D R A F T

Oklahoma State Broadband Office

Oklahoma Broadband Data Program

Broadband Data Program

Applied Geographics, Inc. (AppGeo) and Connected Nation, Inc. (CN) propose to work collaboratively with the Oklahoma State Broadband Office, its Governing Council, and other Oklahoma stakeholders, to develop and implement a comprehensive Broadband Data Program that will meet the needs of the Oklahoma State Broadband Office, including the federal Broadband Equity, Access, and Deployment (BEAD) and Digital Equity Act (DEA) State Planning Grant programs.

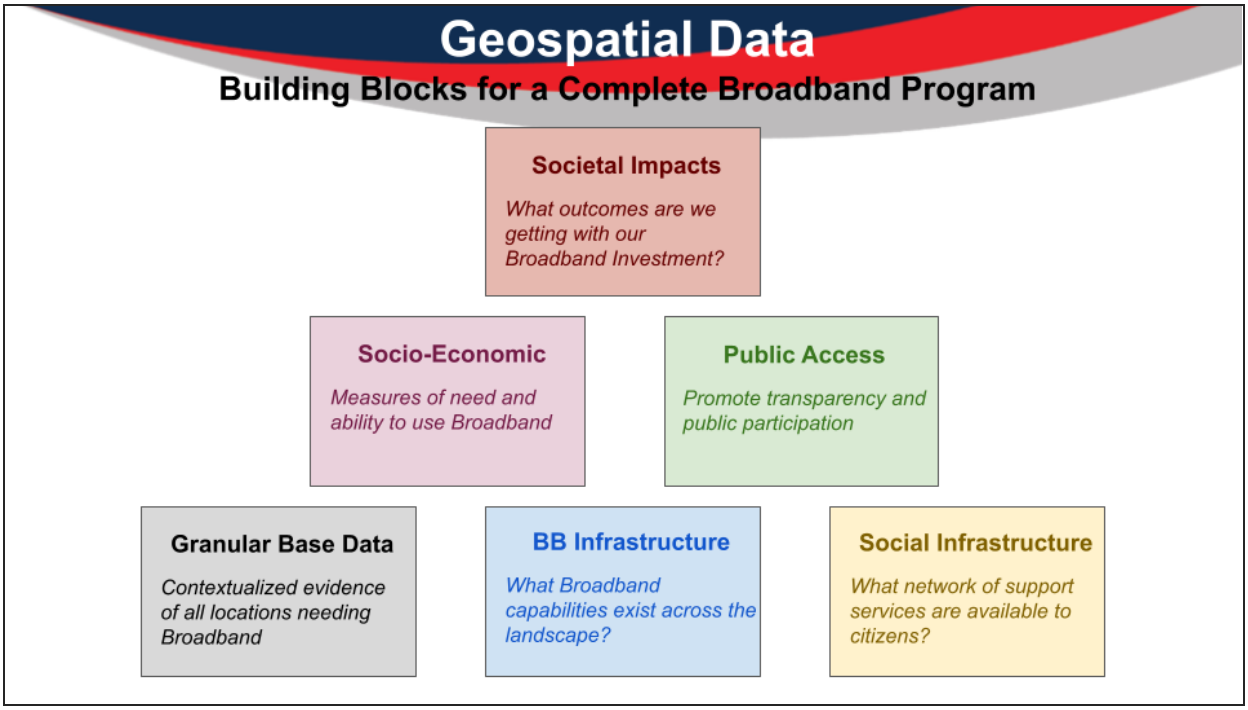
Our proposed Broadband Data Program is based on a high-level strategy (illustrated below) that will ensure Oklahoma has the data and analysis resources it needs to achieve its goals for broadband access, adoption and use across the many communities, tribal nations, and covered populations of the state.

This document describes the tasks we will complete in detail. We will address critical near-term requirements, such as the FCC Broadband Serviceable Location (BSL) Fabric Challenge Process as well as the Broadband Data Collection (BDC) Challenge process. We will design and build the State Broadband Map application. We will tackle the challenging tasks of bringing together the asset inventories required by FCC for the BEAD and DEA planning process.

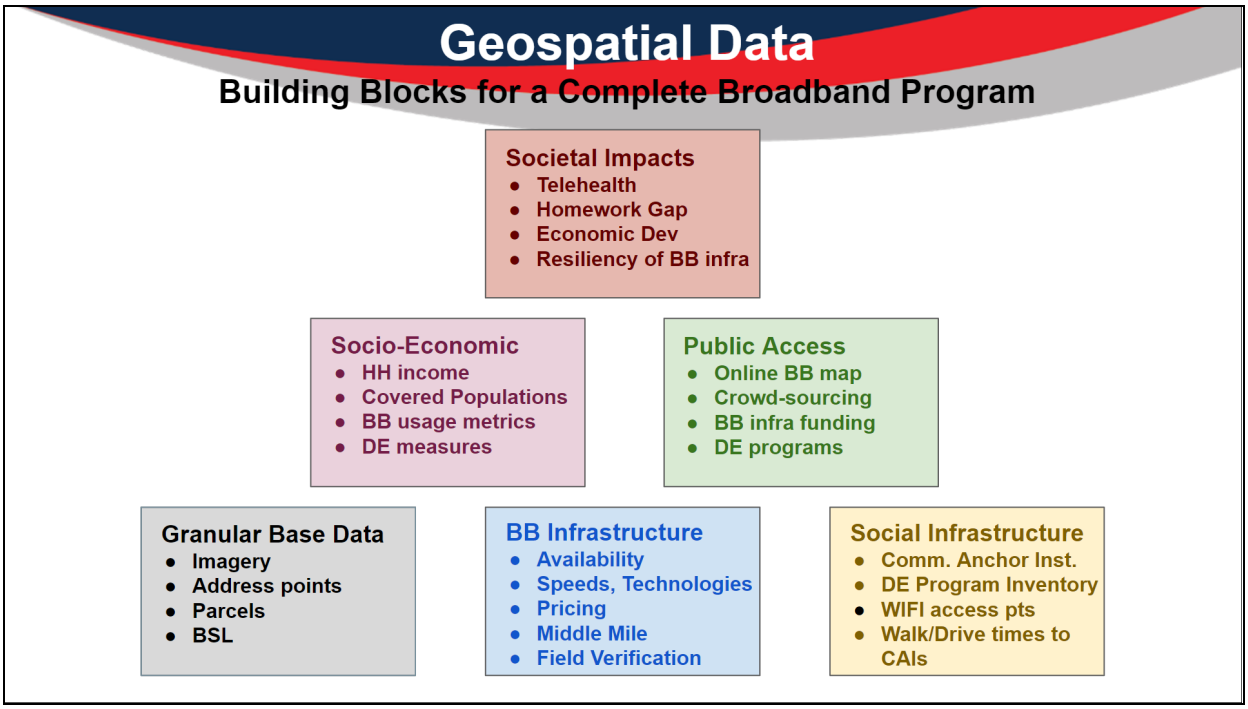
Developing the Broadband Data Program starting now is also an investment that meets longer term needs. The NTIA's BEAD and DEA programs are multi-year programs that require a sustained and consistent supply of data and analysis that begins with planning and transitions to grant program implementation. Once the FCC Challenge and Planning Phase transitions to the Grant Program and Plan Implementation Phase in approximately mid-2024, additional funds (on the order of hundreds of millions of dollars) will be available from the FCC for program implementation. In this second phase which lasts from 4 to 5 years, our proposed Broadband Data Program emphasis will shift to providing a dedicated and consistent broadband data maintenance, analysis, data sharing, results tracking, and support function that is commensurate with the demands of the program implementation.

Our proposed Broadband Data Program is based on AppGeo's Broadband Data Strategy model, which is represented by the pyramid of data building blocks in the diagrams below. In essence, we've enumerated and grouped the many types of data required to realize broadband access, adoption, and use goals. The pyramid structure of the data program illustrates how measurement of societal impacts (in terms of education, workforce, health, environment) is built on the other building blocks. This complete model of a Broadband Data Program is the

foundation for achieving universally-available and adopted Broadband, which is the true measure of success of the programs.



Above: Data Building Block model. Below: Data Building Block Details.



Contracting Through Oklahoma DBITS

The services described in this Statement of Work (SOW) can be contracted for directly through AppGeo's Oklahoma Deliverables Based IT Services (DBITS, Contract Number SW1050AP) contracting vehicle (AppGeo Supplier No. 0000522928 and AppGeo Contract ID No. 0-6603).

AppGeo's DBITS contract includes the following categories of services that cover all of the proposed and potential areas of IT services required for the Broadband Data Program:

- Application Development and Maintenance, Support and Training Planning
- Technology Upgrade and Migration Transformation
- Business Intelligence and Data Warehouse
- IT Technology Assessment, Planning and Procurement
- Independent Verification and Validation and Quality Assurance
- Project Management

All state departments, boards, commissions, agencies, and institutions are eligible to buy off this contract. The ordering process involves the development of a SOW and quote to be approved by the ordering entity. This Statement of Work can be finalized to serve that purpose and a final quote can be developed.

Comprehensive and Continuous Support

The Broadband Data Program is designed to be an ongoing embedded activity that is intrinsic to the way that the Oklahoma Broadband Office will carry out the full breadth of its programs and activities. The early stages of the data program will be heavily weighted towards data collection, challenging the FCC data, and conducting the analysis that supports the State plans for BEAD and DEA. As the grant programs ramp up after the planning stage, the data program will also shift towards program management, tracking, and performance monitoring. This latter stage will involve maintaining the core broadband data, onboarding additional data, as well as adding to the functional capabilities of the Broadband Mapping portal where much of the presentation, analysis, and interaction with the data will occur.

We would anticipate that the early stages will be funded with the $5 million in NTIA state planning support. Receipt of the NTIA planning funds will trigger a 270-day timeline for the completion of the 5-Year Action Plans for BEAD. The Action Plan sets the State's broadband goals and priorities and serves as a comprehensive needs assessment that will inform the state's Initial Proposal to NTIA. Similarly, the State is eligible for federal funding from the NTIA to support the development of a State Digital Equity Plan due 365 days after receipt of funds.

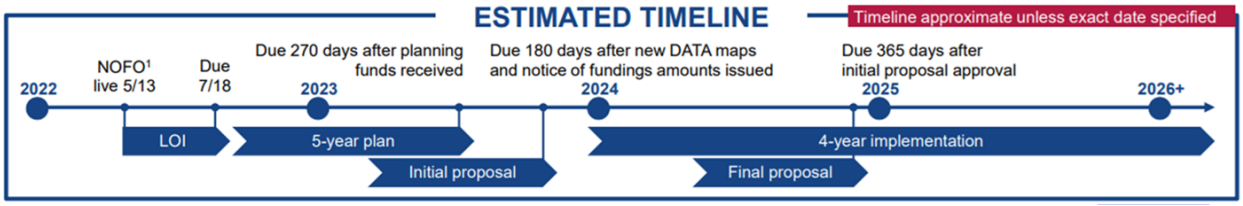
Most immediately, the first Fabric Challenge started September 12th, and BDC Challenges will start in November. The challenge process and the BEAD and DEA Plans will require specific types of data and analysis over the course of the next 9 to 12 months. And these Challenge processes will have implications for the ultimate allocation of State funding.

The Broadband Data Program needs to start in earnest to accommodate this aggressive schedule of program planning and challenge processes.

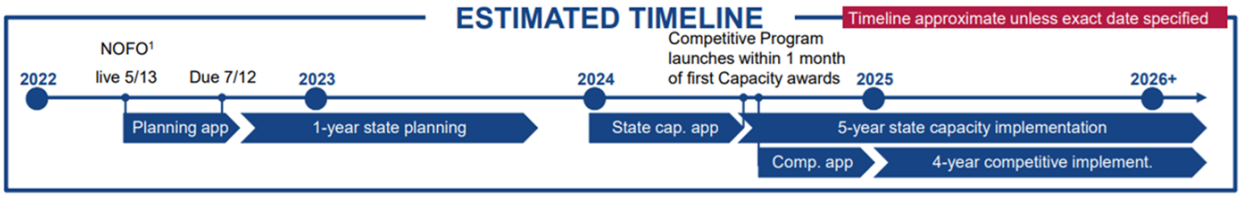
The latter stages of the Broadband Data Program that follow the initial planning focus will be eligible for funding under the state's full BEAD and DE allocations from NTIA (which will exceed hundreds of millions of dollars).

Provided below are the BEAD and DEA timelines as currently communicated by the NTIA:

BEAD Planning and Implementation



Digital Equity Planning and Implementation



Tasks

The following tasks will establish the Broadband Data Program and ensure the State meets key analytical objectives and FCC program deadlines (as shown in the preceding section timelines).

1. Project Management, Ongoing Communications and Coordination
2. Review Existing Resources and Create Implementation Plan for Oklahoma Broadband Data Program
3. Deploy an Interactive Broadband Map Application
4. Conduct Analyses for FCC Fabric Challenge, Maintain the State BSL Map
5. Develop a State-sourced Broadband Serviceable Location (BSL) Fabric dataset
6. Conduct BDC Challenge Process, Maintain the State Broadband Coverage Map
7. Create BEAD and DEA Asset inventories
8. Conduct Geospatial Analysis for BEAD and DEA plan development

Through these tasks we will establish the core data, methods, and analyses that will drive BEAD and DEA planning and program execution. As described above, for 2023 through 2024, these tasks, subject to receiving timely inputs from the State and Tribal Nations, will meet FCC Challenges and BEAD and DE Planning deadlines. When FCC grant program funding starts in late 2024 for 4 to 5 years, the Broadband Data Program will shift to maintaining core data, extending the application functionality, and providing the analyses necessary to support program implementation.

Each of these tasks is described in detail in a separate section below.

Cost Proposal

The following cost proposal table includes all of the task elements described in this SOW. We provide costs for each task for the Planning and Challenge Phase (years 2023 and 2024, respectively) and for the Program Implementation Phase (starting sometime in late 2024 and continuing for 4-5 years), which we price at an estimated annual cost.

We propose that the tasks be completed on a Time and Materials basis, with monthly invoicing that documents progress and work completion against the master schedule and work plan.

The multi-year time horizon of this SOW allows for development of a full and consistent program of collaboration and management across the horizon of FCC funding and programming. This creates efficiency and velocity in our joint work. It allows our respective staffs/teams to coordinate, plan, and make the necessary investments in data, applications, and strategy that will be required to match the FCC program timetables concerning cyclical Fabric and BDC Challenges, BEAD and DE Plan development, and ongoing implementation of broadband coverage, access, adoption, and use programs.

Program Management will establish and maintain a master schedule and work plan that shows the initiation, progress, and close-out of tasks and activities.

Task	2023*	2024**	2025***	Notes/Assumptions
Program Management	$150,000	$130,000	$100,000	
Broadband Data Program Plan	$25,000	-	-	Builds on Guidehouse report. Establishes multi-year plan.
Deploy Interactive Broadband Mapping Applications	$375,000	$300,000	$200,000	Starts with functional requirements analysis and phased deployment plan. Hosting, data updates included.
Fabric Challenges and BSL Data	$150,000	$75,000	$15,000	
Develop Oklahoma BSL Address Layer	$25,000	$375,000	-	Timing will depend on availability of NG911 data to the NENA standard. Annual maintenance will be under the management of the State GIO.
BDC Challenges	$375,000	$225,000	$150,000	After establishment of methods and data, challenge costs will diminish, but updating state data with FCC releases remains a priority.
BEAD and DEA Asset Inventories	$275,000	$75,000	$100,000	After initial data gathering and after BEAD and DEA plans are approved, focus will be on tracking impacts of program plan implementation.
Analytics for BEAD and DEA Planning	$150,000	$125,000	$125,000	(Initial effort to support Plan development, followed by on-demand analytical services at a low level of intensity)
Commercial Data - Annual Subscription	$200,000	$200,000	$200,000	Estimated cost, TBD. Ecopia for BSL Fabric Challenge and DataAxle for Digital Equity analyses.
Total	$1,725,000	$1,505,000	$790,000	The recurring annual cost starting in 2025 is funded by the grant programs, and will be adjusted to match evolving requirements..

*Includes costs for CY 2023, AND also includes any anticipated costs that may be incurred at the end of CY 2022 depending on the start date.

**2024 includes the completion of the planning and the start of the program implementation and funding.

***2025 cost is a benchmark for annual Broadband Data Program annual cost during the program implementation phase which lasts 4 to 5 years. In two years time and as State and FCC requirements become clearer, these costs will be reviewed and adjusted, with the potential to adjust task scope.

Task 1 - Project Management, Coordination and Communications

The project will require ongoing coordination and communication across a broad range of activities required to meet FCC deadlines and State objectives. AppGeo will assign a senior team to oversee and manage the scope of work as described in this document; a team that can also stay engaged to provide strategic continuity and support as the federal requirements and the state data program evolve.

The AppGeo Management Team will be led by certified PMPs with significant project/program leadership experience, and with direct experience working on similar (broadband mapping, analysis, applications) projects. Management Team members include Morgen Healy, PMP, Vice President and Principal, and Brian Coolidge, PMP, Senior Project Manager, each having more than 20 years of experience. Morgen as Principal-in-Charge will operate at the program level, attend to contracting and subcontracting. She will be the point of contact (POC) to the state for strategy, scoping task assignments, program schedule, and program deliverables. Brian will focus on the day-to-day management of tasks and schedule, coordination and communications, liaison to subcontractors at the Task level, and serve as POC to the state who is accountable for all task level details and reporting. It is our experience that this division of role specificity between Program-level and Task-level management helps streamline communications in a way that makes the state and the State Broadband Office's management of the data program more efficient.

Activities

- Establish and maintain the master project schedule and overall Program Management Plan
- Hold regular coordination meetings with the State Broadband Director and staff; provide meeting notes and track action items
- Maintain Task-level documentation, progress reports, plans
- Develop additional task level Scopes of Work as needed to meet project objectives
- Coordinate communications, assignments, activity and schedule with partners
- Oversee and check quality of work and deliverables of Team and partners
- Ensure quality, timeliness, and utility of all deliverables

Timeline

- Will continue throughout the performance period of this Scope of Work

Deliverables

- Master schedule maintained throughout the project
- Status Reports and Meeting notes
- Task level progress reports and project activity documentation
- Records of decisions, contracts, subcontracts, and other program level documentation

Assumptions

- The state will assign a primary point of contact to interact with our Management Team
- Weekly to bi-weekly meetings are anticipated at the start to match the pace of the work, with the expectation that bi-weekly to monthly meetings will become the norm.
- Inputs that are required from the State or Tribal Nations will be provided in a timely manner in keeping with the project schedule
- Cooperation and participation by Tribal Nations will be available to support the Broadband Data Program objectives and tasks.

Task 2 - Broadband Data Program Plan

Over the course of the next five years, data will need to be collected, updated, and used in different combinations to inform effective State Broadband Office management and decision-making, provide transparency to the public to ensure accountability and establish trust in the programs, and drive accountability by outside participants and effective use of the federal broadband funds.

The purpose of the Broadband Data Program is to ensure that the goals of the Oklahoma Broadband Office will be met and supported with appropriate data.

The Broadband Data Program plan will be constructed using a building block approach, as depicted in the high-level conceptual diagram shown on page 3. Creating and onboarding individual data will be driven by the timing of critical activities such as the FCC Fabric Challenge Process, the submission to NTIA of the state's Initial BEAD Proposal, and other milestones.

Activities

Our team will develop a five year implementation plan for a Broadband Data Program to ensure that the right data is available at the right time, and that it is securely managed, and maintained.

The planning process will leverage all existing sources of information that describe the current data resources, starting with in-depth review of the recent Guidehouse report, and including if/as needed review of state data, FCC data, and commercial data sources.

The core elements or building blocks of the data program are the actual datasets, sourced from state data, local/county/tribal data, third-party commercial data, asset inventory data, field validation data, survey data, broadband speed test data, provider-sourced data, FCC data, NTIA data, and many other data sources currently known (and unknown or not yet created).

This task is not an inventory but rather an action plan to establish the resources, schedule, and management necessary to ensure that appropriate data will be in place at the right time to meet each specific requirement of the programs to be carried out by the State Broadband Office. The AppGeo and Connected Nation team will work closely with the State Broadband Office to turn existing documentation into this action plan. An annual review cycle will ensure the relevance and currency of the strategy over the five year time frame.

Deliverables

- Create a multi-year plan for implementation of a Broadband Data Program that aligns action with FCC and NTIA program requirements and State Broadband Office needs and goals.
- Leverage all existing resources (e.g., Guidehouse documentation) to guide the data implementation planning
- Address key aspects of data program management:
    - Access or storage, handling, and security of relevant data
    - Documentation of metadata for each dataset showing the provenance of the data and other relevant information to ensure “fitness for use”
    - Cost effective acquisition and maintenance of data across the five year horizon
    - Determination of access needs for each dataset and any protections, aggregation, or other procedures to be applied to enable appropriate access

Timelines

- Work on the data program plan will begin immediately and be completed within three months from project commencement
- Annual review and updates to the Strategy will ensure relevance and alignment with task progress, external requirements, and State Broadband Office goals.
- Since the data program will be implemented with an incremental, building block approach, the schedule of data acquisition/aggregation/analysis will be agreed upon between the State Broadband Office and the AppGeo and Connected Nation team as a part of the master schedule for all tasks to be developed by the Program Manager.

Assumptions

- The AppGeo and Connected Nation team will configure modern cloud services to host and manage the datasets, and will administer the services.
- Most use and access of the public data will be through the Interactive Broadband Map described in Task 3.
- Use and access to data resources will be controlled and secured, with appropriate access granted to approved recipients, such as ISPs, State Broadband Office staff, outside contractors working on projects, FCC and NTIA, and so forth.

Task 3 - Deploy an Interactive Broadband Map

AppGeo will develop an interactive broadband map application using its template for broadband mapping applications. AppGeo's application template provides a flexible platform for supporting the overall data program; a platform that can serve as a hub for presenting up-to-date information to a wide audience (including the general public and login-only access), that offers a way to solicit external feedback (comment forms, map markup) from the public and ISPs, and that can support State Broadband Office analytical needs, planning, and decision support (overlay, downloads, map sharing, automated calculations, etc).

Some examples of functional capabilities to be reviewed and prioritized for phased deployment through the requirements analysis, include:

- Display existing broadband coverage and speed information, or lack thereof (i.e., served and under/unserved locations)
- Display of data layers for federal, state, local, BEAD, and SDE Planning and Capacity program deployments and implementation and grant programs, including project footprint polygons and geospatial indicators of implementation progress
- Publishing geographic representations of determinations of BEAD eligibility
- Tools/workflows that help broadband providers evaluate the BEAD eligibility for their proposed potential project footprints, e.g., 80% of locations be unserved (for projects qualifying as unserved/first priority) or underserved (for projects qualifying as underserved/second priority)
- Supporting the FCC and BEAD challenge processes by allowing for stakeholder review of data and identification of potential challenges
- Mapping and spatial analysis of anchor institutions, covered populations, geographies of digital vulnerability, etc.
- Incorporating additional data layers, such as broadband deployment cost analyses, internet service price maps, and Affordable Connectivity Program availability, for map-based presentation and comparison with other layers
- Helping the state to review/optimize BEAD subgrantee selection in a data-driven and transparent way

The interactive map template will meet an agreed set of priority functional requirements, and establish the foundation for adding data and functional capabilities going forward.

Activities

- Requirements collection and detailing through meetings with the state and stakeholders; Develop workflow and requirements document

- Deploy broadband map template in an initial phased, prioritized approach that coincides with state priorities and federal program requirements.
- Apply best practices for iterative and progressive configuration, functional enhancement, deployment, test, document, and go live
- Maintenance, administrative support, hosting, monitoring
- Data uploads to maintain currency of application data

Deliverables

- Requirements document and priority roadmap
- Interactive web mapping application deployment
- Administrative and end-user documentation and online help

Timeline

Our goal is to have the basic application up and running as soon as possible. Working with the agreement of the State Broadband Office, we can fast track the deployment of a basic broadband data viewer in parallel with the more formal requirements gathering.

Our standard approach to a web application deployment using our template designs has this basic timeline:

- Complete the full requirements within 60-90 days of project kick off and start up.
- Begin initial deployment of priority functions and features within 30 days of review/acceptance of the requirements assessment.
- Make adjustments to implementation schedule to deliver agreed upon priority functions and deployments on a fast track to meet key analytical needs.

Assumptions

- The state will be able to provide timely input to the definition of functional requirements and establishment of priorities for phased deployment
- The tool will be deployed in phases so that priority functions are aligned with BEAD and DE requirements and the state's analytical requirements
- For each major deployment phase, the State will have 30 days to review and approve that deliverable

Task 4 - Conduct Analyses for FCC Fabric Data Challenge Process

The FCC is launching separate, but related, challenge processes for the broadband serviceable location fabric (Fabric Challenge) and the Broadband Data Collection (BDC Challenge) filings. AppGeo will provide for an efficient and effective FCC challenge process, following procedures defined by the FCC, using modern data manipulation tools, run by a team of data scientists, and overseen by SMEs.

The FCC has defined a Fabric challenge process that allows states to submit a combination of their own state data, third party data, and other supporting data evidence to establish each state's broadband serviceable locations (BSLs). The challenge process is detailed and specific, and has implications for the level of federal BEAD funding. The following activities provide a framework to get started right away; and define an approach that can be repeated as many times as needed to meet FCC requirements or improve the state's BSL data.

Activities

- Evaluation and acquisition of 3rd party BSL data for the challenge process - it is anticipated that some combination of DataAxle and/or Ecopia will be used. Note that use of 3rd party BSL data can be replaced by a state-owned BSL dataset as soon as it is developed as Task 5 in this Scope of Work. Third-party licensed data will also be supplemented with additional public datasets, including a new nationwide building footprint layer created by the Oak Ridge National Lab, as well as state address points and parcel datasets.
- Automated comparison of FCC BSL data with 3rd party BSL data to create an output file showing all differences between the two datasets. Sort differences by type and priority, validating with parcel and building footprint data. Prepare a detailed summary for review and acceptance by the State.
- Format the challenge data to fully comply with the FCC data specifications for Fabric Data Challenge Process submission, including use of FCC codes indicating the specific reason for each BSL challenge location.
- Submit the bulk Fabric Data Challenge to the FCC on behalf of the Oklahoma Broadband Office. Note that the state must attest to the accuracy of Challenge submittals.
- Upon challenge adjudication decisions by FCC, incorporate all accepted challenge data into the BSL layer for use by the state as the authoritative BSL data for all Oklahoma Broadband Office analyses and decisions.
- Evaluate rejected challenge data for possible resubmission to the FCC challenge process based on additional supporting evidence or other corrections.

Deliverables

- Summary of potential challenge BSLs identified through comparison of FCC data and 3rd party data, for state review and acceptance.
- Preparation and submission of BSL challenge data to the FCC, per their detailed specifications.
- Incorporate accepted challenge data into final BSL layer for state use
- Evaluate rejected challenge data for possible correction and resubmission to FCC.
- Documentation of methods, data and summary of results.

Timeline

- FCC Fabric Challenge Process opened on September 12. Priority is to ensure that all viable BSL locations are identified, since the BEAD funding formula is based on BSL metrics. Other challenge categories in the BSL data (unit counts, incorrect building identified, residential vs. business coding, etc) may be submitted as a secondary priority in a later challenge submission.
- The AppGeo Team will complete the first-round FCC Fabric Challenge Process task as soon as possible after notice to proceed.
- FCC will be releasing an updated version of their BSL Fabric data at the start of each BDC collection period, so the next BSL Fabric data release is expected on January 1, 2023. The AppGeo Team will conduct a second-round Fabric Challenge to ensure that Oklahoma has made its best possible effort to correct deficiencies in the FCC Fabric data prior to NTIA making their state funding allocations in mid-2023.

Assumptions

- This task is focused heavily on the first two rounds of Fabric Challenge, since those will impact BEAD funding allocations. FCC will be releasing updated versions of the Fabric dataset every 6 months, so a repeatable process can easily be carried out with each new release, with the understanding that the value of additional Fabric Challenge submissions will be substantially eliminated after the NTIA makes their BEAD funding allocations. Long term, Oklahoma can rely on use of its own BSL layer, identified in Task 5, and could potentially discontinue the use of licensed third-party data for this purpose.
- AppGeo will apply a proprietary methodology that we have developed.

Task 5 - Develop Statewide Broadband Serviceable Address Location Points

The State's vision is to develop a serviceable BSL layer using public-sector Geographic Information Systems (GIS) address point data, property tax assessment data, and GIS tax parcel polygon data built from the data maintained by the counties and 9-1-1 Public Safety Answering Points (PSAPs) as the primary sources. This new state dataset will be created by aggregating and harmonizing the available state and county data into a consistent and complete statewide dataset. The value of a comprehensive and reliable statewide address point dataset is its use to identify gaps in broadband infrastructure for broadband services, for digital equity analysis, and for broadband infrastructure planning.

A significant advantage to the State of this strategy is that the resulting address data is unencumbered by commercial terms of use restrictions, is not subject to annual licensing fees, can be maintained by authoritative stakeholders within the State, and can potentially attract funding from and service other statewide agencies, such as public safety, workforce and economic development, transportation, natural resources, and state planning functions.

Activities:

- Review of state address data by PSAPs and counties, identifying gaps and inconsistencies that may require follow-up.
- Amass state parcel and appraisal data for assignment of business and residential codes to individual addresses.
- Gather available building footprint data (Oak Ridge National Lab, counties, PSAPs, Microsoft, open data) and associate with address points (we estimate that more than 95% of BSL locations will have an available building footprint)
- Establish a standard GIS schema for a state BSL layer created from the address points and building footprints.
- Devise plan for improving and completing address data at the county level, in expectation that the state will become the curator of the data, in collaboration with county partners.
- Design and implement workflows and supporting systems to aggregate and maintain the state address data layer by the state.
- Ensure compliance of address data with standards required for BSL and other potential uses, including 911, to maximize the ROI of the address data.
- Provide a commercially-licensed address point data set that can be used as a BSL layer while the State dataset is being developed.

Deliverables:

- Report documenting the review and assessment of currently available datasets to be used as the source for creating a statewide BSL layer.
- Statewide building footprints to be compiled from existing, available sources (no new data development unless an additional task is agreed upon), that will be associated with address points though a spatial match process.
- Establishment of standards for a state BSL layer, to include a schema, plans to improve and complete the statewide address layer, workflows to support local and state collaboration led by the state, and design of supporting systems.
- A plan for long term maintenance and funding of the statewide layer

Timeline:

- This task will commence immediately following contract signing for this scope of work.
- Total timeline is estimated to be 18-24 months, with major dependencies on the state team who are expected to bear primary responsibility for data gathering from the counties and ongoing state/local coordination activities.

Assumptions:

- This activity will be coordinated with the state, with the expectation that the State GIO and 911 offices will play a central role.
- The state will collect the source datasets from the counties and will handle all coordination with the county stakeholders.
- Costs - initial and ongoing - This task is a candidate for a shared funding strategy with other beneficiaries of the data. AppGeo will facilitate a process to coordinate funding.

Task 6 - Prepare for the FCC BDC Challenge Process

The FCC is developing guidance for the Broadband Data Collection (BDC) Challenge Process which will require states to apply a combination of their own state data, third party data, stakeholder feedback, and field verification to validate each state's broadband provider coverage at the address level of granularity. The challenge process will be detailed and specific, and have implications for BEAD funding eligibility. In advance of the detailed FCC guidelines, our Team has outlined a process for the challenges that can be adapted to the forthcoming guidance and technical specifications. The following activities provide a framework to get started right away and flexibility to meet FCC requirements.

Activities

- Analyze current broadband data collection for areas that should be targeted for further investigation (e.g., service areas not represented by the most granular data, low confidence in accuracy, etc.).
- Collect updated coverage data from providers (new FCC BDC reporting format) and compare/scrutinize data for accuracy, seeking clarifications from providers as needed.
- Conduct targeted, independent research on provider service areas and available speeds; to include targeted field verification and survey-based verification methods.
- Upon release of BDC data from the FCC (anticipated in Nov/Dec time frame), analyze FCC data to identify candidates for the challenge process.
- Prepare a summary report of challenge data candidates, by type and priority, for review and acceptance by the State Broadband Office (SBO).
- Process and format challenges into required FCC Challenge Process specifications (not yet released by FCC).
- Submit BDC Challenges to the FCC on behalf of the SBO or prepare for submission by the SBO.
- Upon challenge adjudication decisions by FCC, incorporate all accepted challenge data into the broadband coverage data layers for use by the SBO as the authoritative coverage data for all SBO program analyses and decisions.
- Evaluate rejected challenge data for possible resubmission to the FCC challenge process based on additional supporting evidence or other corrections.

Deliverables

- Summary of potential challenges identified through comparison of FCC data, ISP data, 3rd party data, and field verifications, for SBO review and acceptance.

- Preparation and submission of BDC challenge data to the FCC, per their detailed specifications.
- Incorporate accepted challenge data into final broadband coverage layers for SBO use
- Evaluate rejected challenge data for possible correction and resubmission to FCC.
- Documentation of methods, data, and summary of results.

Timeline

- FCC BDC Challenge Process is expected to open upon initial release of BDC data, anticipated in the Nov 2022 timeframe. The BDC Challenge Process is continuous, but since BDC data releases will occur twice each year, the AppGeo Team anticipates that this will be a repeatable process to be conducted shortly after each new BDC data release by the FCC. The AppGeo Team further anticipates that the volume of individual challenges will decline with each new data release.
- AppGeo Team plans to complete the FCC BDC Challenge Process within 3 months of each new BDC data release.

Assumptions

- The FCC will release BDC challenge guidance before the end of Q4 2022.
- This task will be conducted upon each new release of BDC data by the FCC; twice per year, through duration of the scope term
- Data obtained through targeted field validation and other collection efforts will be applicable to and allowable in the challenge process.
- The initial BDC Challenge Process will be especially important because it will affect BEAD allocations; later iterations will become significant for tracking progress toward coverage goals at a geographically detailed level.
- The BDC challenge process will be ongoing, however, a mid-2023 cut-off date is expected for challenges to be submitted and adjudicated that would impact the NTIA BEAD program.

Task 7 - Address the Asset Inventory Requirements for BEAD and DE

This task focuses on developing several elements in our data building blocks model presented above. Through the development of the Broadband Data Program, this task's scope - specific data sources and methods - will be given more definition. Because of the attention given to this requirement in both BEAD and DEA, we include it as a specific task in this SOW.

AppGeo will catalog a wide variety of "asset inventories'' in order to support data-driven planning efforts. The phrase "asset inventory" has multiple definitions in circulation, so for clarity, it is here used according to the definitions in the BEAD and DEA NOFOs. The BEAD NOFO gives it this meaning:

> *Include an asset inventory that catalogs broadband adoption, affordability, equity, access, and deployment activities occurring within the Eligible Entity and identifies and provides details regarding any relevant partners, such as community-based organizations and CAIs that may inform broadband deployment and adoption planning.*

And the DEA NOFO gives it this, rather similar, meaning:

> *An asset inventory, including current resources, programs, and strategies that promote digital equity for each of the covered populations, whether publicly or privately funded, as well as existing digital equity plans and programs already in place among municipal, regional, and Tribal governments;*

While there are differences, for example, BEAD mentions "deployment" and DEA mentions "covered populations," the definitions can reasonably be conflated into a single set of data deliverables that can be used for multiple purposes.

In defining this task, we recognize that there may be synergies across information gathering activities that are already underway and/or that will occur as a part of other State Broadband Office initiatives. For example, the AppGeo Project Team anticipates that the stakeholder engagement effort required by BEAD and DEA will generate a lot of information about ongoing efforts and activities in the State, which can be captured, mapped where appropriate, and stored as inputs to the asset inventories required in key BEAD and DEA deliverables. Close coordination with the State Broadband Office in scoping our Team's data acquisition effort will avoid redundant efforts and expenditures.

We note, as well, that Oklahoma will likely have additional challenges with respect to gathering these asset inventories in the 39 federally-recognized Tribal Nations located within the state. We are not yet informed on how the SBO plans to handle coordination, outreach, and data gathering from Tribal Nations, so we note here that our estimates do not include any tribal-specific provisions. We will be pleased to adjust our approach and cost estimates when we have more information on SBO's tribal strategy.

To align with and integrate this broader landscape of data collection and inventory, AppGeo will focus this Task on the *geospatial* representations and analysis of the asset inventory, answering questions like:

- *What is the rate of adoption and use* of broadband?
- *Where are* the Community Anchor Institutions (CAIs) and programs that contribute to promoting access, adoption and use/digital inclusion, and *what is their geographic reach?*
- *How does* the presence and activity level of CAI programs map onto the places where DEA covered populations live, according to Census and other data sources?

For the purposes of this task, "Assets" appropriate for inclusion in the "inventory" include but are not limited to:

- Provider service areas and expansion
- Deployment areas/locations from various federal programs (e.g., USDA ReConnect, FCC RDOF, etc.)
- US Census Bureau American Community Survey (ACS) datasets that contain broadband adoption statistics
- CAI locations and connectivity levels
- WiFi hotspots and other public internet access points
- Broadband pricing
- 3rd party or survey-based data on broadband adoption and use, digital literacy and technology ownership
- Local digital skills training offerings and resources provided through CAI

Activities

- Further refine definition of data to be collected for targeted assets
- Gap analysis with available data and/or with current/planned data collection programs
- Develop plan for data acquisition or collection as needed, and for integration of each asset inventory type

- Execute data acquisition/collection plan
- Incorporate data into interactive geospatial tool
- Perform analyses to turn data into actionable information for BEAD and DE planning and program implementation
- Document all data and sourcing

Deliverables

- Asset inventory in the form of documented data sets
- Loading of key data layers into the interactive geospatial tool for display and/or sharing as appropriate

Timeline

- This data collection effort will be conducted with sufficient intensity so as to support the development of the BEAD 5-Year Action Plan/State Digital Equity Plan that will submitted to NTIA.
- In parallel with updates to broadband coverage mapping, updates to adoption and use data will be an ongoing effort to provide the State with measurement of progress toward closing the digital divide

Assumptions

- AppGeo's approach to this Task will take into account the potential for other funded initiatives to provide data that AppGeo can incorporate into this inventory, such a the far-reaching stakeholder engagement process to fulfill the BEAD and DEA requirements, which the SBO will support and/or benefit by capturing information from.
- The Interactive Mapping Application may play a valuable data collection role for this Task as well by providing means for crowd-sourced feedback. But further discussions will be needed to define the activities and effort level in light of coordination among related and complementary projects.
- Depending on the level of detail or frequency of data collection, additional funds may be required.
- This task may be revised when we have information regarding the SBOs planned strategy for outreach, coordination, and data-gathering from the state's 39 Tribal Nations. No tribal-specific provisions are currently included.

Task 8 - Spatial Analysis for BEAD and DEA Planning

The AppGeo team will act as an on-call analytics engine to provide analysis needed for the BEAD and DEA plan development to meet plan deadlines (expected to be in late 2023). As the planning process kicks off in late 2022 or early 2023, the data and spatial analysis we propose will support the process of stakeholder identification, engagement, and analysis of feedback, as well as provide mapping and information to drive the planning process and illustrations for the final plans.

Activities:

- Review and identify innovative and best analytical practices from other states and other entities engaged in BEAD and DEA activities
- Provide the baseline data analyses - coverage, access, adoption, use - that drive the planning process
- Process and analyze data to support the BEAD and DEA stakeholder engagement activities throughout the state
- Develop presentation materials for stakeholder engagement and outreach
- Process and analyze data and prepare for incorporation into the BEAD 5-Year Action Plan and State Digital Equity Plan

Deliverables

- Data and analyses for use in BEAD 5-Year Action Plan and State Digital Equity Plan
- Data and analyses for use in developing stakeholder engagement materials
- Analysis of stakeholder feedback

Timeline

- This data collection effort will be conducted with sufficient intensity so as to support the development of the BEAD 5-Year Action Plan/State Digital Equity Plan that will submitted to NTIA.

Assumptions

- The SBO will leverage and work with existing stakeholder groups to lead engagement efforts.
- Effort will be scaled to meet the evolving program deadlines and scope.
- Close coordination with the State Broadband Office staff resources

Qualifications and Readiness of the Team

AppGeo and Connected Nation have an established formal agreement to partner together on state broadband projects, and together have decades of relevant experience and a deep bench of expertise.

AppGeo and Connected Nation are uniquely qualified and prepared to provide the full range of services proposed in the SOW.

- AppGeo worked with the Oklahoma GIS to design, build and maintain the state's first Broadband Mapping site in 2010
- Between them, AppGeo and Connected Nation have mapped and created interactive mapping applications for broadband for over 20 states. Connected Nation has mapped over 40% of the U.S. landmass.
- Connected Nation (a non-profit) was founded solely to promote broadband expansion, access, adoption and use across the nation more than 20 years ago
- Both firms have broadband project experience with tribal nations on tribal lands
- Both firms are experts in GIS, spatial analysis, data visualization, and mapping
- Both firms have specific project experience with stakeholder engagement, analysis, and mapping associated with digital equity, stakeholder engagement, broadband planning
- CN has specific and deep expertise, technology and trained staff for field verification of broadband infrastructure, technology and coverage measurement

Additional information and references can be provided upon request.