	Year 1/2 Total S/Hrs dedicated	Year 1 Salary/hr	Year 2 Salary/hr	Year 1 Hours/Percent	YEAR 1 Applicant Share	YEAR 1 Federal Share	Year 2 Hours/Percent	YEAR 2 Applicant Share	YEAR 2 Federal Share	Total Federal Share
MDBC										
Personal Costs										
Manager										
Administrator										
Salary						27,000.00			31,930.00	58,930.00
Fringe 40%						10,800.00			12,772.00	23,572.00
Direct Allocation Method										
Office rent						2,880.00			2,966.00	5,846.00
Internet 1.5 meg capacity						1,800.00			1,800.00	3,600.00
Monthly security monitoring						150.00			150.00	300.00
Parking						2,500.00			2,500.00	5,000.00
Pre-award Costs						18,500.00				18,500.00
phone/fax						510.00			360.00	870.00
Supplies						4,000.00			2,500.00	6,500.00
Desk and office furniture						1,500.00				1,500.00
Security system						2,000.00				2,000.00
Badge ID system with supplies						15,000.00				15,000.00
EQUIPMENT										
Workstation (updating/maintenance)						10,000.00				10,000.00
Security SW						10,000.00				10,000.00
SOFTWARE										
ESRI SW						10,000.00				10,000.00
DATA										
Wireless						40,000.00				40,000.00
TOTAL MD BROADBAND COOP										$ 211,618.00
CONSULTANTS COSTS										
Professional Services Specific to MdBC										
Legal, Accounting, Consulting						60,000.00			30,000.00	90,000.00
TOTAL Professional Services Specific to MdBC										$ 90,000.00
BEACON										
Personal Costs										
Director	1037	52.40	52.40	516.5		27,060.00	520		27,248.00	54,828.00
Graduate Assistant	731	13.68		731		10,000.00				10,000.00
Graduate Assistant	952	10.50		952		10,000.00				10,000.00
Salary						47,060.00			27,248.00	74,308.00
Fringe 48%						22,588.80			13,079.04	35,667.84
Travel Costs	Cost per Mile	RT Miles	Annual Trips	Accomd.			Nights			
Year -1 BEACON to Metro core from Salisbury	0.2925	200	24	125.75		7,440.00	48			7,488.00
Year -2 BEACON to Metro core from Salisbury	0.2925	200	12	125.75			24		3,837.00	3,861.00
Equipment										
One rugged laptop for field work						1,440.24				1,440.24
TOTAL BEACON										$ 122,765.08
ESRGC										
Personal Costs										

				Mapping budget detail						
Director	36%	24,433.92	6,990.82	36%		24,433.92	36%		6,990.82	31,425.10
GIS Manager	30%	26,500.00	5,459.00	50%		26,500.00	10%		5,459.00	31,959.10
Senior GIS Analyst	50%	20,500.00		50%		20,500.00	0%			20,500.00
GIS Analyst	100%	35,000.00		100%		35,000.00	0%			35,000.00
Senior GIS Analyst (TBH)	100%	50,000.00	51,500.00	100%		50,000.00	100%		51,500.00	101,501.00
Salary						**156,433.92**			**63,949.82**	**220,383.74**
Fringe 27%						**42,237.16**			**17,266.45**	**59,503.61**
IDC 48%						**95,362.12**			**38,983.81**	**134,345.93**
Travel Costs	Cost per Mile	RT Miles	Annual Trips							
SS ESRGC Metro Core from SBY	0.2925	232	24			1,628.64			1,628.64	3,257.28
TOTAL ESRGC									$	**417,190.55**
ESRI										
Application Development Support						50,000.00				50,000.00
									$	**50,000.00**
TU DECO (CGIS/AEHS)										
Personal Costs										
Director	350	46.20	47.59	200		9,240.96	150		7,138.64	16,529.60
Project Manager, Data	850	38.46	39.62	600		23,076.92	250		9,903.85	33,230.77
Project Manager, Data	850	37.50	38.63	600		22,500.00	250		9,656.25	32,406.25
GIS Specialist	300	26.57	27.37	200		5,314.00	100		2,736.71	8,150.71
GIS Specialist	500	18.75	19.31	400		7,500.00	100		1,931.25	9,531.25
GIS Specialist	500	20.67	21.29	400		8,269.23	100		2,129.33	10,498.56
GIS Specialist	500	20.67	21.29	400		8,269.23	100		2,129.33	10,498.56
GIS Specialist	400	26.81	27.62	300		8,044.18	100		2,761.84	10,906.02
GIS Specialist	700	28.03	28.88	500		14,017.07	200		5,775.03	19,992.10
Information Tech Officer	350	39.48	40.66	200		7,895.00	150		6,098.89	14,143.89
System Engineer	400	35.69	36.76	300		10,706.39	100		3,675.86	14,482.26
IT Integration Specialist	400	20.59	21.21	300		8,177.00	100		2,120.77	8,397.77
Web Server Administrator	400	36.06	37.14	300		10,817.31	100		3,713.94	14,631.25
GIS application Programmer	700	36.06	37.14	500		18,030.00	200		7,428.36	25,658.36
GIS application Programmer	600	34.62	35.65	500		17,307.69	100		3,565.38	20,973.08
Writer	400	23.93	24.65	300		7,179.38	100		2,464.92	9,744.29
Director	350	60.10	61.90	250		15,024.04	100		6,189.90	21,313.94
Associate Director	300	68.18	70.22	200		13,635.19	100		7,022.12	20,757.32
Research Assistant	560	27.05	27.86	400		10,819.23	160		4,457.52	15,436.75
Salary						**223,822.83**			**90,899.90**	**314,722.72**
Fringe 51%						**114,149.64**			**46,358.95**	**160,508.59**
IDC 50%						**168,986.23**			**68,629.42**	**237,615.66**
Travel Costs	Cost per Mile	RT Miles	Annual Trips							
Towson University to Md Broadband Coop	0.55	300	12			1,980.00			1,980.00	3,960.00
Equipment										
Storage/Server						15,000.00				15,000.00
Hosting										
Support hosting cost increase to MDiMAP						12,000.00			24,000.00	36,000.00
TOTAL TOWSON UNIVERSITY									$	**767,806.97**

NTIA Broadband Mapping Project
Budget Revision Responses and Explanations
Submitted October 23, 2009

The following information was extracted from the original proposal and has been revised and shortened to directly address NTIA's concerns and suggestions.

The State of Maryland, through its agent, the Maryland Broadband Cooperative, Inc. (MdBC), intends to undertake all aspects of data collection and mapping of areas in Maryland that are unserved and underserved by broadband service providers. Funding for this important project is provided through the Broadband Data Improvement Act (BDIA) and is managed by the National Telecommunications and Information Administration (NTIA).

This project will yield the following desirable outcomes:
1. Initial, preliminary data for NTIA delivered very quickly.
2. Comprehensive, verified, accurate, detailed data for the NTIA within 6 months.
3. A statewide database of broadband service areas that can be used for infrastructure planning, economic development, increasing public awareness, and broadband service marketing.
4. A public-facing interactive web map application that enables address search, area visualization, and symbolization at multiple scales.
5. An in-depth market research analysis of broadband demand in different areas of the state.
6. A set of planning documents that outline the impediments to broadband adoption in the underserved/unserved areas of the state by region, a set of recommendations to overcome those barriers, and a review of the success of short-term recommendation implementation, all from the perspective of the key broadband constituent groups.

Maryland's project will be completed in four initiatives.

1. Statewide Broadband Service Assessment (Initial Phase)

MdBC, the Eastern Shore Regional GIS Cooperative (ESRGC), and the Center for GIS at Towson University (CGIS) will process two sets of broadband service area data: those datasets currently on-hand at MdBC or that will be purchased from vendors, and those datasets initially delivered to MdBC by broadband service providers. Datasets delivered by service providers will be verified for accuracy and completeness, and will be processed to conform to the feature and attribute requirements of the Technical Appendix of the NoFA. These data will be loaded into the secure geodata server and processed for delivery to NTIA between February 1, 2010 and March 1, 2010.

    a. **MdBC** will serve as overall project manager and will finalize data sharing agreements, maintain security of confidential and sensitive information, ensure compliance with American Recovery and Reinvestment Act (ARRA) reporting requirements, and perform accounting functions in compliance with federal guidelines for this grant funding.

b. **ESRGC** will geocode data broadband service areas to individual address points or polygons, reformat the data to NTIA's deliverable specifications, export and deliver required broadband service information to NTIA, and provide general GIS support needed by MdBC. ESRGC will ensure adherence to the attribute specifications contained within the Technical Appendix of the NoFA for this project. Data work is described below.

Data Development

For the first delivery phase, ESRGC is responsible for obtaining MDBC's existing wireline service area datasets, as well as the wireless services areas that will be acquired, and process them for transfer and consumption by NTIA. This will be accomplished by first capturing as much of the attribute information as possible as described in the NoFA, including the advertised maximum upstream and downstream speeds, and transmission codes. ESRGC will assign to the broadband service area information to each address in the state as taken from the address points provided by the Maryland Department of Planning (MDP) and the Maryland State Department of Taxation and Assessment (SDAT). ESRGC will then format that data into the specified text formats and deliver the results to NTIA.

For the second delivery phase, ESRGC's primary function, with assistance from CGIS, will be to process the multitude of data files and formats as they come from the broadband service providers. Each file from each provider must be checked for logical inconsistencies, mapped onto the specified attribute definitions, and loaded into the enterprise geodatabase. Great care will be taken with those portions of the data that have been designated sensitive or confidential. These portions will likely be removed from the primary working database and set aside into an access-limited geodatabase for reference at a later time. These data will again be checked against the Technical Appendix of the NoFA for compliance with NTIA requirements for attributes and formatting. If the data is received as individual customer records, those customer addresses will be linked to their spatial location using the MDP/SDAT address points. If the service area information is received as polygons, ESRGC will again assign the polygon information to the addresses that fall within that polygon.

Data Updates

The ongoing role for ESRGC will be to provide technical GIS support to MdBC to enable the regular update of the broadband service area information. The update schedule will be once per quarter or twice as often as sought by NTIA. The update process will be documented carefully for each broadband service provider for the purpose of automating as much of the process as possible. As the project moves beyond the initial data collection and delivery phase, the team proposes to link the broadband service information to a tax parcel polygon rather than an address point, wherever possible. While NTIA would still receive its data as text files noting each address, the tax parcel polygons will be the preferred method of display and analysis within the State.'

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Specific Roles of Staff
The ESRGC Director will be responsible for overall project direction, strategy, troubleshooting, and coordination with project partners, broadband service providers, and NTIA, if necessary. The GIS Manager will be responsible for the day-to-day management of performance goals, solution development, internal QA/QC, and staff supervision. The Senior GIS Analyst, to be located on-site at the Maryland Broadband Cooperative, will work with the CGIS staff on database testing and performance, will be engaged in geoprocessing, implementing developed solutions, undertaking topological analysis to verify data quality, and any other tasks needed by the MdBC to accomplish both this grant and the expected Broadband Infrastructure project. The junior GIS Analyst will conduct all data processing tasks necessary to complete the project, including geocoding, data editing, and mapping.

c. **CGIS** will compile the community anchor dataset, support ESRGC staff in formatting broadband data, and ensure data accessibility via configuration, deployment, and hosting of the publicly accessible Web application. As a primary GIS resource for the State of Maryland, CGIS will participate in collaboration and other technical components of the project. CGIS developed the MD iMap architecture and also hosts MD iMap. MD iMap is a portal or framework that provides a single point of access to Maryland's GIS related information, products, and services. Data and related work is described below.

Data Development
CGIS will support ESRGC with collection, normalization, formatting, and representation of the data received from the broadband service providers, as requested by ESRGC. At this point it is not known how many broadband providers there are, or how the providers organize or maintain their service area data. Because of this uncertainty, there is potential for a significant level of effort to be required to assemble and present this data as an accurate and seamless map layer.

CGIS will develop the community anchor dataset that includes public schools, colleges and universities, libraries, medical and healthcare providers, public safety entities, and other community support organizations and entities. Locations of these features will be derived primarily from the Maryland Property View dataset, which leverages the SDAT database. Other datasets will be leveraged to supplement MD Property View in order to capture the required attributes. Required Community Anchor institution attributes for subscribing institutions includes Technology of Transmission, and Advertised Upstream and Downstream Service Speeds. Again, the level of detail and completeness of the broadband provider's service area data has a great degree of influence on the methods used and effort required to complete this data set. Community anchor institution data will be delivered per the instructions provided in the Technical Appendix of the NoFA.

Data Loading
Per established best practices, CGIS will maintain a three-tier geodatabase, including GIS repository, staging, and production database environments. The GIS Specialist team will work with the IT Support staff to ensure that the GIS data is prepared and delivered as to provide for ready ingestion into the ArcSDE database. Broadband and related GIS data will be loaded and maintained within this database structure and served to the MD iMap framework for public accessibility to the publicly accessible Web application.

ArcGIS Server Map Services
CGIS will create ArcGIS map documents (MXDs) of the appropriate broadband and related data, which includes symbolizing and labeling for ease of interpretation and use by the public. ArcGIS Server services will be created and published. These services will be configured for optimal performance, including caching services as necessary to improve data display rates and application performance. Services will be maintained on the MD iMap framework.

d. The Regional Economic Studies Institute, Applied Economics and Human Services RESI-AEHS) at Towson University will verify the accuracy of data received from internet service providers (ISPs) and MdBC. A survey instrument will be developed and will be used to confirm underserved regions as identified by MdBC. The survey will be administered to households within these identified regions on a regular basis over an estimated two-year period as part of an ongoing data verification process. Acquisition of contact information for these households will be dependent upon the level of detail necessary for data verification. Surveys will be administered primarily through telephone conversations. RESI-AEHS will prepare reports summarizing and detailing the findings of the surveys, develop a process for recurring data verification, and train MdBC staff to support and maintain the process. Year One will include the survey design, implementation of the design, data analysis, and process verification. Year Two will include training MdBC staff as well as supporting the reoccurring data verification process. It is vital that the verification process is maintained to ensure that broadband expansion and development is captured and verified by provider and access location.

Specific Roles of Staff
RESI-AEHS Director: Provide overall management and develop the process, survey design and survey area for data analysis and verification. Ensure that the process meets data verification thresholds.

Associate Director: Serve as project manager for the data verification. Coordinate the work of research assistants; participate in survey design, survey area, and analysis of results.

Research Analyst: Collect, compile, and analyze data; design and review statistical reports.

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2. Statewide Broadband Service Assessment (Subsequent Phases)

In the subsequent phase of the Statewide Broadband Service Assessment, the broadband service area data will be processed with two additional goals in mind: establishment of automated or semi-automated processes to receive the datafiles from broadband service provides and load it into the secure geodata server, and manipulation of data to meet the needs of the interactive state broadband map phase. During this second initiative, the nature and extent of broadband demand in the state will also be studied and reported.

CGIS will coordinate with State project partners to research and implement the data update process deemed best suited for the members of the Maryland Broadband Mapping team. This process will encompass collecting updated broadband service data from the service providers, performing data quality control and normalization, reformatting data as needed, and transferring and uploading the data into the geodatabase and Web application. Options include ArcGIS Server Geodatabase Replication, and manual processing and transfer of data. Factors that will affect the decision include how the data is collected and updated and if the data is updated in an ArcSDE database.

3. Interactive Public Map of Broadband Service In Maryland

CGIS will develop, configure, and "stand up" Maryland's broadband Web-based mapping application on the MD iMap infrastructure, making the broadband data and related application functionality available to the public. Quarterly data updates will be integrated into the MD iMap geodatabases and ArcGIS Server services and made available to the web application. System Maintenance Contribution and application updates will be applied quarterly. Additional hardware will be installed to increase the system data storage capacity and maintain system performance.

Specific Roles of Technical Staff
The CGIS Director will be responsible for overall project direction, strategy, troubleshooting, and coordination with project partners, and NTIA if necessary. The Project Manager will be responsible for the day-to-day management of performance goals, solution development, internal QA/QC, and staff supervision. The Information Technical Officer will ensure that data, application, and system teams are implementing technically sound solutions, and will ensure that all state IT standards are met for state legislative audit requirements. GIS Specialist staff work will be coordinated by the project manager; tasks will be delegated to the appropriate staff level to ensure staff is being used efficiently. GIS Specialist IV will work with the Project Manager to identify and implement technical processes that accomplish the project goals and ensure overall quality of the data deliverables; coordinate with members of the programming and IT teams to understand and meet their requirements in terms of GIS data; and identify any technical obstacles and work with the GIS Specialist III to develop optimal solutions to overcome them. GIS Specialist III will establish the most efficient process for developing the Community Anchor dataset, developing the broadband service area data, and performing broadband provider data updates; examine the potential available data sources that satisfy the criteria for Community Anchor data, and develop a

Maryland Broadband Mapping Component Timeline Phase 3

ID	Project Name	Lead	Days	Start	End	15-Sep	15-Oct	15-Nov	15-Dec	15-Jan	15-Feb	15-Mar	15-Apr	15-May	15-Jun	15-Jul	15-Aug	14-Sep	28-Sep
3.0	Interactive Public Map of Broadband Service In Maryland	ESRI	167	15-Sep	28-Feb														
3.1	TBA	TBA	13	16-Sep	28-Sep														
3.1.1	TBA	TBA	2	16-Sep	17-Sep														
3.1.2			7	18-Sep	24-Sep														
3.1.3			4	25-Sep	28-Sep														
3.2	TBA	TBA	30	30-Sep	29-Oct														
.1	TBA	TBA	14	30-Sep	13-Oct														
.2			7	30-Sep	6-Oct														
3.2.3			9	15-Oct	23-Oct														
3.2.4			4	24-Oct	27-Oct														
3.2.5			1	28-Oct	28-Oct														
3.3	TBA	TBA	152	30-Sep	28-Feb														
3.3.1	TBA	TBA	90	30-Sep	28-Dec														
3.3.2			90	30-Sep	28-Dec														
3.3.3			90	1-Nov	29-Jan														
3.3.4			30	2-Nov	1-Dec														
3.3.5			75	1-Dec	13-Feb														
3.3.6			30	30-Dec	28-Jan														
3.3.7			9	15-Feb	23-Feb														
3.3.8			1	25-Feb	25-Feb														
3.4	TBA	TBA	152	30-Sep	28-Feb														
3.4.1	TBA	TBA	90	30-Sep	28-Dec														
3.4.2			90	30-Sep	28-Dec														
3.4.3			90	1-Nov	29-Jan														
3.4.4			30	2-Nov	1-Dec														
3.4.5			75	1-Dec	13-Feb														
3.4.6			30	30-Dec	28-Jan														
3.4.7			9	15-Feb	23-Feb														
3.4.8			1	25-Feb	25-Feb														

Maryland Broadband Mapping Component Timeline Phase 4

ID	Project Name	Lead	Days	Start	End
4.0	Development of Broadband Service Expansion Plan	DBED	365	15-Sep	14-Sep
4.1	Establish and sustain local technology teams	Regional Councils & DBED	364	16-Sep	14-Sep
4.1.1	Identify members in each region	Regional Councils & DBED	30	16-Sep	15-Oct
4.1.2	Kick-off meeting in each region	Regional Councils & DBED	15	16-Oct	30-Oct
4.1.3	First follow-up meeting in each region	Regional Councils & DBED	31	1-Dec	31-Dec
4.1.4	Second follow-up meeting in each region	Regional Councils & DBED	28	1-Feb	28-Feb
4.1.5	Third follow-up meeting in each region	Regional Councils & DBED	30	1-Apr	30-Apr
4.1.6	Final follow-up meeting in each region	Regional Councils & DBED	30	1-Jun	30-Jun
4.2	Conduct regional broadband summits	Regional Councils & DBED	242	1-Nov	30-Jun
4.2.1	Summit One - Salisbury	TCCLESM	30	1-Nov	30-Nov
4.2.2	Summit One - Easton	MSRC	30	1-Nov	30-Nov
4.2.3	Summit One - Elkton	USRC	30	1-Nov	30-Nov
4.2.4	Summit One - Waldorf	TCCSM	30	1-Nov	30-Nov
4.2.5	Summit One - Hagerstown	TCCWM	30	1-Nov	30-Nov
4.2.6	Summit One - Baltimore	DBED	30	1-Nov	30-Nov
4.2.7	Summit Two - Salisbury	TCCLESM	30	1-May	30-May
4.2.8	Summit Two - Easton	MSRC	30	1-May	30-May
4.2.9	Summit Two - Elkton	USRC	30	1-May	30-May
4.2.10	Summit Two - Waldorf	TCCSM	30	1-May	30-May
4.2.11	Summit Two - Hagerstown	TCCWM	30	1-May	30-May
4.2.12	Summit Two - Baltimore	DBED	30	1-May	30-May
4.3	Conduct collaboration meetings b/w IT companies and BBSPs	Regional Councils & DBED	30	1-Jan	30-Jan
4.3.1	Invite stakeholders and have meeting in Salisbury	TCCLESM	30	1-Jan	30-Jan
4.3.2	Invite stakeholders and have meeting in Easton	MSRC	30	1-Jan	30-Jan
4.3.3	Invite stakeholders and have meeting in Elkton	USRC	30	1-Jan	30-Jan
4.3.4	Invite stakeholders and have meeting in Waldorf	TCCSM	30	1-Jan	30-Jan
4.3.5	Invite stakeholders and have meeting in Hagerstown	TCCWM	30	1-Jan	30-Jan
4.3.6	Invite stakeholders and have meeting in Baltimore	DBED	30	1-Jan	30-Jan
4.4	Conduct collaboration meetings b/w govt/nonprofits and BBSPs	Regional Councils & DBED	30	1-Mar	30-Mar
4.4.1	Invite stakeholders and have meeting in Salisbury	TCCLESM	30	1-Mar	30-Mar
4.4.2	Invite stakeholders and have meeting in Easton	MSRC	30	1-Mar	30-Mar
4.4.3	Invite stakeholders and have meeting in Elkton	USRC	30	1-Mar	30-Mar
4.4.4	Invite stakeholders and have meeting in Waldorf	TCCSM	30	1-Mar	30-Mar
4.4.5	Invite stakeholders and have meeting in Hagerstown	TCCWM	30	1-Mar	30-Mar
4.4.6	Invite stakeholders and have meeting in Baltimore	DBED	30	1-Mar	30-Mar
4.5	Write and submit final report	DBED	62	1-Jul	31-Aug
4.5.1	Findings submitted from Lower Shore	TCCLESM	31	1-Jul	31-Jul
4.5.2	Findings submitted from MidShore	MSRC	31	1-Jul	31-Jul
4.5.3	Findings submitted from Upper Shore	USRC	31	1-Jul	31-Jul
4.5.4	Findings submitted from Southern Maryland	TCCSM	31	1-Jul	31-Jul
4.5.5	Findings submitted from Western Maryland	TCCWM	31	1-Jul	31-Jul
4.5.6	Findings submitted from Baltimore	DBED	31	1-Jul	31-Jul
4.5.7	Compile reports, construct executive summary, & submit	DBED	31	1-Aug	31-Aug