ANNUAL PERFORMANCE PROGRESS REPORT FOR BROADBAND INFRASTRUCTURE PROJECTS

General Information

1. Federal Agency and Organizational Element to Which Report is Submitted	2. Award Identification Number	3. DUNS Number
Department of Commerce, National Telecommunications and Information Administration	NT10BIX5570105	807477898

4. Recipient Organization

Treasury, New Jersey Department of 125 W. State Street, Trenton, NJ 08608-1101

5. Current Reporting Period End Date (MM/DD/YYYY)	6. Is this the last Annual Report of the Award Period?
12-31-2016	⊙ Yes ○ No

7. Certification: I certify to the best of my knowledge and belief that this report is correct and complete for performance of activities for the purposes set forth in the award documents.

7a. Typed or Printed Name and Title of Certifying Official	7c. Telephone (area code, number and extension)
Steven C. Talpas Chief, NJOHSP Interoperable Communications Bureau	609.584.4811
7b. Signature of Certifying Official	**7d. Email Address** STalpas@njohsp.gov
	7e. Date Report Submitted (MM/DD/YYYY): 11-16-14

OVERALL PROJECT PERFORMANCE INDICATORS

1. Please provide the following average cost figures for your project. Please review the instructions to determine how to calculate these figures. Write "0" in the second column and "N/A" in the third column if your project does not yet have this information. Depending on whether your project contains Middle Mile and/or Last Mile components, some metrics may not apply. Please provide a narrative description if the total is different from the target provided in your baseline plan (600 words or less).

Cost Indicator	Average Cost / Speed	Narrative (describe your reasons for any variance from the baseline plan or any other relevant information)
Average cost per new mile (Middle Mile)	0	Network miles do not apply to the New Jersey project.
Average cost per household passed (Last Mile)	0	Public Safety focused project.
Average cost per subscriber (Last Mile)	0	Data point does not apply to this project.
Maximum broadband speed advertised (Middle Mile)	0	Data point does not apply to this project.
Maximum broadband speed advertised (Last Mile)	0	Data point does not apply to this project.
Average broadband speed provided (Middle Mile)	0	Data point does not apply to this project.
Average broadband speed provided (Last Mile)	0	Data point does not apply to this project.

2. Please provide each facility name and type, the county where the facility is located, and census tract information for any facilities funded by your project during this annual reporting period. Report only facilities for which construction has been completed.

Facility Identifier / Name	Facility Type	County	Census Tracts
N/A	N/A	N/A	N/A

Add Facility	Remove Facility

3. Please identify (1) the total number of interconnection, peering, and/or transit agreements entered into during this annual reporting period; (2) the total number of agreements of each type that you are currently negotiating; and (3) whether you have denied any request for interconnection and if so, why. If you have not entered into any agreements, please write "N/A."

Interconnection Agreements (600 words or less)

Interconnection Agreements were not necessary due to the contained Broadband Network utilized by the Deployable Network.

Peering and Transit Agreements (600 words or less)

Peering and Transit Agreement were not necessary due to the contained Broadband Network utilized by the Deployable Network.

CAPACITY, UTILIZATION, AND CAPABILITY INDICATORS

4. Community Anchor Institutions: In the chart below, please provide information on the types of community anchor institutions capable of receiving service (i.e., anchor institutions connected to your network plus those passed by your network) as a result of BTOP funds.

Type of Community Anchor Institution	Total Number Within Service Area	Type of Community Anchor Institution	Total Number Within Service Area
Schools (K-12)	0	Public Housing	0
Libraries	0	Other Institutions of Higher Education	2
Medical and Healthcare Providers	0	Other Community Support Organizations	0
Public Safety Entities	63	Other Government Facilities	6
Community Colleges	0	Total Community Anchor Institutions	71

5. Please indicate the average increase in broadband speed provided to the community anchor institution customers as a result of your project, including a description of how this increase was calculated (600 words or less).

The LTE wireless broadband service is a new service to the Community Anchor Institutions. Prior to the implementation of JerseyNet, the only access to wireless broadband that Public Safety Entities had was through very limited commercial cellular in select agencies. The broadband speed of commercial cellular was not known. The JerseyNet microwave backbone is 200Mps. The average broadband speed of community anchor institutions receiving coverage is capped at 10Mps for JerseyNet vehicular router users. Institutions receiving handheld devices are currently capped at 1Mps. The calculation process is derived from bandwidth throttling restrictions within the Home Subscriber Unit (HSS). This unit is responsible for access control and bandwidth allocation down to the device level as an effort to assure satisfactory user experience without overwhelming the backhaul system.

6. What retail services are being provided by this project? Please describe below. (600 words or less). As an attachment to this report, please provide pricing plans (in $ per month) associated with each retail service. Retail services description:

This is a Public Safety project and retail services do not apply.

7a. What network management policies (e.g., bandwidth limitations, traffic prioritization) are in place for the services provided by your project? 7b. Have you ever limited or blocked consumers from accessing any lawful content, service, service provider, or application, or prevented any consumers from attaching any legal device to the network? If so, please explain why (300 words or less)?
7a. Traffic prioritization is done by user versus application due to the use of encrypted Virtual Private Network (VPN) tunnels for application traffic. Handheld devices are limited to a 1Mb and vehicular routers are limited to 10Mb. Most video services on the network have local recording capability to limit streaming. 7b. JerseyNet utilizes the State's Garden State Network as its backbone and complies with the security parameters enforced by the State. All local applications that ride on the network are approved in conjunction with the Office of Information Technology. At this point, Internet traffic is unrestricted however the State is in process of implementing WebSense which will allow JerseyNet to enforce restrictions such as sports sites if desired. The end user device must have a JerseyNet Subscriber Identity Module (SIM) provisioned by an authorized partner to have access to the network.

8. If applicable, please provide the total number and the percentage of subscribers who have dropped the broadband service provided through this project (total number of households and/or businesses and the "churn rate") and the subscribers' reasons for discontinuing their service (600 words or less).
N/A

9. Please provide the following information regarding the number of fiber strand-miles:

Total Number of Strand-miles	Total Number of Active Fiber Strand-miles Used by Recipient	Total Number of Leased Fiber Strand-miles	Total Number of Dark Fiber Strand-miles	Total Number of Strand-miles Being Built		
				Active	Leased	Dark
0	0	0	0	0	0	0

10. If you wholesale dark fiber, please list your wholesale customers and the number of fiber miles you currently are leasing to those customers:
N/A

11. Please provide the following information regarding the facility collocation capacity:

Total Facility (total square feet for all facilities)	Number of Square Feet Used by Recipient	Number of Square Feet Leased	Number of Square Feet Available
0	0	0	0

12. If you do not own collocation space, please describe how and where other network providers and/or customers interconnect with your network (600 words or less).

N/A

13. To the extent that you have made any subcontracts or sub grants, please provide the number of subcontracts or sub grants that have been made to socially and economically disadvantaged small business (SDB) concerns as defined by section 8(a) of the Small Business Act, 15 U.S.C. 647, as modified by NTIA's adoption of an alternative small business size standard for use in BTOP. Please also provide the names of these SDB entities (150 words or less).

N/A

14. Please describe any best practices/lessons learned that can be shared with other similar BTOP projects (900 words or less).

1) The Internet Protocol scheme is very challenging. Many issues are being worked on as they relate to devices, roaming, applications and agencies. Of particular challenge is the issue of session persistence when roaming.
2) Network Security - The discussion revolves around who gets access to what and what the State will allow over the network. This becomes challenging as it relates to State, Municipal and County Governments as well as individual applications, particularly Criminal Justice Information System (CJIS), which has its own requirements. Of particular challenge is how to maintain the priority and preemption characteristics of the Long Term Evolution (LTE) network while satisfying application requirements for a Virtual Private Network (VPN).
3) The NJ project has seven (7) active equipment vendors involved. The number of vendors necessitates an extremely strong integration and Project Management (PM) approach.
4) Microwave backhaul in a dense urban area poses particular challenges. Microwave path studies should be prioritized, early in the project.
5) When integrating a new network into an existing network, discussion with the Security team should be prioritized early in the project.
6) Clarity on who provides and programs Subscriber Identity Module (SIM) cards must be established during the procurement cycle.
7) Application and device training is key for public safety personnel adopting and using the Band 14 network and services.
8) Consistent outreach to individual agencies helps build user confidence and opens doors to collaboration and valuable feedback and insight. New Jersey is very aggressive in its outreach to users and agencies. The project leadership travels weekly, and sometimes daily, to support outreach and education to stakeholders. Continued outreach will be critical as the project enters the operational stage.
9) If microwave will be used for Cell On Wheels (COW) and System On Wheels (SOW)deployments, auto pan-tilt brackets should be considered for installation. In preparation for an approaching hurricane, the project team lowered antenna masts on their COWs and SOWs. After the event passed the team found microwave backhaul connectivity was challenging and time consuming to restore. Having auto pan-tilt installed on these units could have addressed this issue.
10) Final Network Acceptance in a multi-vendor environment must be clearly defined for each vendor.
11) More time is needed to provision SIM cards that support both Band 14 and the commercial network. Because this involves the exchange of security keys, a mechanism need to be created to allow secure information flow.
12) The following is a listing of lessons learned during special events:
• Ample design time is required for backhaul considerations.
• Understanding capacity requirements for each application to be used during the special event and having a good estimate of the number of users expected is essential in the network dimensioning. Such dimensioning should include not only the Radio Access Network (RAN) and the Core but also the transport network and the internet gateway.
• At a major special event, unlicensed spectrum for Wi-Fi and microwave is heavily used and reliability may suffer. Moving Wi-Fi to 5GHz band can be an option if devices support it. Wi-Fi congestion can occur and cause users to believe the issue is Band 14 related.
• For Vehicular Network Systems (VNS) relying only on satellite for backhaul, a site survey of the entire area is required, not just where it's planned to be deployed.
• Upon event completion, systems should be brought back to a default configuration.
13) In heavily populated areas, a licensed microwave should be implemented.
14) Alarm prioritization is important in an operational environment.
15) Data analytics on network performance Key Performance Indicators (KPI's) are important as a comparison to the Network Operations Center (NOC) ticketing.

16) Vehicular network systems should be deployed to be tested weekly.
17) Ready standby COWs/SOWs should be deployed to be tested monthly.

15. Using the Excel spreadsheet template titled "Annual PPR CCI Addendum", please provide an updated list of Community Anchor Institutions (CAIs) that you have connected and plan to connect to your network.

16. Using the Excel spreadsheet template titled "Annual PPR CCI Addendum", please provide a list of community pairs that are receiving new or improved broadband service as a result of BTOP grant funds.

17. Please provide up-to-date network route maps In a single file, in a Google Earth compatible format (e.g., KMZ file).