ 1,530	$ 4,590
5. GIS specialist 1	$ 13,500	$ 4,500	$ 18,000
6. GIS specialist 2	$ -	$ -	$ -
7. Data coordinator	$ -	$ 4,966	$ 4,966
8. Communications liaison	$ -	$ 896	$ 896
9. Project coordinator	$ -	$ 2,044	$ 2,044
Total	$ 34,743	$ 23,028	$ 57,771
[redacted]			
1. Staff mileage	$ 2,000	$ -	$ 2,000
Total	$ 2,000	$ -	$ 2,000
[redacted]			

Data collection process and analysis			
1. National data corporation	$ 50,000	$ -	$ 50,000
2. East Carolina University	$ 6,096	$ 1,016	$ 7,112
3. IT/Database manager	$ 37,500	$ -	$ 37,500
4. Database hosting	$ 6,000	$ -	$ 6,000
			$ -
Mapping process			$ -
1. National GIS company	$ 21,785	$ -	$ 21,785
2. Web hosting – GIS site	$ 7,293	$ -	$ 7,293
Total	$ 128,674	$ 1,016	$ 129,690
1. Purchased data	$ 4,200	$ -	$ 4,200
Total	$ 4,200	$ -	$ 4,200
1. Indirect on project expenditures	$ 89,309	$ -	$ 89,309
Total	$ 89,309	$ -	$ 89,309

Budget Justification
Mapping – Years 1-5
Rural Economic Development Center, Inc. (Rural Center) / The e-NC Authority

a. Personnel (federal and non-federal costs)

Personnel expenses make up a significant portion of the mapping budget, due to the time and technical expertise required in collecting, analyzing and mapping the required broadband data. The e-NC Authority has been mapping broadband for almost eight years, so we have a dedicated staff ready to move these efforts to the next level of mapping to meet the requirements set forth by NTIA. In addition, the e-NC Authority will donate significant staff time to this project to make up much of the 20% match requirement for the life of the project.

e-NC personnel time will be dedicated to the project as follows:
Year 1:

1. Project director. Jane Smith Patterson, as Executive Director of the e-NC Authority, will be the overall director of the mapping project, with oversight for all aspects of implementation, delivery, and reporting to NTIA. Ms. Patterson will oversee all project staff and subcontractor work. Calculations are based on 10% of a $120,189 FTE salary. Match amount = 15%.
2. Research director. Deborah Watts will coordinate the assessment of the various research methods used in year 1, as well as coordination of various elements of the data collection and analysis. Calculations are based on 25% of a $66,182 annual salary, which is a ¾ time position. Match amount = 0%.
3. Telecom specialist 1. Charles Pittman will work directly with data collection and analysis of data received, particularly in continuation and evolution of e-NC's current process of data collection directly from the service providers. Calculations are based on 50% of a $96,334 FTE salary. Match amount = 25%.
4. Telecom specialist 2. Richard Kelly will work with Charles Pittman in the data collection process, including overseeing the assessment of wireless coverage conducted by UNC-G, and coordinating the assessment of broadband availability at public institutions. Calculations are based on 20% of a $74,124 annual salary, which is for an 80% time position. Match amount = 10%.
5. GIS specialist 1. This position will be filled upon awarding of the grant. The e-NC Authority will seek a full-time GIS specialist to work solely on this mapping project. Training for this position will be overseen by our current GIS specialist who works on a part-time basis. Both e-NC GIS specialists will serve as the liaisons between e-NC and a national GIS company which will be responsible for actual upkeep of the broadband map. Calculations are based on 75% of a $50,000 FTE salary. Match amount = 25%.
6. GIS specialist 2. Joanna Wright, who currently oversees the GIS portion of our activities at e-NC, will provide experience critical to upgrading our current broadband map to the level required by the NTIA. Ms. Wright will be responsible for helping achieve this upgrade, as well as training a full-time GIS specialist for e-NC once that position is filled. Calculations are based on 25% of a $48,167 annual salary, which is a ½ time position. Match amount = 50%.

7. Data coordinator. Carol Torian will be responsible for assisting in organization of the vast amounts of data to be collected by e-NC. She will work with the staff members who are directly overseeing data collection as well as with the IT/Database Manager that we expect to contract with to assist in maintaining this system. There are no federal expenses associated with this position in year 1. Match amount = 30%. Calculations for match are based on 30% of a $43,632 FTE salary.
8. Communications liaison. Cary Edgar is the communications director for the e-NC Authority. As such, she receives numerous inquiries from citizens around the state related to broadband availability. She will be responsible for capturing broadband availability data as related to these citizen inquiries. There are no federal expenses associated with this position in year 1. Match amount = 5%. Calculations for match are based on 5% of a $50,510 FTE salary.
9. Project coordinator. Angie Bailey is the assistant director of e-NC. She will be responsible for working with Ms. Patterson to manage the fiscal and contractual aspects of the project, including coordination of contractors and staff, and acting as a liaison with the Rural Economic Development Center's finance and contracting office. There are no federal expenses associated with this position in year 1. Match amount = 15%. Calculations for match are based on 15% of a $62,009 FTE salary.

Years 2-5:

Work will continue under generally the same staffing plan in years 2-5. However, somewhat less personnel time is expected to be required due to the heavier volume of work in year 1 when multiple data gathering methodologies will be tested and heavily analyzed. Personnel costs and match for years 2-5 is projected as follows:

1. Project director. Jane Smith Patterson. Calculations are based on 10% of a $120,189 FTE salary. Match amount = 5%. (This is a reduction in total project time from 25% in year 1 to 15% in years 2-5.)
2. Research director. Deborah Watts. Calculations are based on 10% of a $66,182 annual salary, which is a ¾ time position. Match amount = 5%. (This is a reduction in total project time from 25% in year 1 to 15% in years 2-5.)
3. Telecom specialist 1. Charles Pittman. Calculations are based on 50% of a $96,334 FTE salary. Match amount = 25%. (Total project time remains at 75% for years 1-5.)
4. Telecom specialist 2. Richard Kelly. Calculations are based on 20% of a $74,124 annual salary, which is for an 80% time position. Match amount = 10%. (Total project time remains at 30% for years 1-5.)
5. GIS specialist 1. Calculations are based on 75% of a $50,000 FTE salary. Match amount = 25%. (Total project time remains at 75% for years 1-5.)
6. GIS specialist 2. Joanna Wright. This position has time allocated to this project in year 1 only.
7. Data coordinator. Carol Torian. There continue to be no federal expenses associated with this position in years 2-5. Match amount continues at 30% for years 2-5. Calculations for match are based on 30% of a $43,632 FTE salary.
8. Communications liaison. Cary Edgar. There continue to be no federal expenses associated with this position in years 2-5. Match amount continues at 5% for years 2-5. Calculations for match are based on 5% of a $50,510 FTE salary.
9. Project coordinator. Angie Bailey. There continue to be no federal expenses associated with this position in years 2-5. Match amount is 10% per year for years 2-5.

Calculations for match are based on 10% of a $62,009 FTE salary. (This is a reduction in total project time from 15% in year 1 to 10% in years 2-5, due to the heavier volume of initial work coordinating contracts and contractors in year 1.)

Note:
Staff members of the e-NC Authority are employees of the Rural Economic Development Center (Rural Center). Please see the applicant capacity section in the project narrative for more information on staff qualifications.

Years 1-5:
Fringe benefits of e-NC (Rural Center) staff members constitute a portion of the direct costs for this project, as well as some of the match on the NTIA funding. Fringe benefits available to Rural Center employees include a 403-B and health insurance. Rates included in this proposal constitute the actual costs projected per employee. The calculation also includes FICA contributions. For each staff position described in the personnel section, the benefits expense for each position is apportioned according to the percentage of the work attributed to this project, whether as a federal expense or as match.

Year 1:

1. Staff mileage is included at just over 600 miles per month for 6 months per year at the rate of $.55 per mile. This allocation of $2000 relates specifically to data collection, and is included annually throughout the 5 years to help defray the costs of traveling around the state to meet directly with various service providers. The e-NC Authority has found over the years that it is critical to meet face-to-face with these partners, at least occasionally, to solidify the relationship with e-NC and encourage them to partner with us on data collection. This travel is generally encompassed within a certain time period over the year, hence the estimate for this to be completed during 6 months of the year. (Calculations: 606 miles/month for 6 months x $.55/mile)
2. Others' mileage (totaling $2000) is included for the attendees of the Data Confab, to be held in the spring of 2010. This conference, as described in the project narrative, is a gathering of technical experts to assess e-NC's various data collection methods. e-NC would expect to cover mileage costs for some or all of the participants. Calculations are based on total estimated mileage of approximately 3600 miles, at a rate of $.55 per mile.
3. Lodging costs (totaling $2000) are included for the Data Confab to be held in the spring of 2010. As e-NC is requesting the participation of these technical experts to assess e-NC's various data collection methods, we would like to be able to cover their lodging costs at a reasonably priced NC hotel. Estimate also includes staff lodging, when necessary.

Years 2-5:

1. Staff mileage is requested at a total of $2000 per year, continuing in years 2-5. This data collection travel is for the same purpose and calculated the same way as described under year 1.

Year 1:

1. Laptops. Funding is requested for two laptops with substantial processing speeds and memory, as required for work with this magnitude of data and for GIS work. Costs are calculated at $2000 per laptop. One laptop would be utilized by the newly hired GIS Specialist 1. The second would be used for our data management work.
2. Software is calculated at $10,000. This cost is an estimate based on the known need for a data management system that is not currently in place at e-NC. The software estimate is included as an accompaniment to the IT/Database Manager and Database Hosting lines under Contractors. It is also likely that some additional software will be needed for e-NC staff in terms of GIS work, although as a state authority, e-NC has use of ESRI software under the state license.

Years 2-5: (Year 4)

1. Laptops. Funding is requested again in year 4 for two laptops with substantial processing speeds and memory. Costs are calculated at $2000 per laptop. This cost from year 1 is repeated in year 4 due to the critical need to maintain computers with high processing powers for staff members working with large amounts of data and with mapping software.

Year 1:

Data collection process and analysis:

1. National data corporation. As part of its data collection process, e-NC will apply Web-enabled data mining techniques for collecting service provider data. Quotes from exploratory discussions with a leading company in this field form this cost estimate. Calculations are based on a rate of $25,000 per data pull. e-NC plans to request 3 data pulls in year 1 – for Nov. 09, and for Feb. and Sept. of 2010, for a total cost of $75,000 for year 1.
2. University of NC - Greensboro. The e-NC Authority will contract with UNC-Greensboro to conduct radio wave wireless propagation studies in year 1. This data collection and analysis, as described in the proposal, requires high-level GIS expertise in modeling and serves as one of the cutting-edge methodologies in the data collection process. Work includes development of propagation models of wireless coverage, on the ground field samplings for verification, and aggregation of the model statewide. All work is completed in year 1. Costs include personnel costs for 2 full-time mapping specialists, one ½ time assistant director and 33% time for research oversight and analysis, plus travel for field sampling and equipment costs. Total costs requested are as follows: Personnel and benefits - $154,577, Travel - $23,750, Equipment - $35,000, and indirect costs from UNC-G of $46,365. (Equipment includes two mobile spectrum analysis receivers, mobile base station demodulating packets and accessories.) Match provided through this project includes: Personnel and benefits - $29,214, and a UNC-G indirect cost donation of $35,614. This project is to be completed in year 1.
3. University of NC – Chapel Hill. The e-NC Authority will contract with UNC-Chapel Hill to conduct an extrapolated census in targeted counties, collecting citizen/consumer data on broadband availability and use. Sampling results will be extrapolated to the entire state. Costs include part-time personnel costs and benefits for the PI, an economic development specialist and a research assistant, totaling $86,315. Additional costs

include travel at $10,365, food at $1748, and UNC indirect costs of $47,246. This work is to be completed in year 1.

4. Field contractors. As part of the extrapolated census, e-NC will contract with three community-based organizations to employ surveyors to carry-out the census (in addition to UNC census work) under the oversight of the UNC-Chapel Hill project team. Estimated total cost for this work is $71,280, with $26,280 of this amount as federal costs and $45,000 to be funded by e-NC as match. Calculated costs for this work consist of $33,600 to compensate census surveyors at a rate of $10 per hour for 3360 hours, plus $1680 as compensation for training hours. Additional costs include phones, phone lines and long distance charges estimated at $10,000, software and supplies estimated at $14,000 and oversight at each center totaling $12,000, including personnel and facility use. This work is to be completed in year 1.
5. East Carolina University. Dr. Ken Wilson of East Carolina University will provide consulting services to e-NC at a rate of $6096 per year for all five years of the grant. Dr. Wilson has partnered with e-NC since 2000, conducting periodic Citizen Surveys of broadband, Internet and computer use around the state. Dr. Wilson will provide input on research design and data analysis to e-NC, on our overall data collection processes and methodologies. In addition, he will work with UNC-Chapel Hill on the extrapolated census and partnering with UNC to design the methodology for the census work. Total cost includes personnel and benefits for Dr. Wilson, plus ECU indirect costs, for a total of $6096 per year as federal costs under this grant, with a match of $1016 per year from East Carolina University.
6. External evaluators. In addition to Dr. Wilson from ECU, e-NC will contract with three other external evaluators to provide insight on research design and data analysis, working with e-NC to finalize e-NC's overall research design for data collection and mapping. They will be key participants in the Technology Advisory Group and the Data Confab in spring 2010. The evaluators are described more fully in the project narrative. Costs are calculated at a rate of $5000 per consultant, for federal costs totaling $15,000. This consulting work is to be completed in year 1.
7. IT/Database manager. The position for IT/Database manager is included in the grant proposal due to the vast amounts of data to be collected for this project. e-NC has not yet received bids for this work, but based on our prior work with IT specialists in this region, we estimate a cost of $75,000 for year 1, when the system will need to be designed, implemented and maintained.
8. Database hosting. Due to the vast amount of data to be collected, e-NC is including federal costs of $6250 for hosting for the database which will house this data. This estimate is based on a quote from the vendor that currently hosts the e-NC Web site.

Mapping process:

1. National GIS company. Due to the need for expert and expedited GIS services as a critical component of the broadband mapping project, e-NC expects to contract with a national GIS company to provide this work. Costs are calculated based on quotes from the company that currently maintains e-NC's GIS mapping program. The total cost of $98,298 for year 1 includes the following: mapping of e-NC collected service provider data ($4200 per update, 2 updates per year), mapping of Web-mined data ($3400 per update, 3 updates in year 1), mapping of wireless data ($2520 per update, twice in year

1), mapping of broadband census data ($7600, one time), mapping of e-solutions data ($2520, one time). Additional estimated costs total $64,538 for year 1 for consulting, to working with e-NC to develop more accurate and informative ways to reflect broadband availability in GIS format. e-NC is currently working with its current GIS company to develop methods and tools to better reflect service provider data and create shapefiles in situations where the data available may not be complete, particularly in relation to cable data.

2. Center for Geographic Information and Analysis. The e-NC Authority plans to contract with the NC Center for Geographic Information and Analysis (CGIA) in year 1, for provision of technical analysis and input in the mapping arena. CGIA will be part of the Technical Advisory Group providing mapping expertise. CGIA provided e-NC's mapping services for the first several years of e-NC's mapping program, and as such has in-depth knowledge of our system. Costs are estimated at $5000 per year, for one year.
9. Web hosting – GIS site. Hosting costs for e-NC's GIS site are estimated at $6000 for year 1, based on a quote from our current hosting company.

Years 2-5:

Data collection process and analysis:

1. National data corporation. e-NC expects to continue its Web-enabled data-mined data collection process in years 2-5. Calculations are based on a rate of $25,000 per data pull, with two pulls per year for years 2-5 of the project. ($50,000 per year for years 2-5.)
2. East Carolina University. Dr. Ken Wilson of East Carolina University will continue to provide consulting services to e-NC at a federal cost of $6096 per year in years 2-5 of the grant, with $1016 per year provided as match by East Carolina University. This work is for the same purpose and at the same cost as described in year 1 except that the census work under UNC-Chapel Hill will be completed after year 1.
3. IT/Database manager. The position for IT/Database manager continues for years 2-5, but at a reduced rate of $37,500 per year for these remaining four years. The cost reduction is due to the fact that the system will have been designed and set up in year 1.
4. Database hosting. Database hosting is continued in years 2-5 at the same rate of $6250 per year.

Mapping process:

5. National GIS company. Contracting with a national GIS company for GIS services and maintenance of the mapping system will continue in years 2-5. Estimated costs are as follows:
   - Year 2: mapping of e-NC collected service provider data ($4410 per update, 2 updates per year), mapping of Web-mined data ($3570 per update, 2 updates per year), and consulting of 50 hours for $4765.
   - Year 3: mapping of e-NC collected service provider data ($4631 per update, 2 updates per year), mapping of Web-mined data ($3749 per update, 2 updates per year), and consulting of 30 hours for $3002.
   - Year 4: mapping of e-NC collected service provider data ($4862 per update, 2 updates per year), mapping of Web-mined data ($3936 per update, 2 updates per year), and consulting of 30 hours for $3152.

- Year 5: mapping of e-NC collected service provider data ($5105 per update, 2 updates per year), mapping of Web-mined data ($4133 per update, 2 updates per year), and consulting of 30 hours for $3309.

6. Web hosting – GIS site. Hosting costs for e-NC's GIS site are estimated for years 2-5 as follows:
   - Year 2: $6300
   - Year 3: $6615
   - Year 4: $6946
   - Year 5: $7293

Year 1:

1. Purchased data. This item is included at a cost of $4200 per year to receive a copy and quarterly updates of the LERG Routing Guide produced by Telcordia, to use as a compliment and verification of e-NC's service provider data.
2. Food & facilities totaling $3000 are included for the Data Confab to be held in spring 2010. Continental breakfast, catered lunch and afternoon snack are included in the estimate, as well as AV needs and room rental.
3. Pre-Award costs. We request that NTIA allow these costs, totaling $53,313, as match for year 1. These costs, incurred between February 17 and submission of this grant proposal, constitute work critical to e-NC's mapping and data collection process. The work included, evaluated under the guidelines outlined in the NOFA, is for time spent developing the e-NC mapping process moving forward, assessing and adding to our data collection process, and performing upgrades of e-NC's mapping system. This time spent allows us to move forward more quickly to meet the performance requirements of this grant program. Note: personnel outlined below represent staff members who will also be working on this project during the grant period. Michael Baker, Inc. currently provides our GIS mapping services and performed numerous upgrades to our system during this past year (but only costs from March forward are included below for relevant Michael Baker work).

Detail of Pre-award Costs – Match for Year 1

Personnel	% of time	Salary	Benefits	Total
Project director	10%	11,557	2,296	13,853
Research director	2%	1,425	294	1,719
Telecom specialist	8%	8.028	2,274	10,302
Telecom specialist	2%	1,425	294	1,719
GIS specialist	31%	15,052	3,033	18,085
		37,335	8,311	45,646
Michael Baker, Inc.	contract costs			7,667
TOTAL				53,313

Years 2-5:

1. Purchased data. This item, the LERG Routing Guide, is included as a recurring cost in years 1-5 at $4200 per year. Cost is calculated for quarterly updates of the LERG Routing Guide throughout the five year grant period.

Years 1-5:

1. Indirect on project expenditures. The Rural Center's proposed indirect rate on project expenditures is 30.93%. The center does not have an approved rate or a cognizant agency. We are requesting a provisional rate of 30.93% based on the calculations in the budget submitted.
2. Explanation of Rural Center/The e-NC Authority. The e-NC Authority is a state authority created by the N.C. General Assembly. By legislative mandate, the e-NC Authority is housed in the Rural Center, and staffed by the Rural Center. As such, the e-NC Authority is an operating division within the Rural Economic Development Center, which provides a significant amount of operational support to e-NC including serving as the fiscal and contractual agent for e-NC, providing office space, IT support, and other administrative support. All e-NC staff members are employees of the Rural Center.

Budget Detail
Planning - Year 1
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
a. Personnel			
1. Project director	$ 12,019	$ 6,009	$ 18,028
2. Research director	$ 6,618	$ 6,618	$ 13,236
3. Telecom specialist 1	$ 9,633	$ 4,817	$ 14,450
4. Telecom specialist 2	$ 7,412	$ 7,412	$ 14,824
5. Data coordinator	$ -	$ 6,201	$ 6,201
6. Communications liaison	$ -	$ 10,102	$ 10,102
7. Project coordinator	$ -	$ 8,726	$ 8,726
Total	$ 35,682	$ 49,885	$ 85,567
b. Fringe benefits			
1. Project director	$ 2,388	$ 1,194	$ 3,582
2. Research director	$ 2,154	$ 2,154	$ 4,308
3. Telecom specialist 1	$ 2,728	$ 1,364	$ 4,092
4. Telecom specialist 2	$ 1,530	$ 1,530	$ 3,060
5. Data coordinator	$ -	$ 3,311	$ 3,311
6. Communications liaison	$ -	$ 3,585	$ 3,585
7. Project coordinator	$ -	$ 2,044	$ 2,044
Total	$ 8,800	$ 15,182	$ 23,982
c. Travel			
d. Equipment			
e. Supplies			
f. Contractual			
Data collection/assessments			
1. National survey company	$ 188,990	$ -	$ 188,990
2. East Carolina University	$ 32,871	$ 9,794	$ 42,665
Total	$ 221,861	$ 9,794	$ 231,655
g. Construction			
h. Other			
1. Videoconferencing	$ -	$ 3,000	$ 3,000
2. Printing	$ -	$ 2,000	$ 2,000
2. Food & facilities	$ -	$ 7,400	$ 7,400
Total	$ -	$ 12,400	$ 12,400
i. Total direct charges			
j. Indirect charges			
1. Indirect on project expenditures	$ 82,380	$ -	$ 82,380
Total	$ 82,380	$ -	$ 82,380
k. TOTALS	$ [illegible]	$ [illegible]	$ [illegible]

Budget Detail
Planning - Year 2
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
a. Personnel			
b. Fringe benefits			
c. Travel			
d. Equipment			
e. Supplies			
f. Contractual			
g. Construction			
h. Other			
2. Food & facilities	$ -	$ 2,400	$ 2,400
Total	$ -	$ 2,400	$ 2,400
i. Total direct charges			
j. Indirect charges			
1. Indirect on project expenditures	$ -	$ -	$ -
Total	$ -	$ -	$ -
k. TOTALS	$ -	$ 2,400	$ 2,400

Budget Detail
Planning - Year 3
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
a. Personnel			
b. Fringe benefits			
c. Travel			
d. Equipment			
e. Supplies			
f. Contractual			
Data collection/assessments			
1. East Carolina University	$ 32,871	$ 9,794	$ 42,665
Total	$ 32,871	$ 9,794	$ 42,665
g. Construction			
h. Other			
2. Food & facilities	$ -	$ 2,400	$ 2,400
Total	$ -	$ 2,400	$ 2,400
i. Total direct charges			
j. Indirect charges			
1. Indirect on project expenditures	$ 10,167	$ -	$ 10,167
Total	$ 10,167	$ -	$ 10,167
k. TOTALS	$ 43,038	$ 12,194	$ 55,232

Budget Detail
Planning - Year 4
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
[redacted]			
2. Food & facilities	$ -	$ 2,400	$ 2,400
Total	$ -	$ 2,400	$ 2,400
[redacted]			
1. Indirect on project expenditures	$ -	$ -	$ -
Total	$ -	$ -	$ -
[redacted]			

Budget Detail
Planning - Year 5
Rural Economic Development Center, Inc. / The e-NC Authority

ITEM	Federal	Non-Federal	Total
[redacted]			
Data collection/assessments			
1. East Carolina University	$ 32,871	$ 9,794	$ 42,665
Total	$ 32,871	$ 9,794	$ 42,665
[redacted]			
2. Food & facilities	$ -	$ 2,400	$ 2,400
Total	$ -	$ 2,400	$ 2,400
[redacted]			
1. Indirect on project expenditures	$ 10,167	$ -	$ 10,167
Total	$ 10,167	$ -	$ 10,167
[redacted]			

Budget Justification
Planning – Years 1-5
Rural Economic Development Center, Inc. (Rural Center) / The e-NC Authority

Personnel (and fringe benefit) expenses make up about one-quarter of the planning funds, although the match contribution in personnel time is higher than requested grant expenditures for personnel. It is likely that much more staff time will be dedicated to these efforts than included in the proposal. The efforts described in the planning narrative relate directly to e-NC's mission, but the personnel costs provided by the grant will allow us to focus specifically on the efforts identified under this project. Personnel costs are requested in year 1 of the planning budget only, although we will continue to oversee planning efforts outlined in this proposal for on-going years, and specifically the Citizen Survey, which will be conducted over 3 years of the 5 year grant period.

e-NC personnel time will be dedicated to the project as follows:
Year 1:

1. Project director. Jane Smith Patterson, as Executive Director of the e-NC Authority, will be the overall director of the planning projects, with oversight for all aspects of implementation, delivery, and reporting to NTIA. Ms. Patterson will oversee all project staff and subcontractor work. Calculations are based on 10% of a $120,189 FTE salary. Match amount = 5%.
2. Research director. Deborah Watts will work with various aspects of the planning projects, including coordination of the work with Dr. Ken Wilson on the Citizen Surveys. Calculations are based on 10% of a $66,182 annual salary, which is a ¾ time position. Match amount = 10%.
3. Telecom specialist 1. Charles Pittman will work with various aspects of the planning projects, with particular focus on the Last Mile RoundUp project and technical expertise on the Lifeline Online project. Calculations are based on 10% of a $96,334 FTE salary. Match amount = 5%.
4. Telecom specialist 2. Richard Kelly will work with various aspects of the planning projects with particular focus on the Last Mile RoundUp project and technical expertise on the Lifeline Online project. Calculations are based on 10% of a $74,124 annual salary, which is for an 80% time position. Match amount = 10%.
5. Data coordinator. Carol Torian will work with various aspects of the planning projects, with particular focus on the Virtual Forum for Vulnerable Populations, the Public Computer Access Centers and Lifeline Online. There are no NTIA grant expenses associated with this position. Match amount = 20%. Calculations for match are based on 20% of a $43,632 FTE salary.
6. Communications liaison. Cary Edgar will work with various aspects of the planning projects, with a particular focus on the e-Solutions Technology Teams and the Regional Business Online Forum (RBOF). There are no NTIA grant expenses associated with this position. Match amount = 20%. Calculations for match are based on 20% of a $50,510 FTE salary.

7. Project coordinator. Angie Bailey will work with various aspects of the planning projects, including working with Ms. Patterson on coordination of the NC Broadband Idea Group, and helping to assess these efforts in terms of the overall planning efforts of e-NC. She will also manage the fiscal and contractual aspects of the project in coordination with the Rural Economic Development Center's finance and contracting office. There are no NTIA grant expenses associated with this position. Match amount = 10%. Calculations for match are based on 10% of a $62,009 FTE salary.

Years 2-5:

Additional personnel time from e-NC for planning efforts in years 2-5 will be contributed as a donation from e-NC, although specific personnel match during this time is not included in the project budget.

Staff members of the e-NC Authority are employees of the Rural Economic Development Center (Rural Center). Please see the applicant capacity section in the mapping project narrative for more information on staff qualifications.

[redacted]

Year 1 only:

Fringe benefits of e-NC (Rural Center) staff members constitute a portion of the direct costs for this project, as well as some of the match on the NTIA funding. Fringe benefits available to Rural Center employees include a 403-B and health insurance. Rates included in this proposal constitute the actual costs projected per employee. The calculation also includes FICA contributions. For each staff position described in the personnel section, the benefits expense for each position is apportioned according to the percentage of the work attributed to this project, whether as a grant expense or as match.

[redacted]

Year 1:

Surveys and analysis:

1. National survey company. The e-NC Authority will contract with a national company with expertise in surveying and data analysis, to collect data directly from broadband users on uses, benefits, and barriers of broadband adoption. This "e-Solutions" benchmarking project is designed to help local areas leverage benefits of broadband, with econometric analysis included as part of the survey. This work will be completed in year 1 of the planning efforts, with data collected from the survey to be mapped as part of e-NC's broadband mapping system. Cost is calculated at $188,990 based on a quote from a national leader in this field.
2. East Carolina University. The e-NC Authority will contract with Dr. Ken Wilson of East Carolina University to conduct Citizen Surveys in years 1, 3 and 5 of the planning project. The e-NC Authority has contracted with Dr. Wilson to conduct these surveys for e-NC in previous years, creating a benchmark from which to measure progress in the state. These surveys will be mixed-mode surveys utilizing a combination of web and telephone interviews to assess how North Carolinians are using computers and the Internet, where they access these tools, and service available. The cost of $32,871 for

Questions from NTIA re NC State Mapping Application

September 9, 2009

1. *Please explain how the possible collection of census block/street segment information rather than address level information from providers impacts the e-NC approach, if at all.*

Recent changes to the level of data required by the NTIA from address level to census block/street segment will not affect the e-NC Authority's NC BRIM project in any substantive way. A primary focus of this project will be the determination of how accurate and useful street segment and census block level data are relative to address level data for broadband mapping and planning purposes. The NC BRIM project is designed to obtain the address level data directly from consumers, thereby possibly not needing to involve providers in the acquisition of what many firms consider their proprietary information. A second focus of NC BRIM is the identification of the most cost effective and practically sustainable method of obtaining rigorous data needed to support ongoing broadband mapping efforts. Details follow.

Research design for NC BRIM is based on a multi-pronged data pull framework that will have information collected at three levels (census block, street segment, and address-specific) via various methodologies (deep-web and GIS-based analytics, provider-supplied service data, and empirical census and site survey). This experimental approach allows direct comparison of the relative merits and cost efficiencies of the different methods, including: a) the web-crawling approach will provide census block data and may be able to also provide street segment data, as defined in our proposal; b) provider data will be requested to show census block and where possible address level information; c) field sampling to verify wireless propagation studies and direct citizen census will provide primary empirical data for comparison with other data. Local workers will be engaged and trained to collect data required by the NOFA from address level homes and businesses within the census blocks of select counties that collectively are representative of the demographic norm in North Carolina.

Technology review will include mobile and fixed wireless, cable, and wire line. A technology advisory committee will work with the staff and oversight of data technology advisory committee, and the university professors noted in the proposal will participate in a Data Collaborative Confab to see which is the most cost effective, publicly verifiable way to enable states such as North Carolina to sustain a program of data collection over time for mapping. As noted in the proposal, staff selected by the FCC and the NTIA will be invited to be part of the data confab in early spring of 2010.

year 1, with a match of $9794 from ECU, includes personnel costs and benefits, as well as communications expenses and supplies.

Years 2-5:

1. East Carolina University. The Citizen Survey conducted in year 1 of the planning project will be repeated in years 3 and 5, at the same cost and with the same match as in year 1.

Year 1:

1. Videoconferencing. This item requires no grant funding, but is included as match from e-NC at an anticipated cost of $3000. This calculation is based on the estimated cost for a statewide videoconference for the Virtual Forum for Vulnerable Populations. This forum is to be held in year 1.
2. Printing. This item requires no grant funding, but is included as match from e-NC at an anticipated cost of $2000. This calculation is based on the estimated cost of printing materials needed for outreach work in association with the virtual forum, the e-Solutions work and the regional business online forum.
3. Food and facilities. This item requires no grant funding, but is included as match from e-NC, at an anticipated cost of $7400. This calculation includes an estimate of $5000 for the forum on vulnerable populations, as well as $2400 for 2 meetings of the NC Broadband Idea Group in year 1.

Years 2-5:

1. Food and facilities. This item requires no grant funding, but is included as match from e-NC at an anticipated cost of $2400 per year, for years 2-5. This calculation includes estimated food and facility costs for meetings of the NC Broadband Idea Group which will meet twice a year throughout the 5 year grant period.

Years 1-5:

1. Indirect on project expenditures. The Rural Center's proposed indirect rate on project expenditures is 30.93%. The center does not have an approved rate or a cognizant agency. We are requesting a provisional rate of 30.93% based on the calculations in the budget submitted.
2. Explanation of Rural Center/The e-NC Authority. The e-NC Authority is a state authority created by the N.C. General Assembly. By legislative mandate, the e-NC Authority is housed in the Rural Center and staffed by the Rural Center. As such, the e-NC Authority is an operating division within the Rural Economic Development Center, which provides a significant amount of operational support to e-NC including serving as the fiscal and contractual agent for e-NC, providing office space, IT support, and other administrative support. All e-NC staff members are employees of the Rural Center.

2. *Indian Tribes/Tribal Governments Please describe your planned outreach to Indian tribes to ensure that these groups are involved in the process and that you will receive information about broadband availability on these lands.*

The State of North Carolina has more than 99,000 Native Americans. There is only one federally recognized Indian nation, the Eastern Band of the Cherokee, who reside on the Qualla Boundary in the western part of the state in Jackson County. There are eight recognized state tribes including the Coharie, the Haliwa Sapponi, the Meherrin, the Occcaneechi Saponi, Sappony, Tuscarora, the Waccamaw Siouan and the Algonquin.

The e-NC Authority worked with the Cherokee nation in 2002 to develop an ecommunities program. Subsequently, the Cherokee tribe became involved as a partner with a private sector entity, Drake Enterprises, in the development of a fiber optic network. That network has over 290 miles of route fiber connecting many counties in the western part of North Carolina where Cherokee tribe members reside, both on and off the Qualla Boundary. Other Indian communities are well integrated into their surrounding territories governments—counties and municipalities.

The Native American community will continue to be a focus of the e-NC Authority and the networks and applications that can affect the ongoing social well being of the Indian communities in North Carolina. Preliminary outreach efforts are already underway to engage the interest and involvement of leaders of the state's Native American communities in the NC BRIM planning efforts to ensure the perspectives and particular challenges of the tribes are captured.

3. *Please describe additional information about your plan for North Carolina's statewide broadband map. For example, do you plan to differentiate how data is presented or available for use by different groups?*

The e-NC Authority is committed to transparency in its operation and to optimizing the public benefit of its efforts. Accordingly, the intent is to make as much of the underlying data used to develop the NC Broadband map available to the public as is possible, subject to guidelines developed by NTIA and its requirements for this project and to specific non-disclosure agreements that may be made with all providers.

The e-NC Authority has been working with a contractor, Michael Baker Corporation, concerning the development of an on-line tool that would allow other organizations limited access to the underlying GIS mapping data without jeopardizing the integrity of the state broadband map. This effort is necessitated by the need to obtain higher quality information from cable providers than is currently available from the

information that these companies submit to the Office of the NC Secretary of State. This is being done irrespective of the broadband stimulus NOFA in order to meet the e-NC Authority's pre-existing responsibility to make comprehensive broadband access information available to the citizens of North Carolina. The NC BRIM project presents an opportunity to apply the tool that will be developed to improve cable data more broadly, as described below. This is done in part in recognition of the value of two-way information flows with telecommunications providers, small businesses, anchor institutions and nonprofit groups that are part of the state's connectivity enterprise. The tool, while initiated by the need to draw fable shapes, is available for all providers and anyone else who wants to draw a shapefile for an area in North Carolina. For example, local governments could use this tool to draw a park area, export it to a local computer and pull it into their GIS program. ***As far as proprietary data goes, the e-NC Authority would handle that like we currently do: it is not sent to the GIS application. The e-NC Authority uses the provider-designated proprietary data in-house only.***

The intent of this approach is to permit these organizations to use the data for their own purposes and to support their efforts to provide timely updates and corrections to the mapping data. The organizations vary widely in their knowledge and use of GIS technology and tools so there is a need to limit their ability for unrestricted access or manipulation of the primary database. The tool that will be developed will move the firms along what in some cases will be a lengthy learning curve, allowing them to download data from the e-NC map, make adjustments to their particular service area, save it to their computer, and then re-submit the attributes for the adjusted shape to the e-NC Authority for qualification before it is uploaded to the state broadband map. The shape-creation tool will not be password protected so anyone will be able to create polygons for their own use or to send them to us, but they will not be able to alter or otherwise imperil the state's broadband map.

The e-NC Authority map will offer users richer and more detailed information when we complete the program contained in the NTIA grant application. With more than 32 layers of data and access to the state corporate geographic data base, citizens, businesses and institutions will be able to use the map as a major analytical tool as they plan to enhance the quality of life of their region, to plan more carefully their government outreach programs and to utilize and track the data for economic development marketing and job creation. In addition to being more comprehensive, the map will provide data that is significantly more current than information available to date. And as a result of the direct comparison of alternative data collection and validation approaches that will take place during the first 6 months of the proposed BRIM project, North Carolina will identify a cost-effective model for sustainable broadband mapping.

4. *Please provide additional detail regarding the guidelines (i.e., the scope) that will be in place for the wireless propagation testing.*

The propagation scope is statewide for existing mobile and fixed wireless broadband. The model will use high spatial resolution (up to 3 meters) Digital Elevation Models derived from statewide Light Detection and Ranging (LIDAR) and empirical formulas to capture the effects of natural terrain, vegetation interference and the behavior of radio waves in space. Data delivered will include the following:

a) Digital raster dataset representing aggregated mobile and fixed wireless signal strength

b) Digital vector dataset representing aggregated mean signal strength by census block

c) Digital vector dataset representing X, Y, locations of all transmitter locations

d) The datasets will be provided twice: one as an initial data set and a second as a final data set that will include adjustments made from field sample observations and measurements.

A written report with map illustrations demonstrating unserved and underserved regions with respect to wireless broadband coverage of North Carolina will be provided to the e-NC Authority. The report will include recommendations for the most cost effective way of updating the collected information.

5. *Pursuant to the Technical Appendix in the NOFA, please clarify that metadata will be incorporated for all GIS products.*

Pursuant to the Technical Appendix in the NOFA, metadata will be incorporated for all GIS products per our discussion with Anne Neville.

6. *Indirect Cost Rate as it pertains to the Rural Center per Anne Neville's question about that*

Regarding the Indirect Cost rate of the Rural Center- the e-NC Authority's fiscal agent - please note that the Vice President for Finance of the Rural Center is writing a short note to lay out the indirect cost context of the Rural Center. The Rural Center does have a cognizant federal agency but they have received federal grants, including two that are currently in progress—one from the Small Business Administration of the US Department of Commerce. In addition, the Rural Center served as the fiscal agent for the e-NC Authority for a previous grant from the NTIA's

Technology Opportunities program (titled " Local E-Government Utilization Program" (LEG-UP)) that allowed the indirect cost as is requested in this application.
