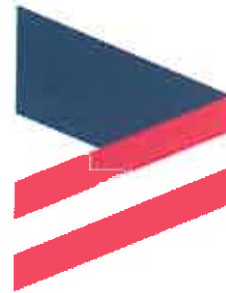


 ORIGINAL

**CONNECTED
NATIONSM**



**Connected Nation's Response to the
State of West Virginia's Request for Proposal
for Broadband Enhancement Consultant**

CRFP # 0327 COM1800000001

Technical Response

Connected Nation
P.O. Box 3448
Bowling Green, KY 42104
o 877.846.7710
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Thomas W. Ferree, Chairman & CEO
tferree@connectednation.org



February 26, 2018

02/27/18 11:22:09
@ Purchasing Division

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February 26, 2018

Melissa Pettrey
Department of Administration
Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

Dear Ms. Pettrey:

On behalf of Connected Nation, it is a privilege to submit the following response to the State of West Virginia. For over 16 years, Connected Nation has worked collaboratively across public and private sectors to ensure affordable broadband availability and create better business environments, more effective community and economic development, efficient government processes, enhanced education, and improved healthcare delivery.

Since its inception in 2001, Connected Nation's mission has been to change lives through technology and bring the benefits of universal broadband, adoption, and use to all communities and ensure their competitiveness in the twenty-first century global economy. We remain committed to building on this experience and look forward to leveraging our expertise in broadband programming to deliver optimal impact and lasting results on West Virginia's broadband landscape.

Please accept this response and my personal commitment to the success of West Virginia's broadband development efforts. If you should have any questions, feel free to contact me by e-mail at tferree@connectednation.org or via telephone at 877.846.7710.

Sincerely,

A handwritten signature in blue ink, appearing to read "Tom Ferree".

Thomas W. Ferree
Chairman & CEO

Attachment A: Vendor Response Sheet

Qualifications and Experience

Provide a response regarding the following: firm and staff qualifications and experience in completing similar projects; references; copies of any staff certifications or degrees applicable to this project; proposed staffing plan; descriptions of past projects completed entailing the location of the project, project manager name and contact information, type of project, and what the project goals and objectives where and how they were met.

Firm Qualifications and Experience

Connected Nation – Leader in Community Broadband Planning and Training

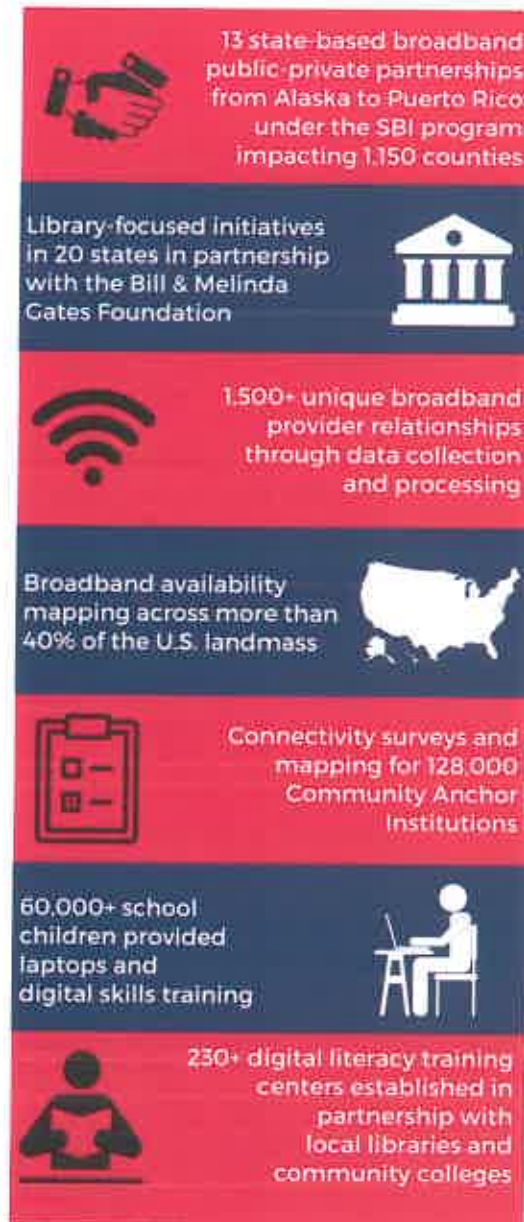
The organization was originally founded on February 19, 2001, as the Center for Information Technology Enterprise (CITE) at Western Kentucky University in Bowling Green, Kentucky, to promote technology expansion in western Kentucky.

CITE evolved into ConnectKentucky, a public-private initiative focused on conducting broadband mapping research and grassroots community-level planning statewide. ConnectKentucky led community planning efforts in all 120 Kentucky counties which helped to expand the use of the emerging technologies of the early 2000s.

Other states began to seek that same type of guidance, and, to facilitate a multi-state consultancy, Connected Nation was formed in 2007. The following are just some examples representing the depth of experience the principals and project team would bring toward supporting the Broadband Enhancement Council's goals and objectives.

Extensive Experience With Multi-Sector Broadband Engagements

Connected Nation (CN) has over 16 years of experience providing strategic consulting and advisory services at the federal, state, and local community levels in order to accelerate and expand broadband access. CN's strategic consulting and advisory services provide a multi-discipline view of the broadband landscape by providing broadband and telecommunications research, policy insights, mapping, engineering, and federal, state, and local strategic planning services.



CN has experience and a process to inform and develop a comprehensive plan with measurable outcomes that is representative of multi-sector stakeholders. Evidence of state-level engagement and comprehensive plan development include the production of the Nevada State Broadband Action Plan and Puerto Rico's Gigabit Island Plan. In every planning process, CN works with state stakeholders to develop a holistic view of the broadband landscape that extends beyond broadband infrastructure and deployment to include the present and planned adoption and use of broadband among residents and businesses.

CN enjoys a strong policy staff that fully understands the telecommunications industry, drawing on years of experience working with states on broadband issues and having experience in Washington both with the FCC and with our nation's legislators. This experience allows for robust development of policy and programs that can help pave a mutually agreeable path toward greater availability and expansion of broadband services.

Given the extensive experience that CN has had helping states achieve their broadband-related goals, CN proposes an approach that would assist the state in ensuring it has a firm foundation from which to advance its broadband plan, and to assist the Broadband Enhancement Council with its implementation goals and strategies.

CN has facilitated the development of state-level task forces or similar governance committees in 11 states focusing on strategic planning initiatives related to broadband. Examples include, but are not limited to:

- Alaska Broadband Task Force
- Connect Iowa Advisory Committee
- Kentucky Steering Committee
- Michigan Collaborative Broadband Committee
- Minnesota Governor's Task Force on Broadband
- Nevada Broadband Task Force
- Ohio Technology Association
- Puerto Rico Broadband Task Force
- Connect South Carolina's Broadband Advisory Council
- Connected Tennessee Steering Committee
- Texas Broadband Task Force

Under the U.S. Department of Commerce's State Broadband Initiative grant program administered under the National Telecommunications and Information Administration, Connected Nation became the single most prolific broadband data collection and planning entity in the country. Links to several State Broadband Initiative final grant reports are provided below:

Connect Alaska: <http://www.connectak.org/ak-final-grant-report>

Connect Iowa: <http://www.connectiowa.org/ia-final-grant-report>

Connect Michigan: <http://www.connectmi.org/final-grant-report>

Connect South Carolina: <http://www.connectsc.org/sc-final-grant-report>

Connected Texas: <http://www.connectedtx.org/tx-final-grant-report>

Connected Tennessee: <http://www.connectedtn.org/tn-final-grant-report>

Recognition and Awards of Note

2005

Selected by Appalachian Regional Commission to lead broadband community planning and training efforts in eastern Kentucky.



2006

Received the Southern Growth Policies Board Innovator Award for the No Child Left Offline program to provide refurbished computers to children enrolled in free and reduced lunch program in multiple counties in eastern Kentucky.



2006

Received the United States Economic Development Administration's Excellence in Innovation Award.



2007

Profiled by *The Economist* magazine in an article entitled "Wiring Rural America" for efforts to build public-private broadband partnerships.



2008

Recognized by *The Wall Street Journal* as one of seven most innovative economic development efforts globally.



2008

Received the Susan G. Hadden Pioneer Award presented by the Alliance for Public Technology (APT), which honors individuals and organizations that advocate for widespread public access to advanced telecommunications.



2009

Selected by 12 states and 1 territory as the designated entity to lead all efforts under the NTIA's State Broadband Initiative and provided approximately 20% of all National Broadband Map data.



2009-2011

Selected as the lead partner by the Bill & Melinda Gates Foundation to work with public libraries in 20 states in a project called Opportunity Online, which brought together local libraries and community stakeholders to plan for broadband sustainability efforts locally.

BILL & MELINDA GATES foundation



2010

Recognized for efforts in Ohio to establish 250 Every Citizen Online digital skills training centers in partnership with libraries and community colleges statewide.



2010

Recognized for efforts in Tennessee through the Computers 4 Kids program that distributed computers and digital skills training to more than 60,000 children across Tennessee, starting with children in the state foster care program.



2011

Selected as key partner in FCC's Connect to Compete program.



2011-2018

Recognized for seven years as being one of the Best Places to Work in Kentucky by the Kentucky Society for Human Resource Management in conjunction with the Kentucky Chamber of Commerce.



2013

Received Honorable Mention for PR Daily's Annual Award for corporate social responsibility.



2014

Chosen as part of the White House's ConnectedED to administer school selection process for \$100 million commitment to provide free mobile broadband Internet access to select middle and high school students in Title 1 schools across the country.



2015

Awarded contract with the Universal Service Administrative Company in support of efforts to direct Universal Service Funds to community broadband services.



Gathering Information and Conducting Surveys

Data Collection

In 2009 Connected Nation became the single most prolific broadband data collection and planning entity in the country under the U.S. Department of Commerce's State Broadband Initiative (SBI) administered by the National Telecommunications and Information Administration (NTIA). Below are some numbers reflecting the scope of that broadband data collection and processing effort.

- 13 state-based broadband public-private partnerships, from Alaska to Puerto Rico, impacting 876 counties
- 1,500+ unique broadband provider relationships in data collection and processing
- Broadband availability mapping across over 40% of the U.S. landmass
- Connectivity surveys and mapping for 128,000 Community Anchor Institutions

Over the course of the five-year SBI grant program, the Connected Nation team processed, prepared, and delivered over 54.5 million broadband records in 110 fully compliant and on-time data submissions to the NTIA.

These efforts essentially reflect some of Connected Nation's experience in data collection on the *supply side* of broadband, but in order to get the full picture, *demand side* information is needed. Connected Nation also has significant experience in conducting multi-sector surveys and gathering localized information related to the adoption and use of broadband or current and future need.

State-Level Surveys

Since 2010, Connected Nation has conducted over 80 state-level technology surveys across 12 states to understand the adoption and use of broadband among residents and businesses. A brief overview of the surveys is as follows:

- **Residential Surveys** - Measure technology adoption among adult heads of households. Recent data collection for the survey has included digital skills assessment of adults, broadband and technology use among school-age children, and online spending habits.
- **Business Surveys** - Assessment of how technology is used among businesses. Surveys have addressed areas of interest including technology use among women-owned businesses, technology skills required by employers, and the economic impact of online sales for businesses in a variety of sectors.
- **Non-Adopter Surveys** - Survey of adult heads of households that do not subscribe to home broadband service. In-depth insights are offered by examining barriers to adoption by demographics and willingness to pay for broadband service.
- **Broadband as an Economic Development Tool** - Survey conducted among economic development professional to determine how clients view broadband, what businesses are seeking in broadband availability at potential locations to build or expand, and what communities can do to help attract businesses that need a digitally skilled workforce and available high-speed Internet service.

County-Level or Community-Level Surveys

In late 2011, Connected Nation launched the Connected Community Engagement Program (ConnectedSM) to facilitate and equip communities across the nation with the knowledge and tools to develop a formal Technology Action Plan and set the course for addressing broadband issues and opportunities in their communities. In the past 4 years, Connected Nation has engaged 344 communities and more than 3,000 local community team members and completed and published over 149 community Technology Action Plans.

Data collection via surveys is one of the most critical phases of the community engagement and requires significant community outreach across sectors and to residents and businesses. Connected Nation has a long history of establishing and working closely with core broadband planning team members to distribute, collect, and track survey responses to inform where additional outreach may be needed. Connected Nation's experience shows that successful data collection efforts require strong community leadership. Historically, projects with strong community involvement advance more smoothly, produce expected results, and foster strong community satisfaction. Connected Nation typically develops a customized online survey portal for each engagement along with paper surveys to ensure a broad representation of respondents. An example is provided here: <http://www.connectmycommunity.org/kent-county/>.

Technical Experience

Connected Nation employs a team of highly skilled and experienced telecommunications engineers, GIS professionals, community technology advisors, policy specialists, and research analysts that focus only on broadband. With this expertise and experience, Connected Nation has developed methodologies that have been repeatedly recognized by federal agencies and state and local broadband planning entities.

GIS and Broadband Mapping

After launching the nation's first statewide broadband availability map in Kentucky in 2004, as ConnectKentucky, Connected Nation has established a reputation nationally for its expertise in the field of broadband data collection and mapping. In fact, Connected Nation developed broadband mapping best practices which have come to be held out by the NTIA and the FCC as the preferred method of accounting for fixed wireless broadband in the National Broadband Map.

Connected Nation's GIS staff has successfully produced broadband databases and mapping products for 16 states and one U.S. territory since 2004. Working with over 1,500 unique broadband providers of all sizes has garnered experience with processing and handling the intricacies of these provider datasets and creating standard GIS formats from a variety of sources. All of Connected Nation's GIS Analysts are certified Geographic Information Systems Professionals (GISPs) and have years of experience mapping telecommunication networks and service areas and conducting advanced geospatial analyses on broadband coverage and network infrastructure data on a near daily basis, in addition to analyzing coverage and overlaying census demographic datasets. Continued education and training in the most up-to-date geospatial technology is a constant focus so the benefits of the most current tools and applications are realized by Connected Nation's clients.

Using primarily the Esri suite of ArcGIS software, the GIS personnel have extensive experience in using geoprocessing tools to process various broadband provider and census data to create aggregated availability and demographic overlay datasets and deliverables. Spreadsheet data is also frequently part of data processing, especially as it relates to geocoding addresses, broadband equipment locations, and analyzing drive test results from mobile wireless projects. As part of the State Broadband Initiative, the GIS staff has participated in technical writing deliverables, contributing to methodology documentation, metadata development, and custom report creation when requested. This experience has also resulted in strong internal data management and security controls that protect data integrity and assure accuracy.

Engineering and Technical Services

Connected Nation Engineering and Technical Services (ETS) staff are highly trained and experienced professionals in broadband modalities and standards, having engineered or operated networks for the top U.S. carriers as well as smaller independents. The combined comprehensive knowledge base of the ETS staff includes adaptive modulation and coding (AMC), multiple-in multiple-out (MIMO) antenna systems, high speed packet access (HSPA), wide and/or code division multiple access (WCDMA, CDMA,) time division multiple access (TDMA), long term evolution (LTE), worldwide interoperability for microwave access (WiMAX), universal mobile telecommunications system (UMTS), evolution data optimized (EVDO), and a comprehensive knowledge of wireline (FTTH, CATV, DSL) and fixed wireless technologies. Familiarity with Institute of Electrical and Electronics Engineers (IEEE) standards-based

protocols was developed from classroom study, hands-on experimentation, network design trials and deployments with AT&T, Bosch Telecom, Alcatel-Lucent, Nokia-Siemens, Newbridge, and a host of other related telephony, broadband, and mobility based companies.

These attributes allow Connected Nation engineers to not only request provider data in a manner that is easily understood by the provider community, but to also provide for the comprehension and translation of the data that is ultimately received. This industry perspective also affords the ability to assess the feasibility of a provider's infrastructure attributes and contributes to other internal and external validation techniques. The result is an industry credibility that has promoted a level of comfort and candor with providers both large and small.

Connected Nation staff has been able to offer a comprehensive process for the collection and submission of information by providers, to ensure that providers can participate in local efforts with as much ease as possible. In addition to providers utilizing various portals for the submission of data (e.g., ShareFile, Hightail, custom provider portals, etc.), Connected Nation also works with providers to submit their information in other formats if they so choose. Connected Nation's objective is to engage providers to participate in whichever way is most convenient to them; the less a provider feels burdened by the process, the more likely they are to participate and supply data.

Connected Nation strives for the highest level of data completeness and accuracy and therefore performs technical validation on selected provider networks and maps coverage for any non-participating providers. Connected Nation's field validation techniques include signal tests using spectrum analyzers and frequency-tuned antennas, drive-testing, confirmation of deployed assets and broadband speeds, etc., all adopted from best practices by its engineering and GIS staff to verify submitted data in a real-world setting. A white paper describing Connected Nation's methodology for validation and verification processes titled *Engineering and Technical Services Field Validation Techniques: A Technical Brief from Connected Nation* was presented to the FCC Wireline Competition Bureau in June 2011. The white paper is included in Comments of Connected Nation, Inc. on ACS' Petition for Waiver available via the link: <http://apps.fcc.gov/ecfs/document/view?id=7022032023>.

Connected Nation's technical staff has applied its vast experience mapping broadband networks to define the techniques and methods—many of which have become industry standards—that inform the most complete, accurate, and reliable broadband maps and planning efforts available today. Connected Nation's ability to analyze and apply reliable data in support of its partners' priorities, as well as its cadre of other broadband programs and community network, adds value well beyond the assessment and planning process. This broad perspective allows Connected Nation to provide context to the local broadband landscape and inform unique solutions for communities and build sustainable programs.

Past Projects and References

Project #1	
Name	Connect Michigan
Type	Broadband, Data Collection, Mapping and Planning
Location	Michigan Statewide
Duration	December 2009 - Ongoing
Comments	Project has been and continues to be implemented within plan and budget.
Contact Information	Robin Ancona, Director, Telecommunications Division Michigan Public Service Commission 517.284.8193; anconar1@michigan.gov
CN Project Lead	Eric Frederick, VP, Community Affairs 877.846.7710; efrederick@connectednation.org
<p>Project Goals/Objectives: assemble, operate, and maintain a database and interactive broadband map to enable consumers and communities to visualize this availability data and empower informed decision making.</p> <p>How They Were Met: CN developed relationships with more than 150 of Michigan's broadband providers to gather, validate, and publish broadband maps and analyses through thirteen data update cycles. CN created local broadband teams, advised on various issues of broadband and technology access, and created locally informed technology action plans in 54 of Michigan's 83 counties which included the involvement of thousands of local stakeholders and organizations. CN developed and hosted three successful statewide broadband conferences, bringing together nearly 3,000 in-person and online participants representing 1,300 unique organizations.</p>	
Project #2	
Name	Minnesota Broadband Mapping
Type	Broadband, Data Collection, and Mapping
Location	Minnesota Statewide
Duration	December 2009 - Ongoing
Comments	Project has been and continues to be implemented within plan and budget.
Contact Information	Danna MacKenzie, Executive Director, Office of Broadband Development Minnesota Department of Employment and Economic Development 651.259.7611; danna.mackenzie@state.mn.us
CN Project Lead	Wes Kerr, Director, Community Solutions 877.846.7710; wkerr@connectednation.org
<p>Project Goals/Objectives: develop and maintain a liaison with the Minnesota broadband provider community in order to provide broadband data collection and mapping services. The state uses this map as a tool for the state's Border-to-Border Broadband Grant program eligibility, as well as a part of their challenge processes.</p> <p>How They Were Met: CN worked directly with Minnesota's 119 last mile providers to develop accurate broadband maps for the purposes of maintaining a state broadband map. CN has also provided validation services that provide the Office of Broadband Development in-field verification of the broadband availability in a given area and has validated grant areas that have been funded for build-out as proposed by the grant recipients.</p>	

Project #3	
Name	Tennessee Broadband Consulting Services
Type	Broadband access grant application review
Location	Tennessee statewide
Duration	November 2017 – January 2018
Comments	Project was implemented within plan and budget.
Contact Information	Crystal Ivey, Broadband Grant and Program Manager Tennessee Department of Economic and Community Development (TNECD) 615.741.1888; crystal.ivey@tn.gov
CN Project Lead	Chip Spann, Director, Engineering and Technical Services 877.846.7710; cspann@connectednation.org
Project Goals/Objectives: Assist an advisory committee in reviewing and scoring grant applications for the TNECD Broadband Access Grant Program.	
How They Were Met: CN provided network engineering expertise in the evaluation of over 60 broadband grant applications.	

Proposed Staffing Plan and Staff Qualifications

Resumes of the key project team members reflecting expertise, detailed experience, and certifications are provided on the following pages. A project team organization chart is also provided below.



Staff	Role	Relevant Experience
Wes Kerr	Primary point of contact with Council. Oversee and guide activities conducted by project team.	10+ years managing relationships to ensure broadband assessment and plan implementation.
Dawn Clark, PMP	Support the development of project plan and adherence to time, scope and budget.	Certified Project Management Professional with 10+ years' experience in federal, state and local broadband projects.
Ashley Hitt, GISP	Ensure broadband inventory data is processed, analyzed, and translated into a geospatial format/broadband maps.	Led GIS efforts in processing and mapping over 40% of U.S. land mass. A decade of pioneering broadband mapping methodologies.
Charles "Chip" Spann	Manage broadband service provider discussions as needed and provide telecommunications engineering support.	Tenured telecom engineer with 10+ years' experience in coordinating with broadband providers and supporting community broadband initiatives nationwide.
Chris McGovern	Ensure effective implementation of survey and data collection methodologies and ensure Plan recommendations are substantiated by research findings.	10+ years developing qualitative and quantitative techniques to interpret data and formulate recommendations to support state and community-level broadband initiatives nationwide.
Heather Gate	Evaluate data findings to identify gaps and opportunities for digital inclusion initiatives, particularly among vulnerable populations.	10+ years in strategy development and implementation of programs that impact Digital Inclusion for all people in all places.
Lindsay Conrad	Support the analysis of and research of available broadband programs	Economics background, tracks and interprets rapidly-changing broadband policy landscape. Over 5 years of experience with CN broadband projects.
Eric Frederick, AICP, LEED AP	Analyze data findings and developing the final strategic plan.	Managerial support for state-level broadband planning efforts in Michigan and 344 communities and lead analyst and planner in publishing over 149 community Technology Action Plans / broadband studies.

Mr. Kerr's responsibilities involve developing and maintaining relationships with solutions providers with a focus on assisting communities with broadband and technology advancement. In this role, he reviews, recommends, and assists communities with actions and tasks related to the advancement of their community's access, adoption, and use of broadband. Mr. Kerr has served Connected Nation (formerly ConnectKentucky) in a variety of roles for over 12 years.

Mr. Kerr assembled and developed a GIS functional team and worked with that team to develop methodologies that allowed for the efficient collection and representation of broadband data. He led the team in the development of tools that were later recognized as national best practices for the collection and analysis of broadband data and representation.

Project Experience

Community Broadband Solutions: Mr. Kerr has also utilized his broad understanding of broadband technologies and rural community dynamics to assist communities in better understanding why certain technologies exist in a particular location and how they may begin to develop more robust access to broadband through various broadband technologies. This work has also included the successful development and reception of USDA RUS Community Connect grants, for rural Kentucky communities.

Minnesota Broadband Mapping: Mr. Kerr has worked extensively with the Minnesota Office of Broadband Development, to provide data collection and provider relations services that have supported and allowed for the continued success of the Minnesota Border-to-Border Broadband grant program. Those responsibilities have included the management of relationships not only with the state office but also with the state broadband provider associations as well as individual broadband providers.

Drive Testing: Mr. Kerr supported Connected Nation projects and programs through field validation and drive testing, including support of methodologies and processes utilized to support Universal Service Administrative Company (USAC) drive testing and team management. This includes process development for in-field testing procedures as well as development and selection of tools to prepare for and execute testing in the field.

State Broadband Initiative: Mr. Kerr developed and maintained relationships with the national broadband providers across the United States and worked through ways to gather sensitive data, earning their trust which resulted in their willingness to participate in state and federally funded broadband mapping initiatives. Mr. Kerr managed the functional team responsible for gathering data for over 1200 broadband providers in the U.S. and worked closely with that team to resolve issues with the data provided and as a liaison between providers and the states.

Education

B.S. Telecommunications Systems Management,
focus on Wireless Communications and Network
Security
Murray State University, Murray, KY (2005)

Work History

Connected Nation (2007-present)
Director, Community Solutions
Sr. Manager, Technical Services
Manager, Provider Relations
Manager, GIS Services

ConnectKentucky (2005-2007)
Sr. Technology Analyst
Technology Analyst

Ms. Clark is a PMP-certified project manager, focusing on increasing efficiencies in scheduling, documentation gathering, and reporting, while improving productivity, quality, and standards of production and mitigating operational challenges, promoting uniformity, and identifying and implementing work process improvements. Ms. Clark creates charters for each active Connected Nation project and monitors each project to ensure execution of deliverables on time and within scope and budget. She applies PMI principles to include creating project plans and capturing milestones and deliverables.

Project Experience

Utah Education and Telehealth Network: Ms. Clark fills the role of project manager for the Utah School Inventory project, which, in partnership with the Utah Education and Telehealth Network (UETN), audited 100 percent of public schools in Utah during a seventeen-week timeline with the goal of understanding district and charter schools' connectivity challenges for the purposes of seeking legislative funding and future resource planning for schools.

Education

B.S. Business Education, Murray State University, Murray, KY (1983)

Certification

Project Management Professional (PMP) (2016)

Work History

Connected Nation (2007-present)
Project Manager
Project Coordinator

ConnectKentucky (2005-2007)
Administrative Assistant

Community Broadband Assessment and Planning:

Ms. Clark supports the efforts of Connected Nation's Connected Community Engagement Program (ConnectedSM), where numerous communities across the country are currently in some phase of engagement working toward a Technology Action Plan with customized solutions for their community to move forward in the areas of access, adoption, and use of broadband. She ensures schedules are managed according to contract specifications to ensure deadlines are met and compiles status reports as required.

State Broadband Initiative: Ms. Clark played an integral role in designing the tracking tool used for broadband data collection from 1200+ providers as well as 120,000+ community anchor institutions across 12 states and 1 territory. She developed an internal manual to document protocols for database users, supplemented by performing regular audits to ensure accuracy and consistency in data entries. Ms. Clark worked closely with various internal teams to ensure compliance with the established process to gather and compile information semi-annually for individual methodology papers for each of the 13 geographies. She also managed the quarterly reporting process for the same entities during the 5-year federal grant term.

Kentucky County Government Websites: Ms. Clark assisted in defining the high-level scope and project requirements for a government website project in Kentucky. With the team, she created the project plan and provided hands-on support for the 65 counties in Kentucky that did not have a government website presence, working closely with county representatives and Kentucky.gov personnel to ensure complete and accurate submission of county-specific data for each of the websites. Ms. Clark reviewed all data for completeness, conducted research to fill in the gaps, and maintained staggered test and go-live schedules for Kentucky.gov with regard to manageability and cost perspective per month.

Kentucky Technology Action Plans: Ms. Clark worked closely with project managers to prepare draft and final versions of county-specific Technology Action Plans based on local broadband needs for each of the 120 counties in Kentucky.

Ms. Hitt is the Director of GIS Services, providing leadership and oversight to the GIS staff, whose work supports broadband mapping across states, counties, and local communities. She is responsible for leading the development of strategies using GIS to provide data visualization solutions that impact policy, economic development, and the Digital Divide. Ms. Hitt is the recipient of the 2017 URISA Leadership Award.

Ms. Hitt is responsible for leading the development of methodologies using broadband-related and demographic datasets to process and analyze data to produce and deliver maps, statistics, and reports. She also leads the division's strategic planning to implement GIS innovations and other geospatial technologies to support CN's vision that everyone belongs in a Connected Nation.

Project Experience

Universal Service Administrative Company (USAC): Ms. Hitt leads the GIS team in analyzing mobile carrier data filings to verify the expansion of mobile broadband availability to rural, remote, and tribal areas using federal subsidies. In addition to data analysis and report development, she also creates processes for analyzing independent drive test data to verify mobile services in these areas.

Broadband Data Visualization: Ms. Hitt leads the charge in developing methodologies for various broadband analyses and data visualization products for Connected Nation's clients and interested legislators, including static maps and interactive applications. State and county map galleries, as well as calculated broadband availability statistics are developed and maintained for state broadband projects to determine served and underserved areas, as well as those in the Digital Divide. Ms. Hitt also leads strategic review and planning related to national broadband datasets to analyze data quality and determine confidence levels in the datasets.

Backhaul/Middle-Mile Mapping: Ms. Hitt provides leadership and direction for the collection, processing, analysis, and visualization of middle-mile broadband mapping, showing infrastructure routes and fiber assets to connect businesses, economic developers, planners, and consumers.

Ohio Department of Transportation (ODOT): Ms. Hitt leads the development of methodologies to process, analyze, and visualize mobile drive test data collected by Connected Nation engineers in rural Ohio counties to determine roads with gaps in service, as well as proximity to assets to assist in the expansion of mobile broadband service.

State Broadband Initiative (SBI): Ms. Hitt provided leadership and direction to the GIS team involved in coordinating data standardization and integration across the SBI project from 2010-2014. She oversaw the broadband data processing, analysis, and aggregation needed to successfully deliver 110 on-time, fully compliant and complete broadband datasets to the NTIA for 12 states and 1 territory. Ms. Hitt presented to industry experts techniques and best practices deployed to continually improve and advance GIS work being performed as part of the SBI program.

Education

M.S. Geoscience, Western Kentucky University, Bowling Green, KY (2007)

B.S. Geography-Meteorology/Climatology and Mathematics Minor, Western Kentucky University, Bowling Green, KY (2005)

GIS Certificate, Western Kentucky University, Bowling Green, KY (2005)

Certification

Geographic Information Systems Professional (GISP) (2009)

Work History

Connected Nation (2007-present)
Director, GIS Services
Manager, GIS Services
GIS Analyst

Mr. Spann performs engineering oversight of mobile drive testing, site plans, cost models, and radio frequency propagation map analysis. He develops drive testing methodologies used by USAC for FCC Auction 901 and 902 funding recipients and also conducts field verification and mobile drive testing OSP audits of Native American tribal lands.

He created field validation and wireless design models which were adopted as best practices by the Federal Communication Commission (FCC) and National Telecommunications and Information Administration (NTIA) during the federally funded State Broadband Initiative (SBI) program in 2010-2014.

Mr. Spann, considered by many as a pioneer in the development of 2-way, digital, and high-speed data services during the 1990s, has 32 years of multiple discipline experience in executive leadership roles within the telecommunications industry (CATV, telephony, fixed wireless, and mobile wireless), with an emphasis on M&A and spectrum management (AWS, BRS, EBS, LMDS, PCS, and WCS).

Project Experience

Ohio Department of Transportation: Ever vigilant to identify ways that ODOT's rural transit vehicles could improve cellular (mobile) reception on recently upgraded dispatch tablets under a T20 project, Mr. Spann recommended the use of external antennae and cellmux and/or cell bonding technology, which has been successfully deployed in both the commercial and public safety sectors for several years. Through the combined use of a specialized multiplexing device capable of receiving multiple mobile carrier inputs, and proper placement of an external mobile antenna on each transit unit, the increase in mobile coverage (reception) was estimated to be a minimum of 50% in the rural Appalachia counties of Ohio where this project was focused.

Universal Service Administrative Company: After Connected Nation received a contract to conduct Auction 901 (Mobility Fund Phase I; High Cost Remote and Rural) and Auction 902 (Tribal Mobility Fund Phase I) in 2015, Mr. Spann developed a mobile drive testing methodology approved by both USAC and the FCC. Thereafter, this methodology was deployed in the mobile testing of over 390 study area codes (SACs) across the lower 48 U.S. states, remote tribal villages in Alaska, and as far away as the Northern Mariana Islands.

State Broadband Initiative: CN, under Mr. Spann's leadership as Director of Engineering & Technical Services, introduced several groundbreaking wireless propagation modeling, field validation, and broadband coverage estimation methodologies that were ultimately adopted, and often cited, by the NTIA and FCC as best practices from 2009-2014.

Education

Attended Connors State College, Warner, OK
(1981-1983)

Attended Oklahoma State University Stillwater, OK
(1983)

Work History

Connected Nation (2008-present)
Director, Engineering & Technical Services
Director, Special Projects
Independent Contractor

ConnectKentucky (2006-2008)
Wireless Business Analyst
Wireless Business Consultant

Mr. McGovern is a creative leader who has budgeted, planned, and managed staffing for projects ranging from public awareness campaigns to multi-state research projects. He is an effective communicator, having transformed complex findings and presented those results through policy briefs, speaking engagements, media appearances, and social networking venues designed to educate and empower decision-makers. He is a trained economist with experience in robust data analysis and a focus on local economic development.

Mr. McGovern works closely with clients and stakeholders to define project goals, evaluate research tools, establish practical project timelines, and ensure the client's satisfaction with the process as well as the end product. He collaborates with researchers at colleges, universities, and policy institutes to ensure that CN's research methods are always current and provide accurate results. He is also a graphic design pro with expertise in using Adobe Creative tools (InDesign, Photoshop, and Illustrator) to create multimedia images that highlight research findings.

Education

M.S. Economics; Murray State University, Murray, KY (2008)

B.S. Political Science, University of Illinois, Chicago, IL (1997)

Work History

Connected Nation (2007-present)
Director, Research Development
Manager, Research Development
Senior Research Analyst

Project Experience

Community Broadband Assessment and Planning: Mr. McGovern worked with the CN team to design and implement a multi-sector data collection process through the ConnectedSM program. As part of this process, He helped design 11 sector-specific survey instruments used in the program to measure broadband adoption and digital skill levels for each community and analyzed the survey results from over 20 communities.

Puerto Rico Institute of Statistics: Mr. McGovern designed survey instruments to measure broadband adoption, access, and usage among businesses and households in Puerto Rico. He then analyzed the results from those surveys, creating published reports for Puerto Rico's Institute of Statistics.

School Technology Assessments: Mr. McGovern oversaw the design and implementation of school technology assessments in multiple states, assisting with the creation of the assessment instruments and online data collection tools. He compiled and analyzed data representing more than 1,500 schools and school districts in multiple states, designed and provided data for individual school district reports, and synthesized data from various data sources to provide insights into e-Rate usage, efficiency, and gaps.

State Broadband Initiative (SBI): Mr. McGovern has designed and implemented annual survey research projects in 12 states and 1 territory simultaneously with a total annual budget of up to \$1.1 million per year, completing under budget each time.

Publications

Carare, Octavian and McGovern, Chris and Noriega, Raquel and Schwarz, Jay A., *The Willingness to Pay for Broadband of Non-Adopters in the U.S.: Estimates from a Multi-State Survey* (November 18, 2014). Information Economics and Policy. <https://ssrn.com/abstract=2375867>.

As the Director of Digital Inclusion for Connected Nation (CN), Heather Gate is responsible for strategy development and implementation of programs that impact digital inclusion for all people in all places. Ms. Gate has more than 10 years' experience working in digital inclusion with the mission of improving the lives of vulnerable populations across the country. She has extensive experience engaging with minorities, rural communities, families, and others on the frontlines of the Digital Divide, and working behind the scenes as an advocate and tactician with local, state, and federal leaders.

Ms. Gate is a multi-talented professional with experience in strategic planning, project management, grant writing and management, and technology application analysis and design. She has helped develop new digital engagement strategies and key tools for addressing the Digital Divide as part of Connected Nation's Connected Community Engagement Program (ConnectedSM).

Project Experience

Affordable Broadband Program: Ms. Gate leads the *Access from AT&T* program, working with over 600 partner organizations across 21 states to ensure the affordable broadband service is accessible to individuals on the Supplemental Nutrition Assistance Program (SNAP). This also entails collecting data about community activities to report to the FCC.

Lifeline Broadband Adoption Pilots: Ms. Gate is responsible for the successful implementation of Connected Nation's digital inclusion programs that saw more than 80,000 people receive basics skills training, a large portion of whom were Somali refugees, and 10,000 computers distributed to vulnerable populations from rural to urban LMI communities. With this experience, Ms. Gate supported the implementation of various Lifeline Broadband Adoption Pilots which ranged from securing refurbished devices in Puerto Rico to coordinating digital literacy workshops for the Hopi Tribe in northeast Arizona.

No Child Left Offline: Ms. Gate led the design and implementation of the No Child Left Offline program, which was the first program to refurbish the state of Kentucky's surplus computers via the prison system and donate them to middle school families enrolled in the National School Lunch Program in economically distressed Appalachian counties.

Online Learning: Ms. Gate led the design and development of CN's online learning platform, Drive™. This platform, launched in 2014, supports new technology learners and trainers and currently encompasses a user universe of more than 10,000 unique learners actively engaged in either basic skills training or job skills training.

Education

M.S. Computer Science
Kentucky State University Frankfort,
KY (2006)

M.S. Public Administration
Kentucky State University
Frankfort, KY (2005)

B.S. Computer Science
Kentucky State University
Frankfort, KY (2003)

Work History

Connected Nation (2007-present)
Director, Digital Inclusion
Manager, Digital Inclusion

ConnectKentucky (2006-2007)
Policy Specialist

By monitoring and seeking to understand all current and forecasted federal and state broadband public policy legislation and initiatives, Ms. Conrad develops recommendations on the strategic direction and development of Connected Nation policy studies and messaging to stakeholders. Ms. Conrad supports and guides Connected Nation's broadband planning, research, and policy agendas.

Ms. Conrad has advised state and local leaders in a nonprofit capacity on increasing the awareness of the broadband landscape in their community to benefit the lives of their citizens. She has helped communities prioritize and expand broadband access, adoption, and use by leading communities through a broadband assessment of their technology resources.

Project Experience

Broadband Policy and Research: Ms. Conrad tracks, analyzes, and communicates relevant broadband-related policy including Federal Communications Commission (FCC) events, filings, and Public Notices as well as relevant Congressional and Administrative activity around technology-specific issues. Ms. Conrad's tracking and interpretation of the rapidly-changing broadband policy landscape plays a vital role in understanding existing or forthcoming opportunities for governments, businesses, and residents.

Utah Education and Telehealth Network: Ms. Conrad utilized her experience in the education and policy spaces to successfully lead the execution of the Utah School Technology Inventory project, in partnership with the Utah Education and Telehealth Network (UETN). The project audited 100 percent of public schools in Utah during a brief fourteen-week timeline with the goal of understanding district and charter schools' connectivity challenges for the purposes of seeking legislative funding and future planning resources for schools.

South Carolina Community Broadband Planning: Ms. Conrad traveled the state of South Carolina working with communities to bring broadband leaders around the table to inventory their current state of technology access, adoption, and use. In this capacity, Ms. Conrad identified relevant leaders to serve as community champions, planned and executed broadband kickoff meetings, led stakeholders in assessments of their current technology assets, and identified a list of key recommendations to aid in expanding the community's broadband access and use.

Education

M.A. Economics, Vanderbilt University
Nashville, TN (2010)

B.A. Economics, Maryville College
Maryville, TN (2007)

Work History

Connected Nation (2014-present)
Director, Public Policy
Director, Education Programs
Broadband Research and Planning
Specialist

Connect South Carolina (2012-2014)
Community Technology Specialist

Mr. Frederick is a broadband community planning expert and a sought-after speaker on broadband and technology issues with eleven years of experience working with local and international stakeholders to improve the access, adoption, and use of broadband. Mr. Frederick's long-term and comprehensive approach to technology-related community development provides the hundreds of communities and thousands of stakeholders engaged by Connected Nation with wide-ranging insights, education, and solutions to create digitally inclusive and equitable communities.

Project Experience

Community Broadband Assessment and Planning: Mr. Frederick and his team have engaged with more than 300 communities across nine states to offer advice, solutions, and planning to improve broadband and technology access, adoption, and use, resulting in published comprehensive technology action plans for 135 of these communities. With unprecedented local data collection through CN's Connected Community Engagement Program (ConnectedSM), Mr. Frederick and his team are providing local and national stakeholders with extraordinary insights into many broadband and technology issues, and advocating for the continued expansion of infrastructure and greater inclusion of all in the digital economy.

State Level Broadband: Mr. Frederick managed and directed the activities of Connect Michigan, a state broadband initiative funded by the Federal Department of Commerce. Connect Michigan was a successful state-based mapping, research, planning, and capacity-building program that met and exceeded the State Broadband initiative (SBI) federal grant timelines and measures.

Publications

- *Publicly Operated Telework Facilities: An Economic Development Opportunity for Michigan's Rural and Tourism-Oriented Communities*, Regional Economic Innovation Project, Michigan State University (2015).
- *Digital Literacy: Further Developing Michigan's Twenty-First Century Workforce*, Regional Economic Innovation Project, Michigan State University (2013).
- *On-Site, Hands-On Technology Training for Small, Rural Michigan Businesses*, Regional Economic Innovation Project, Michigan State University (2012).

Memberships, Affiliations, and Credentials

- Economic Development Administration Center for Regional Economic Innovation, Consultative Panel (2011-present)
- American Planning Association, Technology Division Board Member (2003-present)
- Michigan Association of Planning, Conference Committee (2003-present)
- Prima Civitas Foundation, Information Technology Fellow (2013-2016)

Education

Ph.D. Urban and Regional Planning
Michigan State University
East Lansing, MI (pending)

M.U.R.P. (Master's of Urban and Regional Planning), Michigan State University, East Lansing (2006)

B.S. Planning, Northern Michigan University, Marquette, MI (2004)

Certification

American Institute of Certified Planners (AICP) (2009)

Leadership in Energy and Environmental Design Accredited Professional (LEED-AP), (2009)

Work History

Connected Nation (2011-present)
Vice President, Community Affairs
Director, Connect Michigan

LSL Planning, Inc. (2008-2011)
Project Planner I

Project Goals and Objectives

Section 4, Subsection 4.1 Research existing public and private sector internet infrastructure, technology, and assets within the State; develop an inventory of the internet infrastructure, technology, and assets; and provide recommendations on how those assets can be used to further the Broadband Council's mission of expanding broadband services to state residents and businesses. Vendor should describe how it can complete this requirement within 180 calendar days.

Vendor Response:

Effective planning begins with complete and accurate data. The current national process for collecting, processing, and publishing broadband data does not allow for the level of granularity, timeliness, or validation to serve as an effective and efficient resource for broadband planning activities. Connected Nation proposes the following activities as part of the research and evaluation of broadband services in the State:

- Analyzing federal broadband deployment data
- Collecting and processing broadband data from providers
- Analyzing federal program subsidy data
- Processing FCC registered towers
- Acquiring additional asset data
- Field validation

In order to get a complete and accurate representation of West Virginia's current broadband landscape, Connected Nation proposes to first process and analyze federal broadband datasets (e.g., Form 477 deployment) followed by outreach and coordination with all the known internet service providers in the State. In addition, Connected Nation would work with broadband providers that have not filed the mandatory Form 477 filing (as applicable) to ensure that their coverage is on the State's broadband maps as well. This outreach allows Connected Nation to collect more granular broadband service data and ensure a more accurate depiction of the current broadband used to make decisions on expansion and planning efforts.

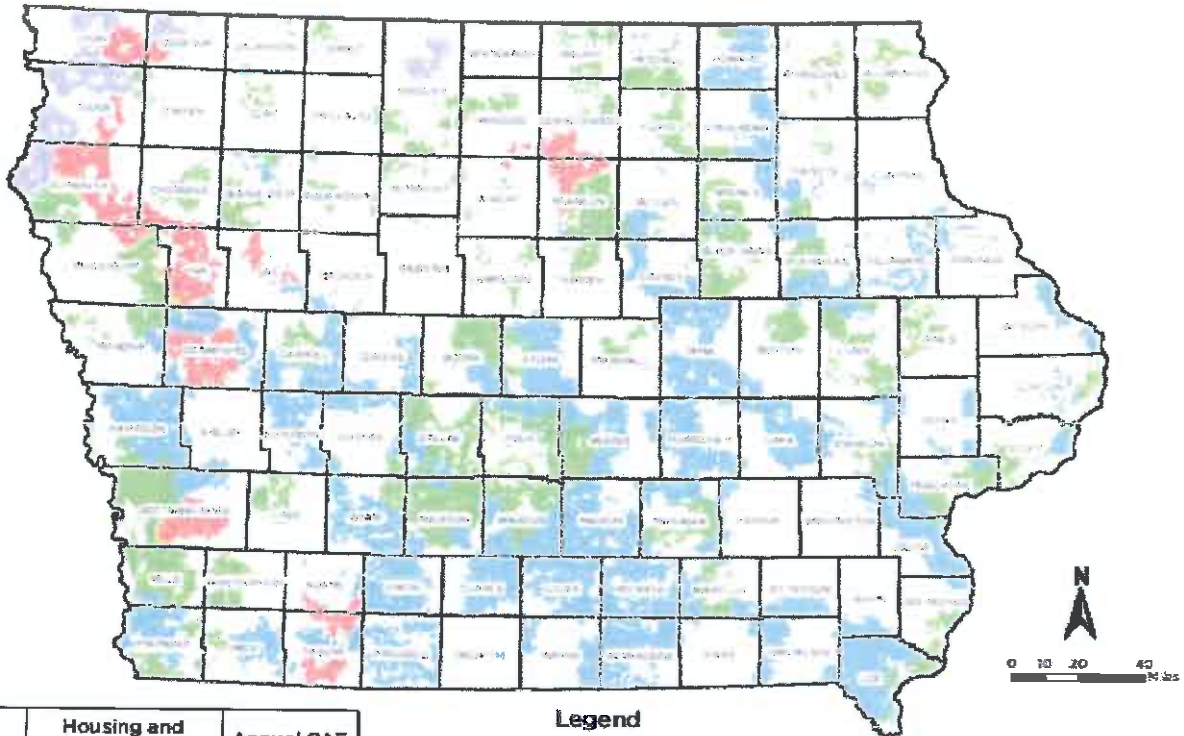
Connected Nation has extensive experience conducting provider outreach and collecting information on a more granular level than what is publicly available or filed with the federal government. Connected Nation then uses this information to more accurately assess current broadband availability, analyze speeds and infrastructure, and determine areas that are unserved and underserved by broadband. In all cases, Connected Nation will protect any and all data which has been deemed confidential.

With more granular broadband data, Connected Nation is able to analyze the availability of various speeds (e.g., 10 Mbps download/1 Mbps upload, 25 Mbps download/3 Mbps upload, etc.), areas where there is low or no competition (i.e., provider density), technology types, and the household density of unserved areas.

As part of any broadband service evaluation, the Broadband Council would be provided with an analysis of federal program subsidy areas within the State, including Connect America Fund (CAF) and Alternative Connect America Cost Model (A-CAM) eligible and commitment areas. Connected Nation proposes to process and analyze these areas compared to current service areas to determine where federal investment is being made in the State.

Below is an example map of CAF Phase II build-out commitments by carrier in the State of Iowa.

Connect America Fund Phase II Build-Out Commitments August 27, 2015



Carrier	Housing and Business Locations in Targeted Areas	Annual CAF Investment
CenturyLink	34,827	\$17,893,887
Consolidated	3,019	\$2,393,216
Frontier	5,438	\$4,240,587
Windstream	44,930	\$28,672,554

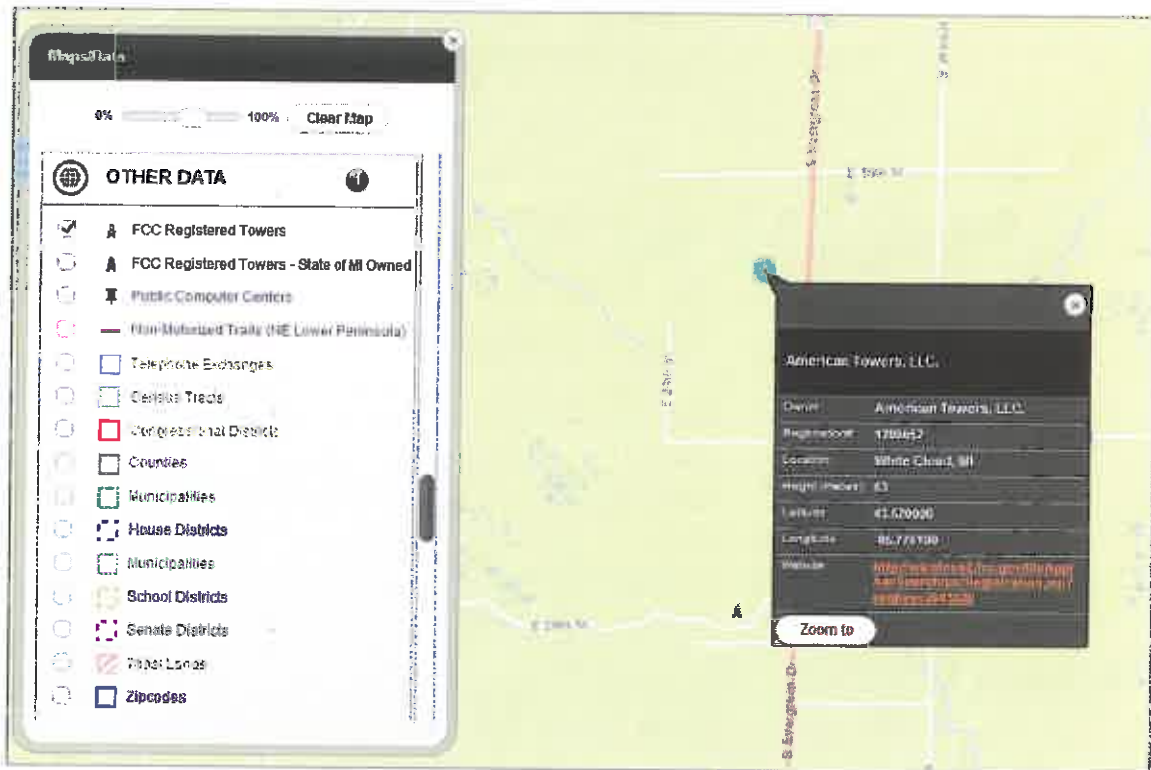
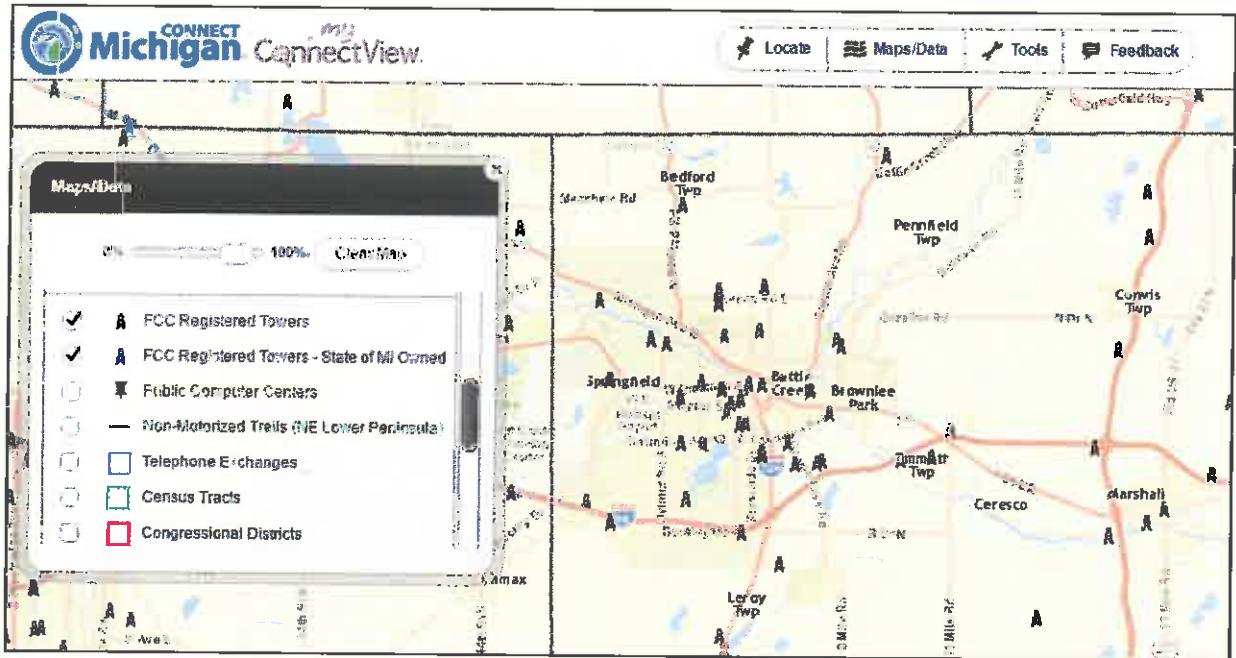
- Legend**
- County Boundary
 - CenturyLink Areas Targeted for CAF Investment
 - Consolidated Areas Targeted for CAF Investment
 - Frontier Areas Targeted for CAF Investment
 - Windstream Areas Targeted for CAF Investment



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In addition, Connected Nation will process and analyze the current status of FCC registered towers, as well as work to obtain other asset data available for the State from state and private resources. This data will assist in identifying where the biggest impact on broadband expansion could potentially occur without having to construct additional vertical assets.

Below are screenshots from Michigan's interactive broadband map of the FCC registered towers in Northwest Calhoun County and Newaygo County.



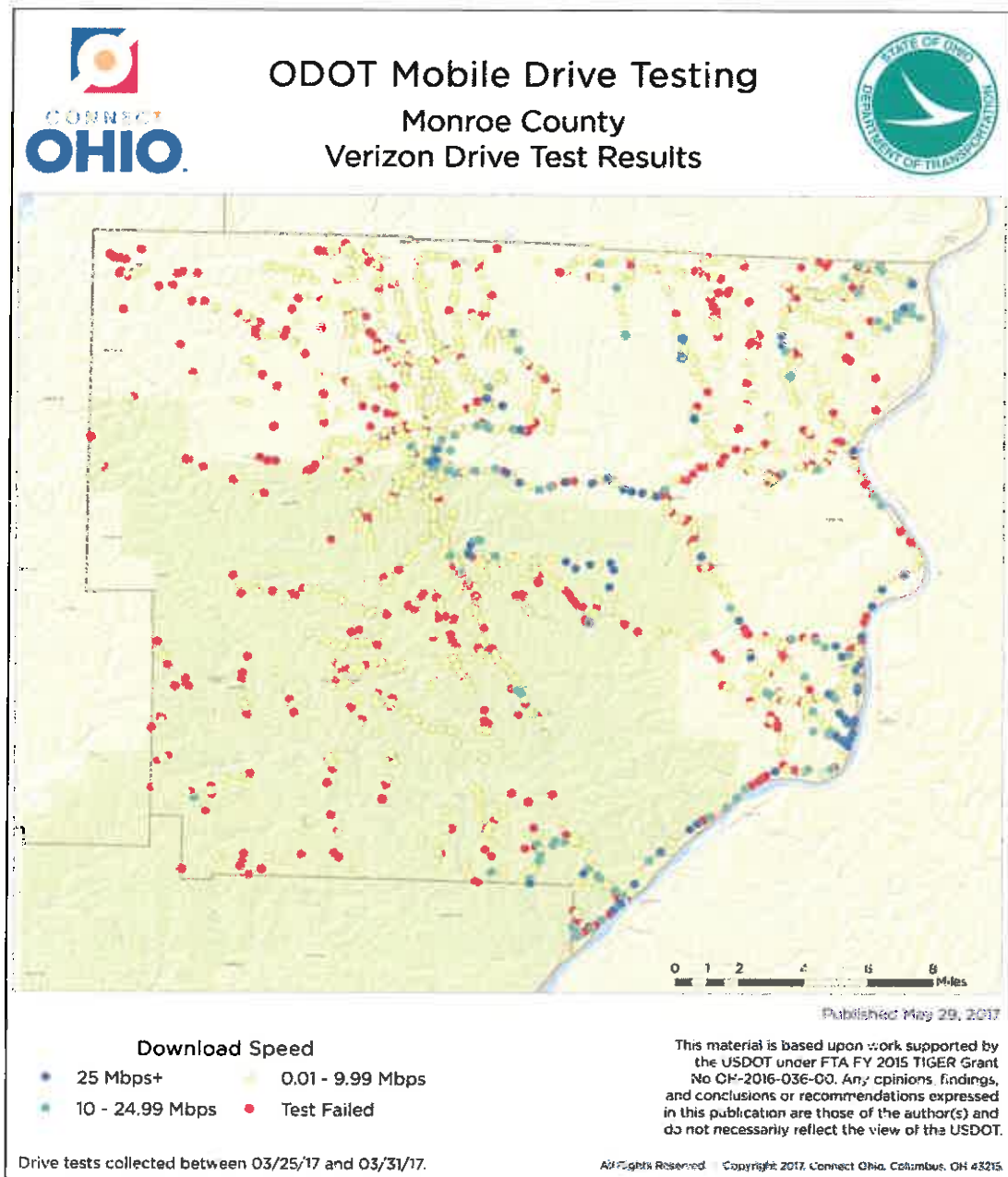
As part of the broadband services evaluation process, Connected Nation will make outreach to all known broadband providers in the State to collect and process various information and data. This information will allow Connected Nation to identify the providers and their offerings by technology and speed, as well as analyze the broadband data to determine the level of competition available in the State. Connected Nation will also calculate the number of households that have access to various numbers of providers to assist in showing how saturated broadband competition is or is not in the State.

Below is an example list of providers that serve each county in Ohio:

 Fixed Broadband Providers by County May 26, 2017						
COUNTY	PROVIDER	PROVIDER DOING-BUSINESS-AS NAME	PLATFORM	WEBSITE	MAXIMUM DOWNLOAD SPEED (Mbps)	MAXIMUM UPLOAD SPEED (Mbps)
Adams	AT&T Services, Inc.	AT&T Ohio	DSL	http://www.att.com/	24	3
Adams	Frontier North, Inc.	Frontier North, Inc.	DSL	http://www.frontier.com/	24	2
Adams	Southern Ohio Communication Services, Inc.	SOCSS Wireless	Fixed Wireless	http://www.socss.cc	3	2
Adams	Time Warner Cable Inc.	Time Warner Cable Inc.	Cable	http://www.timewarnercable.com/	50	5
Allen	Benton Ridge Telephone Company	WATCH TV	Fixed Wireless	http://www.brteleco.com/	5	3
Allen	Buckland Telephone Co.	BTC Communications	DSL	http://www.btccom.net	1.5	0.768
Allen	Buckland Telephone Co.	BTC Communications	Fiber	http://www.btccom.net	30	5
Allen	CenturyLink, Inc.	CenturyLink	DSL	http://www.centurylink.com	80	40
Allen	Columbus Grove Telephone Co.	FairPoint Communications	DSL	http://www.fairpoint.com	25	1.5
Allen	DataBit Solutions Corp	DataBit Solutions	Fixed Wireless	http://www.dbscorp.net/	2	0.768
Allen	FJ Communications	FJ Communications	Fixed Wireless	http://www.fjtelephone.com	5	2
Allen	Frontier North, Inc.	Frontier North, Inc.	DSL	http://www.frontier.com/	24	2
Allen	GoldStar Communications	Gold Radio Group	Fixed Wireless	http://www.nktelco.net	3	1
Allen	MetalINK Technologies, Inc.	MetalINK Technologies, Inc.	Fixed Wireless	http://www.metalink.net/	10	1
Allen	ORWELL TELEPHONE COMPANY	FairPoint Communications	DSL	http://www.fairpoint.com	20	1.5
Allen	Reliable Wireless Solutions	Reliable Wireless Solutions	Fixed Wireless	http://www.reliable-wireless.com/	3	0.768
Allen	Telephone Service Company	Telephone Service Company	DSL	http://www.telserco.com/	15	2
Allen	Telephone Service Company	Telephone Service Company	Cable	http://www.telserco.com/	100	5
Allen	Telephone Service Company	Telephone Service Company	Fiber	http://www.telserco.com/	100	100
Allen	The Columbus Grove Telephone Company	FairPoint Communications	Cable	http://www.fairpoint.com	50	5
Allen	The Orwell Telephone Company	FairPoint Communications	Cable	http://www.fairpoint.com	50	5

As part of the evaluation of broadband services, and in order to develop the most accurate broadband coverage map, Connected Nation proposes including some limited in-field engineering validation and mobile drive testing. The collection of broadband data from federal sources and directly from providers will highlight specific areas where validation may be desired. Connected Nation will then work with the Broadband Council to develop a specific and separate scope for validation activities which may include targeted areas receiving federal or state deployment incentives.

The map below provides a visual of drive test activities performed in coordination with the Ohio Department of Transportation to determine the level of mobile connectivity along all roads in Monroe County.



The combination of granular broadband service area information and assets will help the Council to evaluate the current supply of broadband communications assets, products, and services so that next steps can be determined in broadband planning and expansion activities.

In order to meet the 180-day timeframe, CN will work with the Council to develop a detailed scope of work, deliverables, and timeline during the project kickoff period. CN recommends bi-weekly calls to keep up-to-date on the data collection, analysis, deliverables, and custom

requests; this is in addition to e-mails and informal calls between CN project staff and the Council as needed. CN has established a main point of contact in the staffing plan for the Council to reach out to for requests, questions, comments, and/or concerns as needed. The Project Manager will also work with the Council to establish quarterly updates as needed.

CN estimates a total of **300 hours** to complete this subsection. As noted, estimates for in-field validations will be determined on a case-by-case basis.

Section 4, Subsection 4.2 Refine and enhance the Council's statewide internet speed test portal and GIS mapping systems by collecting supplemental data, and assisting the Broadband Council with developing additional mapping layers, as necessary, and assisting with the analytical interpretation of such data.

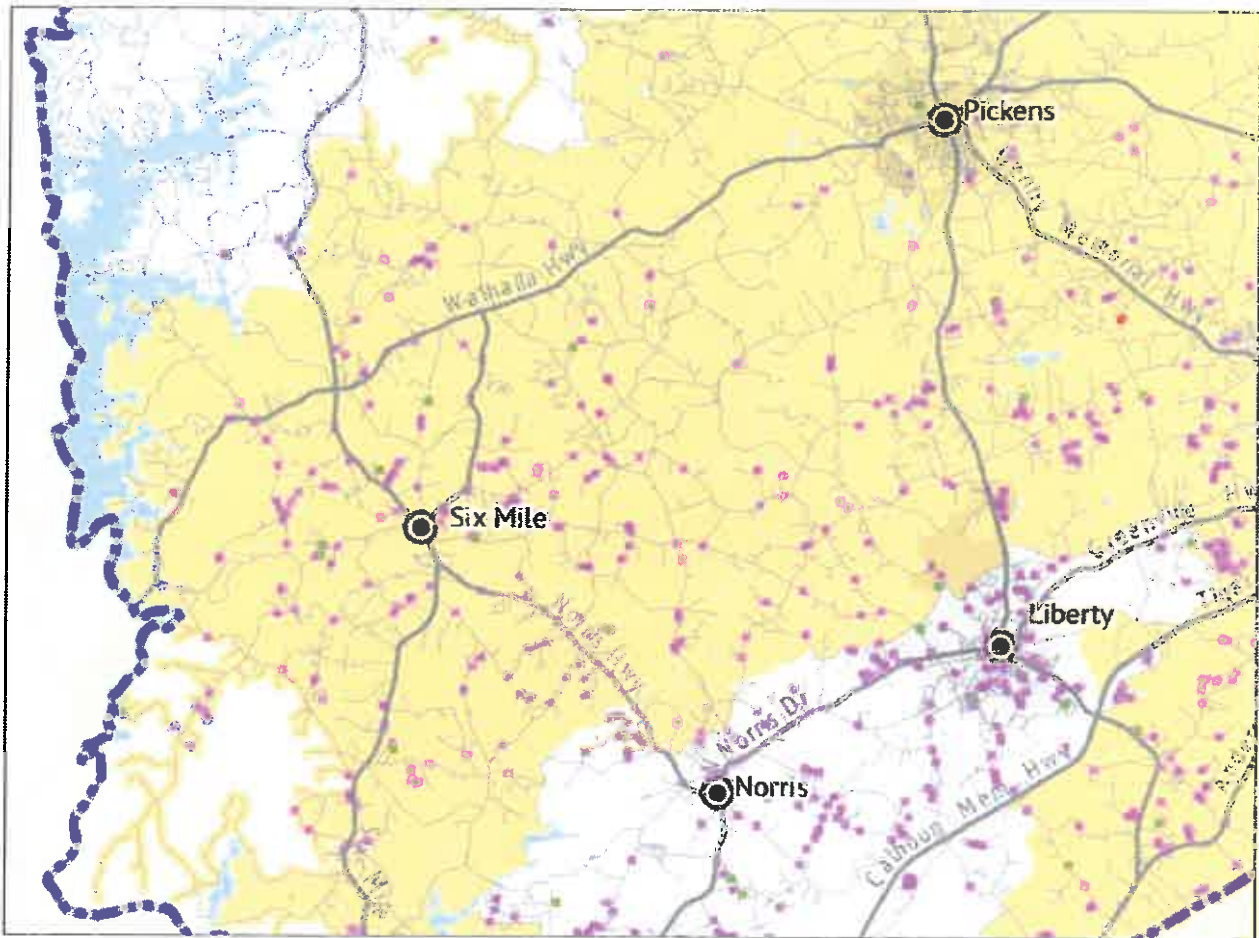
Vendor Response:

CN has experience in capturing and analyzing speed test data in over 10 states on a multi-year basis. CN would work with the Broadband Council to examine the existing statewide internet speed test portal and improve the process. Moreover, CN would work with the Council to process, analyze, and cross-examine the speed test results with other broadband data layers in order to improve statewide data accuracy and granularity of data.

As the Authority acquires other relevant datasets, CN will be able to incorporate them into the broadband service inventory, analyze them against the inventory, and develop additional deliverables as needed. CN has experience processing and analyzing seemingly unrelated data and information to create a better understanding of the broadband landscape in an area. This includes, but is not limited to:

- Location of community anchor institutions (CAIs)
- e-Rate information
- Student home connectivity information
- Industrial parks

School District Broadband Availability by Student



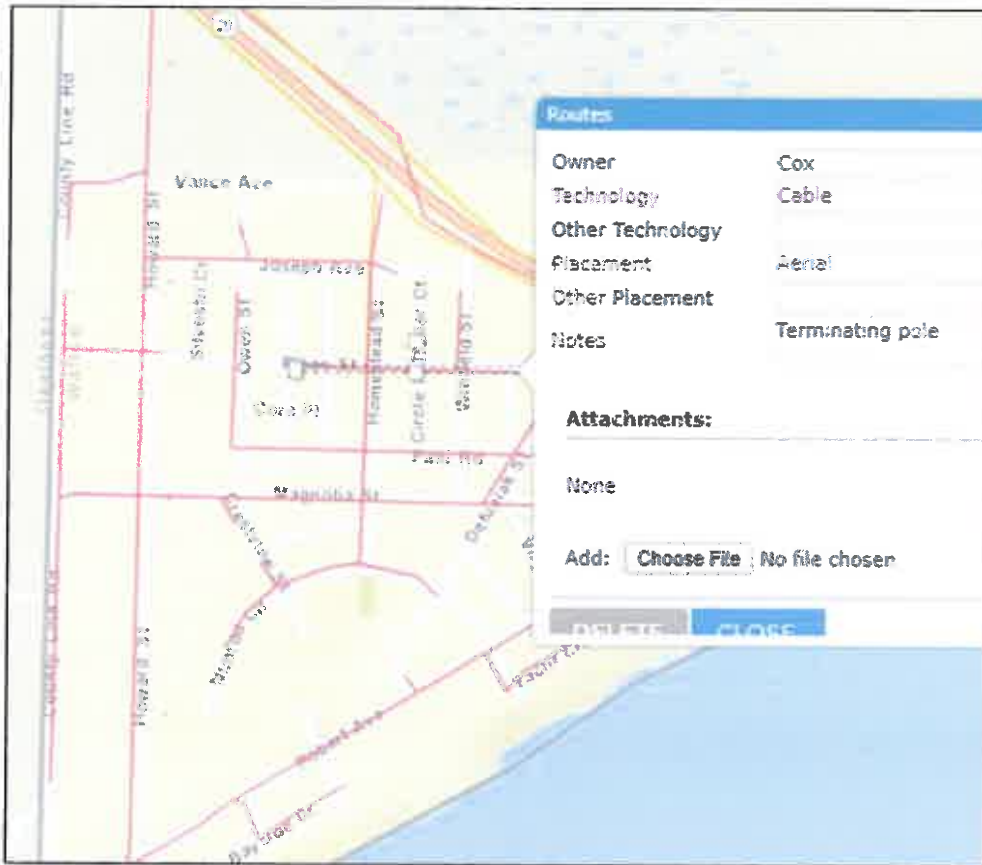
- Pre-K School
- K-5 School
- Middle School
- High School
- Highway
- Local Road
- District Boundary
- Water
- Municipal Area
- Yellow Background: Broadband

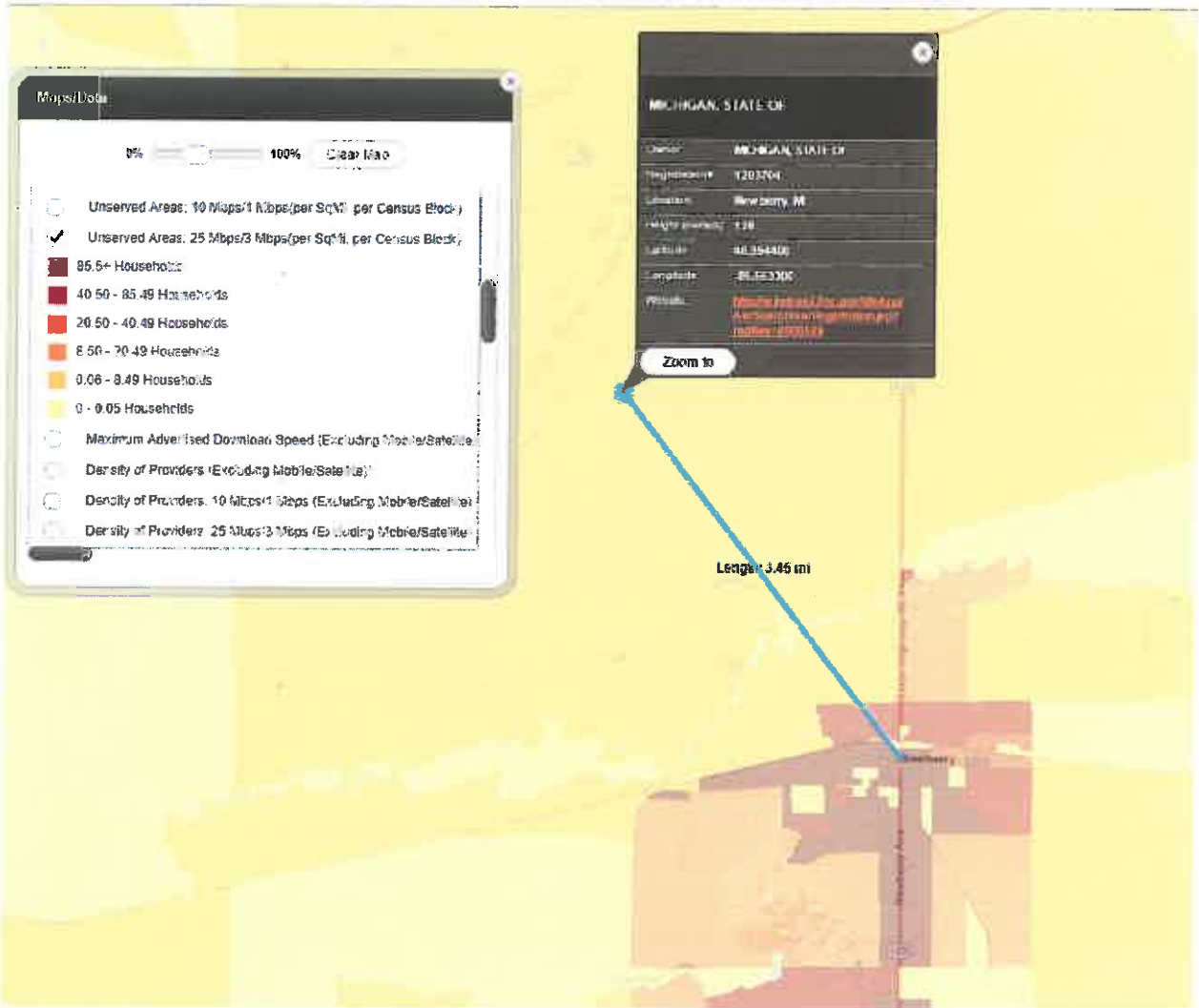
Hourly estimates will depend on the quantity of supplemental data layers to be incorporated and the condition and/or format of the supplemental data layers.

Section 4, Subsection 4.3 Use information obtained in items 4.1 and 4.2 to develop a technical broadband development plan, deliverable in paper and electronic format, that includes: an assessment of service territories, backhaul routes, interconnection points, suggested routes, capacity, providers, technical and delivery models, market analysis, expansion strategies, cost estimates, funding resources, best practices, and other appropriate factors to address barriers at statewide and regional levels, with an emphasis on unserved and underserved areas of the State, as defined in West Virginia Code § 31G-1-1, et seq.

Vendor Response:

CN proposes working with the Council and state agencies to develop a robust interactive mapping environment to serve as the real-time planning tool for broadband development. Additionally, this interactive mapping environment would reflect any supplemental data layers captured in section 4.2. CN would augment this robust planning tool with a paper showcasing various technical and delivery models, a market analysis at the state-level based on available information through the State, expansion strategies based on successes in other states and regions, general cost estimates for various technology platforms, funding resources, best practices, and other appropriate factors to address barriers at statewide and regional levels, with an emphasis on unserved and underserved areas of the State. The paper will not delve into the development of specific business plans or specific network plans with estimated costs to close identified unserved or underserved areas. The idea is for the robust interactive mapping environment to serve as the broadband development tool for broadband providers to develop their own unique models and plans. Examples of data layers and planning tool functionality are provided in this section.



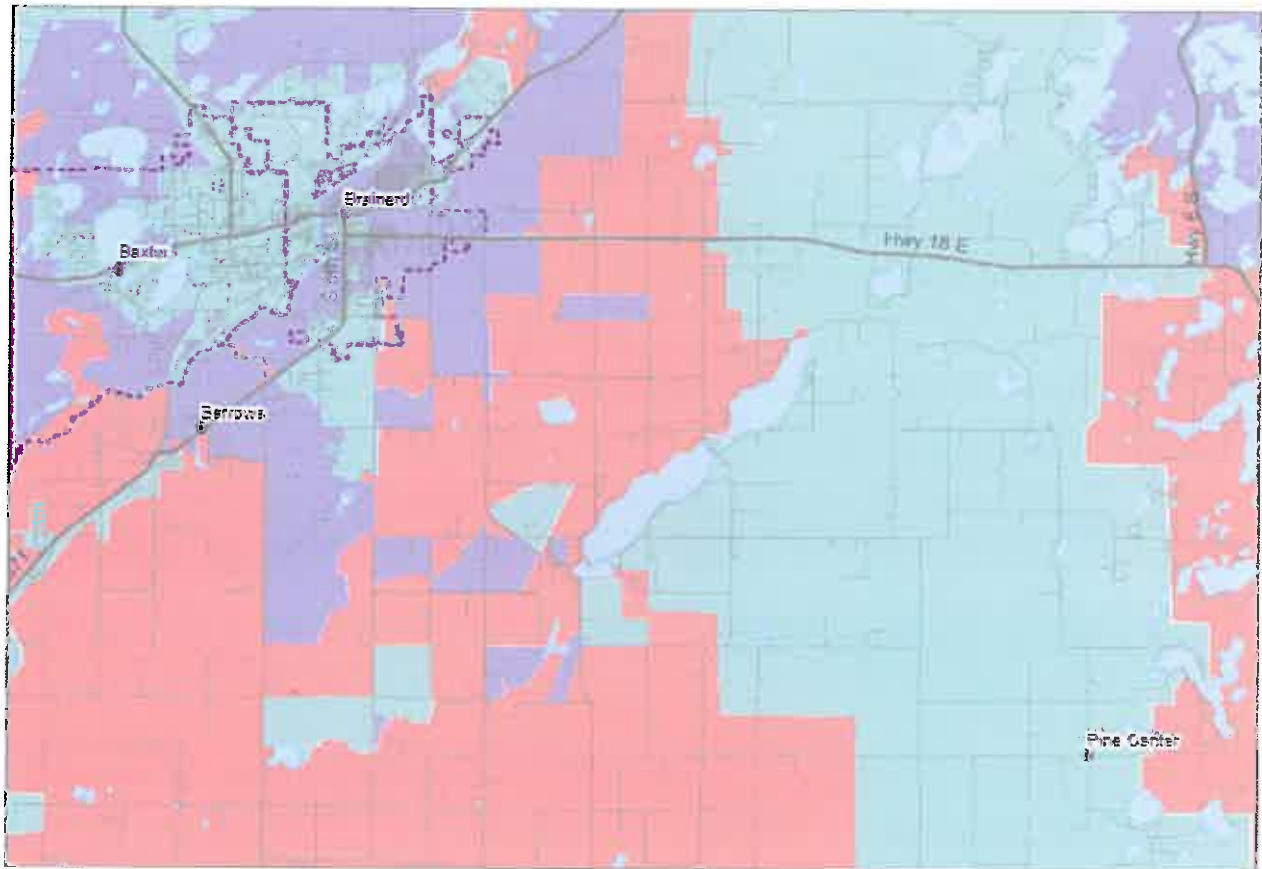







Areas Served by Broadband, Underserved Areas, Unserved Areas

While the FCC's current definition of "advanced broadband services" is currently 25 Mbps download/3 Mbps upload, it is not uncommon for states and other entities to have broadband speed goals at other various speed thresholds. For instance, the state of Minnesota has revised their definition of broadband for underserved and served areas each year. This year, CN worked with the state of Minnesota to develop new broadband service maps based on their broadband definitions of:

- **Served Area:** Broadband of at least 100 Mbps download/20 Mbps upload
- **Underserved Area:** Broadband of at least 25 Mbps download/3 Mbps upload, but below 100 Mbps Download/20 Mbps upload
- **Unserved Area:** No Broadband of at least 25 Mbps download/3 Mbps upload

Map of Served, Underserved, and Unserved Areas in Minnesota by State Definitions



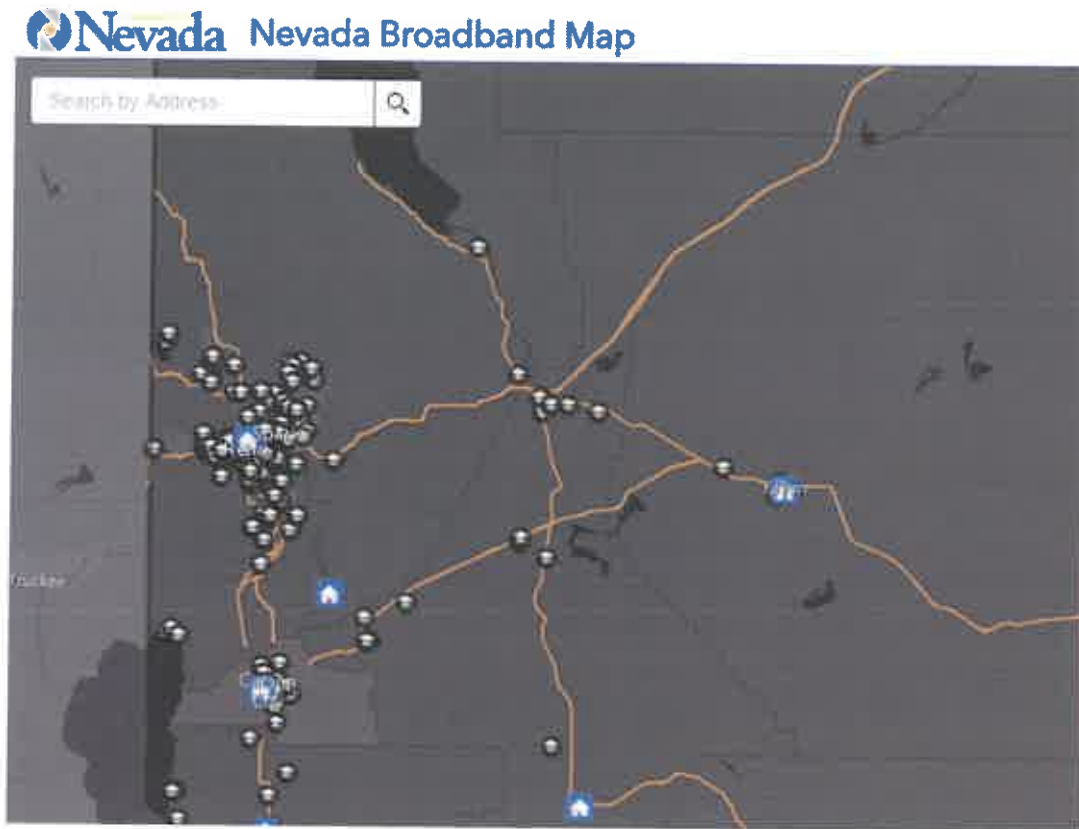
- | | |
|--|--|
|  Interstate |  Wireline Broadband of at Least 100M/20M |
|  US Road |  Underserved Area
(Wireline Broadband of at Least 25M/3M but less than 100M/20M) |
|  Local Road |  Unserved Area
(No Wireline Broadband of at Least 25M/3M) |
|  Municipal Boundary | |
|  County Boundary | |
|  Water | |

CN recognizes the need for broadband definitions to change in order to have the greatest relevancy and impact on businesses, education, consumers, healthcare, and government. CN will produce broadband maps based on the definitions confirmed by the Council and revise the maps based on updated definitions.

Backhaul Map

Connected Nation also has experience working with backhaul providers to collect fiber middle-mile information and map the routes, co-locations, and other relevant information. Connected Nation will work with carriers in the state to identify middle-mile fiber, as well as incorporate backhaul information from other available sources, including subscription-based services to which Connected Nation has access.

An example of an interactive backhaul map is provided via the link below, along with screenshots of the map on the following page.



Backhaul Interactive Map

<http://cngis.maps.arcgis.com/apps/webappviewer/index.html?id=93d36490733746c7aa1d02574cc8ba38>



The interactive mapping environment would be envisioned as part of the completion of section 4.1 and 4.2. In regards to the development of the paper deliverable in paper and electronic format, CN estimates 175 hours with a limit of 10 printed copies.

Section 4, Subsection 4.4 Perform a gap analysis of the current broadband environment, deliverable in paper and electronic format. The analysis should include an evaluation of the current environment against current and future needs of the State, with an evaluation of key barriers to broadband expansion and how to overcome those barriers through such methods as surveys, user outreach and conversations with local and regional government agencies, educational institutions, federal laboratories and agencies, private stakeholders, and broadband providers.

Vendor Response:

Connected Nation will gather specific information about how the interconnected sectors of the State are applying technology in their operations and leveraging broadband to improve interactions with the public, businesses, and institutions. The broadband “use” metrics will ultimately gauge current and future broadband demand and are grouped into the following sections:

- **Government:** The provision of government services and new tactics for community involvement that can be made through the application of technology within local municipalities.
- **Libraries and Community Organizations:** These entities are vital to providing access to information, services, and resources. Broadband can benefit their provision of services and create operational efficiencies.

- **Business and Economic Development:** High-speed connectivity is critical in a global economy, yet many businesses are not leveraging the technologies that can help them compete. The use of broadband by businesses and various economic development support organizations is examined.
- **Tourism:** Many communities see significant revenue from travelers visiting from outside their city. Broadband and technology are important to attract and support such development.
- **Healthcare:** Broadband impacts and improves not only the provision of care, but also a patient's access to their personal medical information and allows for mobile monitoring and tracking that build awareness for how everyday life impacts one's health.
- **Agriculture:** While agriculture is not often thought of as a high-tech field, agriculture producers rely heavily on broadband, often in rural locations in which connections may be sparse.
- **Higher Education:** From traditional degree programs to innovative workforce development and online courses, broadband enhances post-secondary educational opportunities for all.
- **K-12 Education:** Technology device programs and access to online content can improve the provision of K-12 education and allow students to learn in non-traditional environments.
- **Public Safety:** Broadband and technology can greatly impact local citizens' access to public safety resources and information. Additionally, a community's public safety agencies can assist in providing information and resources for battling cybercrime and other cybersecurity issues.
- **Talent and Workforce Development:** These elements are essential to business development and ensuring that existing businesses have the talent they need to compete with the technology skills needed in twenty-first century occupations.

Similar to the adoption metrics, data for the use section is gathered through a series of sector-specific surveys designed to gather information about the technology use by entities that comprise each of these sectors. CN will then provide analyses and recommendations to fill any gaps found during the assessment.

Similarly, CN will gather statewide infrastructure, household, and multi-sector information related to the demand and adoption of broadband services at various connection speeds, technology types, and costs offered by broadband providers.

CN estimates **200 hours** to develop a statewide infrastructure, household, and multi-sector broadband demand analysis with a limit of 10 printed copies. The hours reflect the design and development of the survey instrument, a communication plan for implementation, and analysis of results. The Council and state stakeholders would be responsible for survey implementation

which would involve significant statewide outreach across residents, businesses, and multi-sector stakeholder groups in order to gather sufficient results to develop a meaningful analysis.

Section 4, Subsection 4.5 Under the direction of the Council, work collaboratively with state agencies, local governments, and other stakeholders to develop resources, policies and laws and that contribute to and encourage broadband infrastructure development. These efforts should be documented in the form of written (electronic and paper) reports.

Vendor Response:

As previously established in Section 3, CN has a long history of collaborating with state agencies, local governments, and other stakeholders to develop resources, policies and laws and that contribute to and encourage broadband infrastructure development. With this experience, CN envisions that with the completion of any of the subsections described which result in findings related to West Virginia's state of broadband access, adoption and use there will be a need and desire to engage state, local and perhaps federal stakeholders to present and explain those findings. It is through these findings and subsequent engagement, CN will collaborate with the Council to identify the appropriate call to action.

CN estimates that there is a certain level collaboration and engagement inherently built into presentation of the other subsections which are ultimately captured within the monthly status reports.

Section 4, Subsection 4.6 Review State laws and policies including, but not limited to, utilization of roadbed rights-of-way, easement acquisition, fee structures, permitting procedures, dig once, and other policies that relate to broadband infrastructure development; and recommend policies to increase broadband infrastructure development.

Vendor Response:

CN enjoys a strong policy staff that fully understands the telecommunications industry, drawing on years of experience working with states on broadband issues and having experience in Washington both with the FCC and with our nation's legislators. This experience allows for robust development of policy and programs that can help pave a mutually agreeable path toward greater availability and expansion of broadband services.

CN proposes the following activities to fulfill this project subsection:

1. **Understanding Deployment Barriers:** CN will develop a set of questions for internet service providers in the state. Both wired and wireless, national and local broadband providers will be included in the outreach process in order to fully understand the barriers they face to broadband expansion. The results of this research will be aggregated to produce a report highlighting the areas of concern among the state broadband providers.
2. **Policy Analysis:** Following the provider outreach, CN will gather and analyze the relevant state policies. While the policies and documents to be examined will depend on the provider outreach results, these policies are likely to include rights-of-way permit applications, fees, and processes, zoning ordinances, conduit

installation guidelines, and others. Additionally, CN will conduct outreach with the administrators of the various policies to better understand each process, their issues, communication and coordination with broadband providers, etc. to better understand the policies and how they could be improved to expedite broadband infrastructure deployment.

3. **Recommendations and Model Language:** The results of the provider outreach, issues identification, and policy analysis will culminate in a report that provides specific recommendations for modifying existing policies or establishing new policies to expedite broadband expansion in the region. The report and recommendations can then be used by the various permitting and policy administrators for implementation.

CN estimates **150 hours** to conduct these activities.

Section 4, Subsection 4.7 Develop and present in paper and electronic format, strategies for marketing the State as a preferred route to private companies to increase the availability of broadband infrastructure, technology, and assets within the state.

Vendor Response:

CN will work with the Council to identify the existing long-haul infrastructure routes for interconnection opportunities and develop strategies for marketing the State as a preferred route to private companies. CN will conduct research on best practices for attracting infrastructure investment, such as tax incentives, rights-of-way, dig-once, pole attachments, etc., as well as exploring needs of private companies to best inform marketing strategies.

Hourly estimates for developing the paper will be determined once infrastructure routes have been identified and subsection 4.6 has been completed.

Section 4, Subsection 4.8 Develop, and present in paper and electronic format, communication and outreach strategies to promote broadband utilization with emphasis on workforce development and economic development.

Vendor Response:

CN has nearly two decades of experience promoting broadband use via various different platforms ranging from hosting statewide summits to local community engagements and broadcasting public service announcements to developing tailored messages within affinity groups. CN proposes working with the Council and other State stakeholders to determine past efforts conducted within the State. CN would then develop an inventory of communication and outreach strategies with recommendations for the strategy which may best suit the State.

CN estimates **50 hours** to complete this paper and limits printed copies to 10.

Section 4, Subsection 4.9 At the direction of the Council, assist the Council and local governments with: (1) planning and conceptual development of broadband infrastructure projects; (2) identification of funding sources; (3) preparation of grant/loan applications; (4) development of strong justification for funding to serve as the basis for a grant/loan application to support project implementation and project management.

Vendor Response:

Both as an organization, and through the expertise of its individual staff members, Connected Nation possesses the skills and expertise necessary to manage successful coordination of large scale telecommunication infrastructure projects as well as provide technical assistance to those entities seeking funding.

As a direct recipient of broadband-related grant programs and NTIA's largest grantee for State Broadband initiatives program, CN has implemented over \$87 million dollars in broadband projects across 13 states. These projects have involved broadband research, data collection, validation, and analysis to inform the development of broadband programming and advance policies favorable to broadband expansion. With this level of data aggregation and experience, CN has served as a valued resource in supporting various broadband providers, communities, and partners pursuing grants and programs funded by federal entities. These include: U.S. Department of Agriculture, NTIA, FCC, U.S. Department of Transportation, Delta Regional Authority, and ARC, as well as various state level entities.

Based on this experience as well as other experience, CN would assist the Council and local governments with technical assistance related to the: (1) planning and conceptual development of broadband infrastructure projects; (2) identification of funding sources; (3) preparation of grant/loan applications; and (4) development of strong justification for funding to serve as the basis for a grant/loan application to support project implementation and project management.

Hourly estimates would depend on the scale of the project and complexity of the application.

Section 4, Subsection 4.10 Design and assist with the implementation of methods and programs to aid State staff in oversight, monitoring and reporting of broadband infrastructure projects.

Vendor Response:

CN has significant experience with grant programs, and because broadband is central to its core mission, all of this experience is specific to broadband and telecommunications projects.

As an administrator of broadband-related grant programs, CN has had experience administering grants designed by CN as well as grants designed by others. More recently, CN joined the White House's ConnectED initiative by administering the school selection process for AT&T's \$100 million commitment to provide free mobile broadband Internet access to select middle and high school students in Title 1 schools across the country. In June 2014, CN launched an online application portal to allow school districts to compete for an award under the program.

CN has also administered infrastructure-related programs such as the ConnectBELP broadband expansion project in Breathitt, Estill, Lee, and Powell Counties of Kentucky in partnership with the Regional Technology Authority (RTA), the Department for Local

Government, and USDA Rural Development, funded through the Appalachian Regional Commission. Ultimately, the project resulted in the successful build-out of five towers by ALTIUS Broadband with technical assistance from CN.

Other CN grant programs include Every Citizen Online in Ohio, No Child Left Offline in Kentucky, and Computers 4 Kids in Tennessee. From a grant administrator perspective, CN's Grants Management Office has awarded, managed, and provided oversight to over 125 distinct sub-recipient awards under the NTIA's BTOP and SBI grants. This grant administration included grantee selection, preparation and execution of award agreements, review and correction of reporting, and compliance oversight, including, but not limited to, review of single audit reports (as applicable) and detailed sub-recipient expenditure reviews, when necessary.

In addition to the administration of grants, CN has satisfied the need for broadband data collection, mapping, and validation in Minnesota in order to identify areas eligible for grant funding based on state-established thresholds. The Border-to-Border Broadband Infrastructure grant program was funded with \$10,588,000 by a special session in 2015 and can provide up to 50 percent of project development costs for the acquisition and installation of middle-mile and last-mile infrastructure.

In summary, CN has significant experience with broadband-related grant programs and, moreover, brings the perspective of being a designer, administrator, data supporter, and recipient of broadband technology grants. In order to aid State staff in oversight, monitoring and reporting of broadband infrastructure projects, CN would design a system to be implemented by the State and conduct in-field validation activities to effectively monitor broadband infrastructure projects.

Estimated hours would depend upon the number of infrastructure projects requiring validation.

Section 4, Subsection 4.11 Develop and produce all written forms, documentation, project management, data management, and tracking tools necessary to accurately and completely collect, compile, manage, and analyze data for effective record keeping and compilation in the Council's annual report.

Vendor Response:

CN's proposed project team has in-depth experience in managing national and statewide broadband-related projects such as the SBI and Broadband Technology Opportunities Program (BTOP) projects. Project management staff has Project Management Professional (PMP®) certifications from the Project Management Institute (PMI), uses a well-established Project Management Methodology (PMM) in accordance with PMI standards, and recognizes that a successful project planning includes information on activities, durations, budgets, and resources (Time, Resource, and Scope). CN's adherence to best practices as prescribed by the Project Management Institute's Project Management Body of Knowledge (PMBOK®) ensures its clients and stakeholders experience efficient project administration, effective program results, and robust reporting platforms. CN's PMM includes, but is not limited to, the following: Project Charter, Statement of Work, Success Criteria, Project Organization Chart, Corporate Organization Chart, Responsibility Matrix, Job Descriptions, Work Breakdown Structure, Product Breakdown Structure, Estimating Standards, Project Schedule (including

baselines), Project Status Reports, Risk Management Plan, Quality Management Plan, Change Control Plan, Lessons Learned Report, and Project Closeout Report.

CN has substantial experience with generating reports and reporting on project metrics as reflected in several years of successfully meeting the American Recovery and Reinvestment Act (ARRA) and NTIA grant reporting requirements. CN has been directly involved with the administration of over \$87 million in federal funds represented across 15 awards in 13 states requiring over 460 comprehensive reports for submission. In all cases, CN has adapted to evolving requirements and managed a track record of 100% on-time and compliant data submissions and quarterly reporting for all federal grants.

With a mature and disciplined Project Management Methodology and process in place, CN will be able to track all the project and program metrics and provide those metrics to the client in an agreed upon reporting format. CN also has experience with writing formal Legislature and/or other constituent group reports and presentations that provide updates on the program and project performance and the advancement of broadband technology.

CN proposes the use of monthly status reports to accurately and completely collect, compile, manage, and analyze data for effective record keeping and compilation. CN estimates **60 hours** per year for monthly reporting.

Section 4, Subsection 4.12 Produce reports, on a semi-annual basis or upon request of the Council, to document all findings and conclusions and assist the Council in the development of a professionally prepared annual report in accordance with West Virginia Code § 31G-1-1, et seq.

Vendor Response:

CN has several years' experience creating statewide broadband planning reports under the SBI and other programs, which have been distributed to legislators, state, and local broadband stakeholders. As an example, in Iowa, CN analyzed and presented in mapping format Iowa's broadband availability data, collected and released semi-annually between the years 2010 and 2014 to support findings.

The following link provides an example of a statewide broadband planning and analysis report created for Iowa: http://www.connectiowa.org/sites/default/files/connected-nation/broadband_infrastructure_at_a_state_and_local_level_in_iowa_final2.pdf.

If project goals and objectives have already been completed as described under subsection 4.1 and 4.2 and 4.11 is included, content should be readily available to support report production on a semi-annual basis.

*Section 4, Subsection 4.13 Assist the Council with updating the 2014 Broadband Strategic Plan. A copy of the 2014 plan can be obtained at the following link:
<https://wv broadband.maps.arcgis.com/apps/webappviewer/index.html?id=783e0501c60240d296eddt2092718dfB>*

Vendor Response:

Connected Nation has supported several states with the development a broadband strategic plan. In order to develop a meaningful update to the Plan, Connected Nation would expect significant collaboration and coordination with the Broadband Council and state stakeholders representing various sectors. Primary components of the update to the 2014 Broadband Strategic Plan in West Virginia would include:

- 1) updating broadband availability estimates in relation to prior baseline assessment of broadband deployment;
- 2) identifying and tracking areas with low levels of deployment, the rate at which residential and business users adopt broadband service and other related information technology services, and possible suppliers of such services;
- 3) identifying changes to barriers to adoption of broadband service and information technology services;
- 4) identifying significant changes to the available speeds for broadband connection as well as identifying new broadband service technologies that can be deployed and mapping their reach;
- 5) analyzing detailed market data concerning use and demand for broadband service in relation to baseline data gathered for the initial Plan;
- 6) collaborating with the Broadband Enhancement Council, relevant government agencies and private sector stakeholders to identify significant accomplishments, policy developments and new challenges in the broadband ecosystem since 2014;
- 7) collaborating with the Broadband Enhancement Council to review and update recommendations for advancing broadband deployment and use;
- 8) providing an analyses and updates regarding key federal policy developments that impact West Virginia and proposing strategies to ensure all stakeholders can fully leverage federal opportunities to help strengthen the West Virginia broadband landscape;
- 9) synthesizing the above findings into a document authored by the Broadband Enhancement Council that will summarize the key findings of this research. The document will be made available publicly via electronic format; and
- 10) supporting efforts to release the revised strategic plan. This support will entail the preparation of a broad strategy for the launch, as well as communications items as needed, but not include the organization or financing of any specific event.

If project goals and objectives have already been completed as described under subsection 4.1, 4.2, and 4.4, the activities described to update the West Virginia Broadband Strategic Plan will require an estimated **590 hours** with a limit of 10 printed copies. These hours may be reduced if any or all of the subsections are implemented.

Attachment B: Mandatory Specification Checklist

Mandatory Requirements

The following mandatory requirements must be met by the Vendor as a part of the submitted proposal. Failure on the part of the Vendor to meet any of the mandatory specifications shall result in the disqualification of the proposal. The terms "must", "will", "shall", "minimum", "maximum", or "is/are required" identify a mandatory item or factor. Decisions regarding compliance with any mandatory requirements shall be at the sole discretion of the Purchasing Division.

- 5.1 Federal funds may be associated with any contract awarded under this RFP. The selected firm will be required to comply with Title VI of the Civil Rights Act of 1964, Executive Order 11246, Section 109 of the Housing and Urban Development Act of 1974, Section 3 of the Housing and Urban Development Act of 1968, Conflict of Interest Statement and Access to Records provisions and all other requirements as related to HUD-funded projects. Minority and Women-owned Business Enterprises shall have the maximum opportunity to participate in the performance of this work.

Vendor Response:

Connected Nation understands and acknowledges the requirements as stated above in Section 5.1 of these Mandatory Requirements.

- 5.2 Ordering and Billing Process: Vendor must provide a single blended rate for all work performed under this contract. The hourly rate must include any travel costs. The Council will develop a scope of work upon execution of a specific Project Goal and deliverable.
1. The Vendor will provide an estimate of hours for completion.
 2. Upon reaching agreement on the scope, the Council will execute a delivery order to authorize the work. Vendor is not permitted to exceed the estimated number of hours without express authorization from the Council.
 3. The Vendor will provide an itemized bill based upon hours actually worked; not an estimate.
 4. The Council will review and processes payment based on the hourly rate, hours worked and deliverables specified in the Agreement.

Vendor Response:

Connected Nation has provided a single blended rate for all work to be performed under this contract, which includes all travel costs, and that rate has been submitted in the Cost Proposal. Furthermore, Connected Nation understands and acknowledges all provisions in 1-5 as stated above in Section 5.2.

- 5.3 All materials, maps, reports and data generated as a result of any agreement shall remain the property of the Broadband Council.

Vendor Response:

Connected Nation understands and acknowledges that all materials, maps, reports, and data generated as a result of any agreement shall remain the property of the Broadband Council.

By signing below, I certify that I have reviewed this Request for Proposal in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that, to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

Connected Nation, Inc.
(Company)


(Signature of Representative)

Thomas W. Ferree, Chairman & CEO
(Printed Representative Name, Title)

877.846.7710 / 270.781.7611
(Contact Phone/Fax Number)

February 26, 2018
(Date)

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.


(Signature of Designated Contact)

Chris Pedersen, VP of Planning & Development
(Printed Name and Title of Designated Contact)

P.O. Box 3448, Bowling Green, KY 42104
(Address)


202.255.6098 / 270.781.7611
(Phone Number/Fax Number)

cpedersen@connectednation.org
(Email Address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer, or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer, or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Connected Nation, Inc.

(Company)



(Authorized Signature)

Thomas W. Ferree, Chairman & CEO

(Printed Name and Title of Authorized Representative)

February 26, 2018

(Date)

877.846.7710 / 270.781.7611

(Phone Number/ Fax Number)

Appendix

Purchasing Affidavit

Disclosure of Interested Parties to Contracts

Addendum Acknowledgement Form

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2; failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-3-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Connected Nation

Authorized Signature: [Signature] Date: February 19, 2018

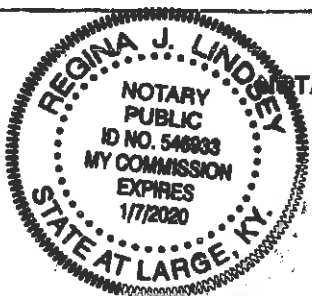
State of Kentucky

County of Warren, to-wit

Taken, subscribed, and sworn to before me this 19 day of February, 2018

My Commission expires 1-7 2020

AFFIX SEAL HERE



NOTARY PUBLIC

[Signature]

West Virginia Ethics Commission



Disclosure of Interested Parties to Contracts

Pursuant to *W. Va. Code* § 6D-1-2, a state agency may not enter into a contract, or a series of related contracts, that has/have an actual or estimated value of \$100,000 or more until the business entity submits to the contracting state agency a Disclosure of Interested Parties to the applicable contract. In addition, the business entity awarded a contract is obligated to submit a supplemental Disclosure of Interested Parties reflecting any new or differing interested parties to the contract within 30 days following the completion or termination of the applicable contract.

For purposes of complying with these requirements, the following definitions apply:

"Business entity" means any entity recognized by law through which business is conducted, including a sole proprietorship, partnership or corporation.

"Interested party" or "Interested parties" means:

- (1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors;
- (2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract. (This subdivision does not apply to a publicly traded company); and
- (3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency. (This subdivision does not apply to persons or business entities performing legal services related to the negotiation or drafting of the applicable contract.)

"State agency" means a board, commission, office, department or other agency in the executive, judicial or legislative branch of state government, including publicly funded institutions of higher education: Provided, that for purposes of *W. Va. Code* § 6D-1-2, the West Virginia Investment Management Board shall not be deemed a state agency nor subject to the requirements of that provision.

The contracting business entity must complete this form and submit it to the contracting state agency prior to contract award and to complete another form within 30 days of contract completion or termination.

This form was created by the State of West Virginia Ethics Commission, 210 Brooks Street, Suite 300, Charleston, WV 25301-1804. Telephone: (304)558-0664; fax: (304)558-2169; e-mail: ethics@wv.gov; website: www.ethics.wv.gov.

West Virginia Ethics Commission
Disclosure of Interested Parties to Contracts

(Required by W. Va. Code § 6D-1-2)

Contracting Business Entity: Connected Nation Address: 191 West Professional Park Ct.
Suite B

Authorized Agent: Thomas W. Ferree Address: Bowling Green, KY 42104

Contract Number: CRFP 0327 COM1800000001 Contract Description: Broadband Enhancement Consultant

Governmental agency awarding contract: State of West Virginia Purchasing Division

Check here if this is a Supplemental Disclosure

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below (attach additional pages if necessary):

1. Subcontractors or other entities performing work or service under the Contract

Check here if none, otherwise list entity/individual names below.

2. Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)

Check here if none, otherwise list entity/individual names below.

3. Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)

Check here if none, otherwise list entity/individual names below.

Signature: [Handwritten Signature]

Date Signed: 19 February 2018

Notary Verification

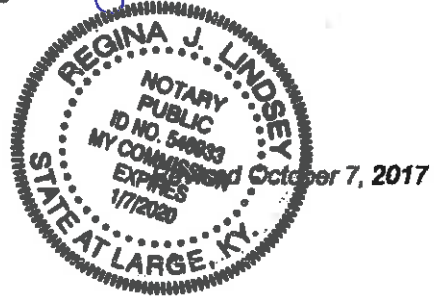
State of Kentucky, County of Warren

I, Thomas W. Ferree, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 19th day of February, 2018

[Handwritten Signature]
Notary Public's Signature

To be completed by State Agency:
Date Received by State Agency: _____
Date submitted to Ethics Commission: _____
Governmental agency submitting Disclosure: _____



ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: COM1800000001

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

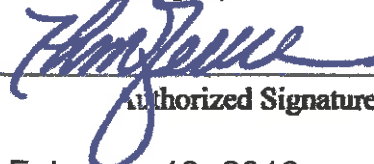
(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Connected Nation

Company



Authorized Signature

February 13, 2018

Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.