Project Abstract

- Current SBDD Mapping amount awarded: $1,399,378
- Current SBDD Planning amount awarded: $499,950
- New Funding requested: <u>$3,830,087</u>
- Total of funding: $5,729,415

- The Bureau of Information and Telecommunications is the assigned broadband mapping authority for the State of South Dakota. Per docket number 0660-ZA29 the state is gathering the required information for the State Broadband Data and Development Grant Program. Broadband data is being collected from telecommunications providers and community anchor institutions. A statewide planning grant has also been awarded. This grant will analyze mapping information submitted and gather public opinions on broadband.

- ($1,064,923) Data Collection, Integration, Verification and Display Summary Years 3, 4 & 5 Continue the mapping project through years 3 – 5, verify the data provided through crowd sourcing and 3rd party verification methods, deliver the results to the public and implement a set of leading practices.

- ($719,200) Improving Address Files Incentivize local governments to provide address level data to the state while providing an online portal to easily maintain that information. Provide GIS resources to maintain the broadband related information for the state.

- ($547,596) State Broadband Capacity Building Summary Fund expanded resources applied to the broadband mapping and Other Programs requested.

- ($848,368) Technology Assistance Summary & ($650,000) Computer Ownership / Internet Usage Summary These programs are inter-related. Provide technology assessment and education services to Community Anchor Institutions (CAI). Provide the CAI's an opportunity to apply for a subgrant to establish or upgrade their broadband technology infrastructure. If the CAI does not have the expertise to adequately install the technology provided by the subgrant, install the infrastructure to insure they get it up and running efficiently and effective.

Revised Project Narrative

- Summary of funds awarded and requested

Program	Status	Original Amount	Revised Amount
Data Collection, Integration, Verification and Display (Years 1 & 2)	Awarded	$ 1,399,378	
Broadband Planning	Awarded	$ 499,950	
Data Collection, Integration, Verification and Display (Years 3, 4, 5)	Requested	$1,110,008	$1,064,923
Reduced: contractor estimates, GIS Project lead to 50%, travel by 50%, hardware refreshment by 50%			
Improving Address Files (Years 2, 3, 4, 5)	Requested	$1,071,360	$719,200
Utilizing state resources for programming to reduce portal costs, reduced GIS architect to 75% time towards project, reduced county participation incentives from $2,500 per year to $1,500 per year.			
State Broadband Capacity Building (Years 2, 3, 4, 5)	Requested	$ 984,080	$547,596
Eliminated staff person, reduced travel to a single trip per month with 1 out-of-state trip annually.			
Technical Assistance (Years 2, 3, 4, 5)	Requested	$ 906,688	$848,368
Reduced travel from 180 days annually to 90.			
Computer Ownership / Internet Usage (Years 2, 3, 4, 5)	Requested	$ 800,000	$650,000
Reduced grants from ~80 @ $10,000 each to ~65 @ $10,000 each.			
Total		$5,206,811	$3,830,087
In Kind Contribution Total	Supplied	$1,301,703	$957,522

In Kind Contributions for the Supplemental Grant will be provided through:

K12 Technology Assistance FTE: $600,000

K12 Hardware Match: $357,522

The K12 Technology Assistance match will be a 1:1 match with the grant. The grant will fund 2 FTE to provide technical assistance to community anchor institutions (K12, county government, libraries, etc.). The state will match 2 FTE funded from the Department of Education with their salaries, benefits and travel. This is estimated to be $150,000 per year * 4 years.

The K12 Hardware match will include a match from the schools and entities participating in the assessment program. The Community Anchor Institutions will be required to provide the costs for the original purchase price of their technology infrastructure. The infrastructure includes network equipment, servers, workstations and software. This is estimated to $357,522.

	Data Collection	Address Files	Broadband Capacity Building	Technical Assistance	Computer Ownership / Internet Usage	Totals
	Years 3 - 5	Years 2 - 5	Years 2 - 5	Years 2 - 5	Years 2 - 5	
Personnel	$372,280	$236,544	$390,790	$561,792	$0	$1,561,406
Fringe	$111,200	$70,656	$116,730	$213,256	$0	$511,842
Travel	$28,368	$0	$27,576	$58,320	$0	$114,264
Equipment	$50,000	$0	$7,500	$15,000	$650,000	$722,500
Supplies	$0	$0	$5,000	$0	$0	$5,000
Contracts	$503,075	$115,000	$0	$0	$0	$618,075
Construction	$0	$0	$0	$0	$0	$0
Other	$0	$297,000	$0	$0	$0	$297,000
Total Direct Charges	$1,064,923	$719,200	$547,596	$848,368	$650,000	$3,830,087
Indirect Charges	$0	$0	$0	$0	$0	$0
Total Charges	$1,064,923	$719,200	$547,596	$848,368	$650,000	$3,830,087

Conclusion

South Dakota has received very good participation in the broadband mapping program from the providers in South Dakota. 35 providers have submitted data for the program. Though the verification process has not yet started in earnest, we have the resources and relationships to establish a very effective crowd sourcing program to accomplish that.

The planning program is just getting started. The plan has been approved and the Broadband Advisory Team is almost established. The next step will be to begin the survey designs for consumers, businesses and specific industries.

The BIT has a successful history of performing the anchor tenant role within South Dakota. That role within the telecommunications field is well documented in the areas of telephony, data and video technologies. Our abilities within the Information Technology field are equally documented across our clientele of state government (Executive, Legislative and Judicial branches), local governments, K12 schools and higher education.

The Supplemental Grant application is a straight-forward request.

- Extend mapping responsibilities for years 3 – 5. We will accomplish that program with a combination of in-house and external resources.

- Create higher quality address lists. Tap into local resources to improve the quality of the address lists. A reliable address list has tremendous long term positive implications across many applications.

- Apply Leading Practices to improve the value and quality of all activities under the SBDD. Take advantage of many of the suggested areas across such topics as speed, confidence scales, pricing, etc.

- The State Broadband Capacity Building program is the foundation of all of the programs. The resources funded within this program are the basis to lead the SBDD within South Dakota.

- The Technical Assistance program provides direct technology support to community anchor institutions. The goal includes strategic and tactical steps to perform a technology assessment services and recommendations for CAI's. The K12 resources being funded through this program can be continued through the Department of Education. This will ensure those CAI's a tremendous resource to tap into for the future.

- The Computer Ownership / Internet Usage program ties very closely to the Technical Assistance program. They are intertwined so that either both are successful for the CAI's, or both do not succeed. After performing initial assessment and services within the Technical Assistance program, the CO / IU program provides a subgrant opportunity for hardware and broadband services. Upon grant distribution, the Technical Assistance program ensures that the hardware /

software / broadband awarded in the grant are successfully implemented in a sustainable manner.

Letters of support are provided by the Legislative Research Council, City of Sioux Falls, state government departments of Education and Revenue, the State Library, Unified Judicial System, Public Utilities Commission, Brown County Treasurer, South Dakota Telecommunications Association and SDN Communications. The broad range of entities displays a solid base of support.

The vision of the state broadband program is to increase broadband adoption by consumers and businesses. Though on the surface it seems like an easy goal to measure, the specifics to accomplish that are tenuous due to the possessors of that data. What we can accomplish is to establish an effective public service campaign along with strategic and tactical steps to bring about those results. The requests within this application are to study, educate, inform, assess and distribute broadband services across South Dakota.

State of South Dakota: Supplemental Application (Revised)
State Broadband Data & Development Program

Project: Data Collection, Integration, Verification and Display

Current Award Amount:	$1,399,378	
Requested Award Amount:	$1,064,923	
Total:	$2,464,301	

- **NAME:** State Broadband Mapping.

- **FUNDS AWARDED:** $1,399,378

- **FUNDS REQUESTED:** $1,064,932

- **PROBLEM:** Funding years 3 – 5 of the State Broadband Data & Development Program is not currently planned.

- **SOLUTION:** Continue the funding within the allowable budgeted levels.

Broadband Service Area, Middle Mile Aggregation Points and Broadband Service Overview

The collection of Broadband Service areas, Middle Mile Aggregation points and Broadband Service Overview information is handled through established Provider Outreach Process:

- Build and Maintain an Inventory of Broadband Providers through research and State inputs.
- Update Provider Material that describes information we need and logistics for data transfer.
- Continue Relationships with Statewide and National Alliance groups to foster cooperation.
- Continue Relationships with each Broadband Provider and identify appropriate contacts.
- Maintain a secure Data transfer protocol using SFTP technology.
- Engage in one-on-one technical meetings to ensure understanding and expectations with Provider.
- Walk Provider through Data Upload SFTP site.
- Download and Processing of Provider Data.
- Allow Provider to examine generated coverage patterns and data layers for verification.
- Adjust and tune coverage as necessary.
- Continue to work with Provider to establish a repeatable process.
- Assist with data preparation with Provider as necessary.
- Maintain records throughout Provider Communication and data handling process (dates contacted, data received, etc.).

The Collection of Community Anchor Institution (CAI) Data

The collection of CAI information is handled through established CAI collection Process:

- Maintain Inventory of existing CAIs and abilities to add to that inventory.
- Maintain web- based CAI portal for institutions to interactively add or confirm attribution, location and enter broadband-specific information.

- Maintain outreach campaign via mail, e-mail or other means as necessary (group conferences, etc.).
- Upload web-based data to Core Database for internal cleansing and processing.
- Translate internal data to deliverable ready format.
- Identify internal data.
- Create secondary campaign to target CAIs who have not responded and repeat as necessary.

Process for Data Integration

South Dakota has developed robust data integration and processing mechanisms that effectively translate incoming data sources to the product deliverables. This process allows for multiple types of inputs and results in a standardized output that meets the requirements for State and NTIA deliverables. This process will continue to be modified and/or enhanced to suit the needs of the project continuation in years 3-5.

- Receive Inputs from Providers via secured file transfer process (SFTP).
- Load source material into Sourcing Database and catalog with Provider information.
- Categorize input into data type category (addresses, block lists, coverage areas, paper maps, etc.).
- Process input based on data type into core standardized format in Staging Database.
- Create Compact Polygons (CP)—(internal methodology for generating area based feature for coverage in Staging Database).
- Apply broadband attribution to CP.
- Apply metadata to CP.
- Compare coverage area to available commercial collateral.
- Compare coverage area to third-party data sets.
- Request for more information if required data elements are missing or coverage discrepancies exist to sourcing team for follow-up with Provider.
- Load CP to Core Database.
- Process coverage area to build Census Block and Street Level geography for deliverable input.
- Process Middle Mile attribution.
- Process input data into Service Overview internal format.
- Process CAI data input into internal format.
- Create Product Deliverable based on NTIA and State-level requirements and according to MapConnect™ Broadband specification.

This includes Geographical Information System (GIS) technical support of mapping data. To ensure that the provider data is submitted in the required formats and accurate. Technical support and maintenance of the government broadband web site is also required herein.

Communicate broadband efforts and information across the state. This includes producing effective marketing materials, attending local and regional events, conferences and booth/table-top participation and other interactive programs. The program manager and staff time will provide project management and communication efforts towards the broadband program.

Data Display and Data Delivery

BroadMap has developed processes that allow for standard delivery of Static NTIA and State deliverables as well as an Online Web application for use by the State for their Broadband Mapping Program giving access to internal State stakeholders as well as the general public.

- Static Deliverables to State and NTIA:
  South Dakota has adopted the MapConnect™ Broadband specification that mirrors the NSGIC File Geodatabase model for the broadband layers and has been successfully delivered to the satisfaction of the NTIA and State Partners. This process will continue and enhancements/modifications will be made as necessary throughout the continuation of this project under this request for continuation.

- Online Web Mapping Application:
  South Dakota is in the process of developing and maintaining State Level Broadband Mapping Portals that allow on-line interactive maps to suit the needs of the State's broadband mapping applications. Under this proposal, this activity will continue through years 3-5 with additional modification and/or enhancements as directed by the State and NTIA stakeholders.

The hardware supporting the mapping system infrastructure and computing resources will be replaced in year four at an estimated cost of $50,000.

Data Verification

Following the initial mapping of providers' coverage area and serviceability claims, the project team deploys the following methods for verification of data. This activity will continue through years 3-5 under this proposal.

- **Third-Party Data Verification:** Visually and programmatically compare the coverages against third-party aggregate data.

Third-Party Data	Data Product
Media Prints	Cable Boundaries
American Roamer	Wireless Provider Footprints
Pitney Bowes	Telco Exchange Boundaries Central Office Locations
ComSearch	Spectrum Holdings License Boundaries

- **Broadband Provider Feedback Loop:** Allow carriers to review their data displayed through a controlled web interface to ensure that accurate information was supplied and processed correctly.
- **Sampling:** Using the geographically distributed sample set of locations developed for use in surveys in our broadband planning efforts, include materials directing business and residential consumers to our crowdsourcing portal, from which address, technology, speeds, and other related statistics can be verified.
- **Crowdsourcing:** This is also deployed via the web to the public in order to solicit location, serviceability and Internet diagnostics that can be gleaned (i.e. speed tests).

Security and Confidentiality

South Dakota does not propose any changes to its current methodologies for handling of Confidential Information. To address data security and confidentiality, we will be using the security, access-control, authentication and authorization services built into many of the applications described herein. In brief, our security protocol is two-fold: IT-based (role-based user/password and IP-locking as examples) and metadata-based (explicit identification of confidential data within the system to ensure that it is filtered, summarized or otherwise reduced to an acceptably non-confidential level in publicly accessible interfaces).

The contracting costs are an estimated $250,000 for four years of broadband mapping support.

Support

Statewide BIT support of the mapping program is $401,880 for four years. This will continue the existing leadership and participation of the broadband resources. Travel to support the supplemental mapping project is estimated at $28,368.

LEADING PRACTICES IN BROADBAND DATA COLLECTION, INTEGRATION, AND VERIFICATION

- **NAME:** Leading Practices in Broadband Data Collection, Integration, and Verification

- **FUNDS AWARDED:** $0

- **FUNDS REQUESTED:** $334,675

- **PROBLEM:** Tasks involved in the mapping of broadband service have multiple, varied approaches, many breaking new ground.

- **SOLUTION:** Follow proven or promising techniques in the mapping of broadband services.

Method of Submission: South Dakota and its partner BroadMap have submitted all datasets to NTIA in a geodatabase format that fulfills all of the requirements of the NTIA guidelines. South Dakota is capable of and will continue to deliver future datasets in geodatabase format as requested without any additional expense to the program.

Address Level Data: Our initial discussions with all SD providers requested address level data, despite the NOFA requirements. Over 50% of our providers comprising ≈70% of the served area in SD provided subscriber address information regardless of census block size. The incompleteness of available address files for South Dakota hinders this effort. A funding request to assist in the building, creation, and maintenance of address files where they do not exist is included herein to ensure a common, complete address file for all of South Dakota is included in the Improving Address Files portion of this request. Once obtained, providers will once again be asked to provide address level data in place of road segment.

Speed Geography ($31,680): The goal is to provide "typical" speed information as collected by a speed test at the census block level to deliver the most valuable, granular presentation of the data through a crowd sourcing tool. The data gathered will be showed on a web portal. This is estimated to cost $31,680. The costs are for a sourcing specialist, application and tools engineer and a data analyst.

Typical Speed ($18,960): SD has begun collecting publicly available data from speed test services, to include the data from the FCC. South Dakota is in the process of developing a "crowdsourcing" portal for our speed and service area verification efforts. The resultant datasets will be combined with the FCC and other public datasets to best determine typical speeds. This analysis is estimated to cost $18,960. The costs are for an application and tools engineer and a data analyst.

Resellers: The BIT understands the reseller environment within South Dakota, and feels that the inclusion of resellers within our datasets and maps does not bring significant value to our broadband efforts. South Dakota may decide to include a list of resellers on our State Broadband Portal in the future.

Integration of Public Data Sources ($32,940): Public data sources are already in use in South Dakota's mapping and verifying processes. Provider and industry association marketing materials/websites are compared against provider data generated maps, with any discrepancies reported to and analyzed by both SD and the provider. In addition, infrastructure analysis using public data sources is in progress, including comparing stated wireless/DSL service areas against registered tower/CO locations and maximum technology ranges, as well as analyzing FCC provided speed test results. Infrastructure analysis services were a part of our original mapping grant request, but the additional public data sources require analysis above and beyond the original program. This cost is $32,940. The costs are for an application and tools engineer and a sourcing specialist.

Free Public Wi-Fi ($50,960): Although some localized efforts exist, there is no central repository of free public Wi-Fi locations at a statewide level, nor is there an effort to collect this data. South Dakota will begin to collect this data from public resources, such as local Chamber of Commerce publications, in Year 2, to develop a master list for SD. To assist in this collection, SD plans to develop a "SD Public Wi-Fi" web portal beginning in Year 2. This portal will allow Wi-Fi users and providers a location to locate free public Wi-Fi in their area, as well as notify the State of Wi-Fi hotspots available in their area. Once verified, a master list and map of these locations will be publicly displayed online. The resulting data

points will also be added to the SD data geodatabase for submission to the NTIA as a fixed wireless provider.

In-state technical resources will be used to develop, maintain and host the web portal, as well as verify the validity of the collected data at a cost of $23,040.   Ingestion of the resultant data into the SD dataset as well as derivation of summary materials will be performed BroadMap as a cost of $27,920. Total cost of this leading practice comes to $50,960.

Pricing: A limited effort to collect pricing information on a variety of broadband service options across the state was undertaken in response to a Governor's Office request in 2009. This effort was undertaken to provide an overall understanding on the state of broadband availability in SD to the Governor. SD plans to revisit this effort in a limited fashion for inclusion on the State Broadband Portal.

Data Confidence Scales: South Dakota has entered into preliminary discussions with our mapping partner to develop a system of data confidence scales. South Dakota is excited to see the suggestions and systems in use around the country, and looks forward to the discussions they will begin.

Ongoing Verification Activities: South Dakota has always envisioned a crowdsourcing portal as part of our verification activities. The portal would contain links to the South Dakota broadband availability information, materials on our broadband expansion efforts and programs, and an opportunity to contribute to our efforts by supplying their own broadband data.

Address information, business or residential status, advertised speeds, technology used, and provider name will all be collected upon completion of a speed test. All of this data will be combined into a dataset and analyzed against the information collected by providers. Discrepancies against provider data will be reported to providers through a combination of our statewide "provider portal" and individual discrepancy reports, allowing for provider feedback and input against their dataset before any necessary adjustments to the centralized dataset are made, if necessary.

To assist in the verification efforts, as well as timely development of the statewide master address file, online address portal, provider feedback, and related duties in Years 2 - 5, South Dakota proposes to use grant funds to hire an additional GIS FTE or contract for GIS services. This FTE is the same as the FTE requested in the Improving Address Files program.

For areas of lower confidence in our broadband data, efforts to increase use of the crowdsourcing portal by residents and businesses will take place to increase the confidence level of our data to an acceptable level. Our extensive network of local contacts in education, library services, public safety, and government will help spread the word about the state looking for the public's help in raising their awareness of their local broadband environment, directing them to our crowdsourcing portal and related services to retrieve their feedback. The data received through these local "viral marketing" campaigns will be processed through the same procedures as all other feedback sources, with necessary feedback delivered to the providers for review and integration into the statewide dataset. Any

corrections determined from public feedback will be displayed on the public broadband portal for South Dakota, as well as in all maps and statistics generated from the mapping program.

Marketing ($101,885)
Many of the efforts within the broad scope of the State Broadband Data & Development Program are relying on the general public to participate. The crowd sourcing efforts for community anchor institutions, speed, pricing and other aspects of the Program are dependent on public input. It is therefore crucial that the "word" of these efforts be heavily disseminated to the general public. Media and public outreach campaigns are a necessity. Utilizing television, radio and print media is crucial to getting that word out. Outreach including presentations to local groups, conference displays, direct mail and other forms is important.

Publicity efforts to raise awareness of the site will take place through government press releases, TV and radio, and state/provider/social websites. Taking advantage of the heavily centralized nature of our state services, we plan to seed our dataset with information collected by our education technology coordinators, K12 and university students, remote government office workers, and public safety personnel. They will receive an invitation to visit the crowdsourcing site themselves, and to inform their families, friends, coworkers and neighbors of our efforts. Finally, all crowdsourcing portal visitors will be invited to bookmark and return to our portal in the future on a periodic basis to help ensure South Dakota has the most up-to-date information possible. It is our vision to map to the census block level where public crowd sourcing has occurred. Estimated cost to build and deliver the campaign is $101,885.

Surveys: Surveys on the public's view and opinion of the broadband environment in SD are currently being put together for distribution in our "broadband planning" efforts. South Dakota does not envision performing secondary surveys to verify our datasets. We will be including informational materials on SD's broadband efforts in the surveys that include an invitation to our crowdsourcing portal, where we can verify their broadband data.

Provider Feedback ($39,690): South Dakota is currently developing a secure online "provider portal" with our partner BroadMap. This portal will be used as the central location for provider data collection, verification, analysis, and corrections. Every provider will be able to review the service area maps, diagrams, and statistics derived from the datasets they provided. It is the goal of South Dakota to maintain the ability for a provider to make online modifications to their map to reduce the time from data ingestion to data display. However, as technical abilities vary between providers, if provider personnel are unable to utilize the online toolsets, South Dakota also will engage in individual verification discussions to complete the verification tasks. These discussions will use the same data representations as the provider portal, and can take place either online in a screen-sharing environment, or offline with hard copies of all data representations with mapping staff on the phone.

Additional data points, and their derivations, received from crowdsourced efforts, public datasets, and local/regional feedback will be integrated into the provider portal as layers atop the provider's own data

depictions. Any corrections, adjustments, or feedback from the provider will then be collected, and the datasets stored by South Dakota suitably updated. Again, assistance can be provided to providers in the event that they are unable to utilize these online toolsets.

The initial development of the provider portal only included the online display of GIS-driven maps of provider datasets, and these costs are included as part of the South Dakota Broadband Mapping grant. The costs of integrating the components of the crowdsourcing portal, the inclusion of online provider processing of GIS layers and datasets, and the additional GIS analytics to be performed on the additional datasets are not. The cost for this is $39,690 and covers applications and tool engineer along with web support.

To assist in coordinating with the providers of South Dakota, processing of provider and public feedback, development of the statewide master address file and online address portal, as well as our verification processes, and related duties in Years 2 - 5, South Dakota proposes to use grant funds to hire an additional GIS FTE or contract for GIS services. This FTE is the same FTE as requested in the Improving Address Files program.

<u>Small Providers:</u> South Dakota and its mapping partner, BroadMap, have had tremendous success in assisting the smaller providers deliver compatible, workable datasets to South Dakota and in turn to the NTIA. To date, through direct technical assistance by BroadMap and the inter-provider knowledge sharing common in South Dakota, all providers willing to participate in the mapping program have delivered data that either was natively in the proper format, or could be integrated into a proper formatting by staff in short order.

<u>Methodology:</u> South Dakota's data delivery to the NTIA has included the requested metadata in the form of a readme file. South Dakota is capable of and will continue to deliver metadata as requested in each subsequent data submission without any additional expense to the program.

- **OUTCOMES AND BENEFITS:**

The outcome of the efforts proposed is an effort that is in line with the generally accepted leading practices learned from the first data submissions and collections in the SBDD program.

- **COST:**

Personnel Salaries & Benefits	$483,480
Contracts	$503,075
Travel	$ 28,368
Hardware	$ 50,000
Total	$1,064,923

- **SBDD PURPOSE:**

Our selection of leading practices brings to the SBDD program a significant value increase for little cost. The desire to deliver a high quality data submission that is not only in line with the written guidelines in the program, but with the spirit of the program for the benefit of South Dakota is strong. These leading practices help ensure a complete, thorough, properly contained dataset that brings new value to the NTIA and the public.

Improving Address Files

- **NAME:** Statewide address point creation. Aggregation and creation of address points for all physical locations in South Dakota.

- **FUNDS AWARDED:** $198,000 in the original mapping grant.

- **FUNDS REQUESTED:** $719,200

- **PROBLEM:** There is a lack of a quality, complete geocodable point dataset for all of South Dakota. This problem is not germane to SD and broadband but this is a tremendous opportunity to finally apply the necessary resources to solve it. Reference this article for further supporting information: http://www.directionsmag.com/article.php?article_id=3536. This article really summarizes the current situation with the address sources staying current.

- **SOLUTION:** Create a comprehensive geocodable point dataset for the State of South Dakota.

This process will involve gathering information from multiple stakeholders, performing gap analysis on the resulting dataset, and providing a mechanism for validation and maintenance of the point dataset.

A geographic information system resource will be applied to the program for years 2 - 5 at time estimate of 75%. This is at a cost of $307,200.

The South Dakota Department of Revenue and Regulation (DRR) has agreed to assist the South Dakota Bureau of Information and Telecommunications (BIT) with the collection of any existing address and coordinate datasets from the County Equalization Offices of South Dakota. In SD's original request, $198,000 was allocated to provide financial assistance to SD county offices in the creation and maintenance of county-level address files. This amounted to a one-time payment of $3,000 to each of our 66 counties covering Years 1 & 2 of the mapping project. With the expansion into Years 3 - 5, SD proposes to continue this assistance with an annual assistance payment of $1,500 per year for Years 3 – 5 to each of our 66 counties. This amounts to $297,000 over Years 3 – 5. This financial assistance is offered in return for the cooperation of the county office in the collection, maintenance, and distribution of county-level address files used in the compilation of the statewide master address file.

Gap analysis performed on this master address list will determine where coordinates do not exist. BIT will utilize the SD One Call and DRR road datasets to fill in as many gaps as possible and analyze any inconsistencies in the address files. Roof-top verification of rural address points using the latest FSA aerial photography will ensure structures exist at all address points. Any missing addresses will be cross-checked against any remaining data held by county offices, planning districts, and 911 PSAP's to comprise the most complete master address list for South Dakota.

To help input new and validate existing address points, a secure web portal will be developed. This portal will allow stakeholders to see all addresses that have or have not been validated for their area,

allow for their own validation efforts by moving address points and creating new points for unmatched addresses. The development of this portal will either be handled by BIT in-house technical personnel or be contracted out, and is estimated to cost of $48 per hour for 2,000 hours = $96,000. Maintenance for years 3 – 5 is estimated at 132 hours per year @ $48 per hour = $6,336 per year or $19,000 total. Total development costs for the address portal is $115,000.

General Need - Address points don't exist
Number of census blocks greater than 2 sq. miles - 6773
No. of expected Address points in blocks > 2 sq. miles
Population = 67,499 / 4 people per house = roughly 16,875 Address points
No. of points that are currently located in state as a whole, in blocks > 2 sq. miles
Population 754844 / 4 people per house = roughly 188,711 Address points
Estimated % of land area and state population for non-located points in blocks > 2 sq. miles = 62% of land area in blocks greater than 2 square miles.
Pop. 67,499 or 9% of the population

To ensure accuracy in the long term, South Dakota will provide additional analysis services against related data sources and provide a medium by which relevant stakeholders can service their datasets. Monthly gap analysis against real estate transactions datasets reported to the SD DRR will provide information on new, missing, or updated address points. Annual analysis against all new roads constructed as reported by the SD Department of Transportation Non-State Trunk Road Inventory program will assist in ensuring completeness in the address layers.

To assist in the timely development of the statewide master address file and online address portal, as well as our verification processes for years 3 - 5, South Dakota proposes to use grant funds to hire an additional GIS FTE or contract for GIS services. This FTE is the same FTE as requested in the Leading Practices program.

- **OUTCOMES AND BENEFITS:**
The outcome of the efforts proposed is a centralized, up-to-date GIS address point layer for all of South Dakota as well as a successful, sustainable process to generate, maintain, and distribute the necessary components for its creation and distribution to all South Dakota stakeholders.

- **COST:**

Personnel Salaries & Benefits	$ 307,200
Application Development	$ 115,000
County Participation	$ 297,000

Total	$719,200

- **SBDD PURPOSE:**

The creation of a comprehensive point database of all physical property locations in South Dakota will provide the ability to geocode all residences in South Dakota. The resultant database will deliver an accountable and accurate medium for matching provider subscriber address information for reporting broadband service information to the NTIA and South Dakota stakeholders.

State Broadband Capacity Building ($400K - $1M)

- **NAME:** SD Broadband Program

- **FUNDS AWARDED:**
  $232,126 was awarded in salaries and benefits for Mapping (Years 1 – 2) & Planning grants
  (Years 1 – 5). This will expand the existing commitment for further investments and capacities.

- **FUNDS REQUESTED:** $547,596

- **PROBLEM:**
  SD does not have a broadband program office. This will fund FTE hours towards the program.

- **SOLUTION:**
  The resources funded here will provide further outreach, project participation, coordination,
  and communication responsibilities of the program. This will ensure seamless mapping, planning
  and other program processes for all broadband related activities.

  The program project time will include:
  - Governmental broadband coordination and communications with legislative, executive,
    judicial and municipal governments. Educating, informing and collaborating with the
    stakeholder communities on broadband efforts across the state.
  - Constant and regular communication and cooperation with the provider community is
    essential. It is important that the telecommunications industry have open and regular
    discussions on the project. It is their data being gathered and presented; it is necessary
    to invest resources towards making those relationships successful.
  - Expand the existing Broadband Advisory Team;
  - Develop state plans to support broadband and I/T growth and adoption;
  - Be the 'broadband prophet' to provide regular and constant interaction with the public
    to insure accurate information being disseminated;
  - Convene and attend technology events.

  The resources funded here are directly related to the original mapping and planning grants
  funded through the NTIA for the BDIA.

  The resources to accomplish these activities will be drawn from:
  - Δ The Bureau of Information & Telecommunications;
  - Δ Government contracts and external resources;

  The BIT is already providing program support of the project through the mapping project (years
  1 and year 2) and the planning grant (years 1 – 5). The proposal for the Mapping years 3 – 5 are

at the beginning of this application. The additional resources requested here will be to expand the broadband program to accomplish the items mentioned above and to coordinate the Other Programs being proposed.

- **OUTCOMES AND BENEFITS:**
  - More efficient coordination of government broadband related activities;
  - Better informed public on broadband abilities;
  - Various maps depicting broadband coverage across SD;
  - Active participation of the broadband community in the projects;
  - Verification activities;
  - Up-to-date broadband web site delivering important, accurate broadband information to the public.

- **COST:**

Personnel Salaries & Benefits	$507,520
Travel	$ 27,576
Supplies	$ 5,000
Equipment	$ 7,500
Total	$547,596

- **SBDD PURPOSE:**

This proposal is the foundation of the support required to pursue the broadband activities within South Dakota for support of the SBDD activities. The program director and staff will evangelize the broadband portfolio, including mapping, planning, address files, technical assistance, computer ownership / broadband usage projects.

Technology Assistance ($250,000 - $1,750,000)

- **NAME:** SD TAP Into Tech Expertise

- **FUNDS AWARDED:** $0

- **FUNDS REQUESTED:** $848,368

- **PROBLEM:**
  Community anchor institutions (CAI's) are unable to architect, design, implement and support effective technical solutions to provide dependable and reliable broadband-enabled services to their constituents.

- **SOLUTION:**
  Deliver technology assessment services to community anchor institutions. Technology can be implemented in a wide variety of methods. Many institutions simply take an approach of "get it installed as soon as possible" without regards to the best considerations for long term dependability and reliability. This solution is to provide assessment and on-site services where necessary to the CAI's to improve their infrastructures.

  Provide a team of technologists that:
  1. Have planning abilities;
  2. Possess effective technical skills in network design, desktop support, directory and technology security, and content delivery;
  3. Have effective and positive oral and written communication skills;
  4. Provide proven best practice technology procedures;
  5. Deliver the train-the-trainer program.

  This team will provide direct, on-site assistance to community anchor institutions in the areas of:
  - o Technology strategic planning;
  - o Technology tactical initiatives such as:
    - Network wiring;
    - Wireless technologies;
    - Broadband technologies;
    - Local and wide area network services;
    - Desktop support;
    - Technology security including the areas of firewall, desktop and policy;
    - Directory services;
    - Documentation;
    - Content delivery;

- Best practices & standards;
- Technology train-the-trainer programs;
- Availability of government contracts.

This project will be directly related to the Computer Ownership and Internet Usage project. It is anticipated that interested CAI's will initially apply for an "assessment" as part of the Technical Assistance program. The initial site visit will include a tactical and strategic review of the infrastructure and support activities as discussed above.

BIT has direct, hands-on experience in all of the technology referenced above. BIT provides technology support across the Legislative, Judicial and Executive branches of state government. A very centralized approach to managing technology has been very successful for our rural state. Leveraging this experience for CAI's will be a natural fit for us.

The intention is to leverage existing governmental standards and best practices, delivering them to a wider audience. The standards and practices are proven to be successful; there is no need to create new practices. Instead, take a proven commodity and provide those services to a wider audience. Those practices will be demonstrated and taught to the participating CAI's through a dedicated classroom experience. An estimated 5 days of customized hands-on training will ensure a successful learning experience.

BIT has a solid partnership with Dakota State University regarding training and education. Since 2006, over 300 participants in customized training provided to the K12 community. The topics include customized solutions towards desktop and network security, directory structures, operating systems and other important technology topics. The training program will be expanded beyond the existing clientele to include other community anchor institution personnel.

The federal budget will fund personnel, application evaluation, statewide travel to the community anchor institutions and equipment for the personnel.

- **OUTCOMES AND BENEFITS:**
  - Dependable and reliable technology infrastructures.
  - Better educated technology support community.
  - Improved performance of technology.

- o Documented infrastructure.
- o Tangible metrics will include site-visits, CAI's assisted, miles traveled, workstations impacted, individuals trained, recommendations made.

- **COST:**

Personnel Salaries & Benefits	$775,048
Travel	$ 58,320
Equipment	$ 15,000
Total	$848,368

- **SBDD PURPOSE:**

BIT is very experienced and successful in delivering the entire technology life cycle to our clients. The applicable existing service catalog includes strategic and tactical experience in desktop computer support to technology security to wireless to wide area networking to Internet access to content delivery. This program is to leverage that expertise and deliver it to a wider audience of community anchor institutions.

South Dakota has 155 school districts and 66 county governments. Most of these CAI's are classified as rural or frontier from a population perspective. There are 37 Indian schools that are also classified as public schools. The ability of these institutions to obtain objective, dependable technology advice is rare, and the expertise available on a local basis can be challenging for many of our CAI's. Our purpose is to provide an opportunity for these CAI's to get reliable technology advice. Unreliable technology is frustrating and costly. This program is a tremendous jump-start to those participating to ensure a more sustainable infrastructure.

BIT has partnerships and established relationships with the Executive, Legislative & Judicial branches of state government. Services are provided to all of the counties across the state, every SD public K12 school, and also the public institutions of higher education. Our ability to establish effective partnerships and deliver quality services is well documented. The diversity of partnerships and support is documented by the variety of organizations providing letters of support for these projects.

Computer Ownership / Internet Usage ($500,000 - $1.25M)

- **NAME:** Get on the SD Broadband Wagon

- **FUNDS AWARDED:**
  Applied for $906,688 as part of the SD TAP Into Tech Expertise.

- **FUNDS REQUESTED:** $650,000

- **PROBLEM:**
  Community Anchor institutions have inadequate technology infrastructures. This is due to:
  - Unavailable financial resources;
  - Lack of expertise;
  - Outdated computers;
  - Poor networking infrastructure;
  - Outdated or undersized broadband connections.

- **SOLUTION:**
  The goal is to establish or update the technology infrastructure of the community anchor institutions by providing subgrants to build a dependable and supportable technology infrastructure lifecycle.

  The eligible subgrant categories include:
  1. Infrastructure upgrade or establishment;
  2. Broadband capacity (establish or improve broadband connectivity).

  The Infrastructure category includes providing personal computers, software and networking equipment in a proven, standardized architecture. Interested CAI's will be required to make a minimum broadband connectivity commitment of 1 Mbps, both upstream and downstream. The broadband can be wired or wireless.

  Broadband capacity would include requests for new broadband sites with committed public computing facilities in addition to existing sites requesting additional capacity. Broadband requested can be wired or wireless but speeds must exceed 1Mbps, both upstream and downstream.

  The project is integrated with the South Dakota Technical Assistance Program (TAP) being requested. The proposed process is:
  i. Technology assessment via the TAP;
  ii. Document the 'technology condition' of the CAI via the TAP;
  iii. Provide subgrant opportunity;

iv. Evaluate subgrant applications;

v. Award subgrants;

vi. Assist with technology implementation where necessary using the TAP resources;

vii. Follow-up to document usage.

The costs for the application evaluation portion of the process along with any installation consults have been included with the Technical Assistance Program.

The subgrant applications will be evaluated based on:
- o Implementation plan for grant equipment;
- o Pre-grant activities and cooperation;
- o Post-grant planning;
- o Sustainability of maintaining infrastructure;
- o Ongoing technical support and assistance;
- o Broadband capacity;
- o Community support;
- o Public availability of computing resources;
- o Security considerations;
- o Other factors may be established.

- **OUTCOMES AND BENEFITS:**
  - o Technology will become more available to the community;
  - o Fast, reliable and dependable technology;
  - o Increased broadband adoption within the community;
  - o Improved technology support and assistance abilities;
  - o Metrics include people impacted, bandwidth increased, computers put into service, recommendations made;
  - o An estimated 80 subgrants of $10,000 each provided for four years.

- **COST:**

Subgrants	65 @ $10,000 each = $650,000

- **SBDD PURPOSE:**

By its' very nature, the project will increase the number of computers in CAI's by providing computers to those in need. Broadband usage will also increase because of the very nature of the subgranting approach. The combination of the Technical Assistance program along with the CO / IU program is very good combination. The melding of the two programs is paramount to the success of bringing greater broadband and technological achievements to South Dakota.

The BIT will expand on its existing partnership with the SD Department of Education (DoE) for the distribution of grant dollars. The DoE has a wealth of experience in the subgranting process.

BIT provides services to all 66 counties within South Dakota. This is to provide services to a variety of our clients with the Departments of Revenue, Social Services, Health, etc. We deliver services to every county courthouse for "state" applications. We have on-site experience and knowledge of the county networks, applications, and challenges. Their technical experience and abilities to capitalize on the capabilities of today's broadband environment are limited. This grant will go a long ways to improving the technology landscape of those community anchor institutions.

South Dakota has ~145 libraries across the state. As a point of reference, there are 62 libraries across the state at a DSL broadband connectivity speed. With a sizable percentage of South Dakota accessing online services at their local library, ensuring libraries have the fastest possible connectivity speeds and dependable internal infrastructures is paramount to their success in delivering services to their patrons.