SCOPE OF SERVICES for the

Study and Report of Emergency Service and Wireless Telecommunications Infrastructure Master Plan

Prepared for:

Town of Bedford, New York

CityScape CONSULTANTS, INC.

"Unleashing the Power of Technology"

Federal Engineering®

Prepared by:
CityScape Consultants, Inc.
June 27, 2019

SCOPE OF SERVICES

CityScape proposes the following scope of services to be completed in unison by CityScape Consultants, Inc. ***(CS)***, and Federal Engineering, Inc. ***(FE) (CS/FE Team)***, for the development of the combined **Study and Report of Emergency Services and Wireless Telecommunications Master Plan.**

TASKS AND DELIVERABLES

TASK 1: Preliminary Research and Project Initiation

A. Preliminary Research – This task includes research and acquisition of tower data for fieldwork for the assessments of existing antenna, towers, base stations. The necessary data is gathered from a variety of sources including actual data and permits obtained from the Town, research of FCC registered site locations, direct information from existing service providers and tower owners active in the Town, the Town's GIS, and through actual site visits to each location. ***CS/FE Team*** will request, review and compile all Town-supplied system documentation and gather relevant information prior to scheduling the wireless facilities assessments. Additionally, extensive research of the community is conducted at this time. Population density, trends of the community, seasonal variables if applicable are all studied for an abundant working knowledge of the Town.

Weekly/Bi-Weekly Project Updates - CityScape will coordinate and establish a regularly scheduled teleconference call between designated Town staff and ***CS/FE Team*** to aid in maintaining project timelines and goals. The initial conference call will establish goals and expectations of the Town that will facilitate the workflow and timeline requirements. During this call, preliminary data needed from the Town by ***CS/FE Team*** will be identified, including discussion regarding public-owned properties. CityScape will gather information from staff and the WFWG concerning local wireless issues, policies, priorities, agency interactions, opportunities and begin to establish the process for the Wireless Master Plan with assistance from staff and stakeholders.

B. Project Initiation Meeting – The ***CS/FE Team*** will schedule and coordinate a mutually agreeable project initiation meeting.

This meeting will allow for coordination with the Town's participants and a discussion on spectrum and coverage. During the project initiation meeting, a common understanding of the project goals, objectives, and vision will be established and any other pertinent items best understood through a close working relationship between our respective management teams and staffs.

This meeting includes but is not limited to:

- Introduction to Wireless Master Plan process;
- Overview of the pertinent state and federal regulations;
- Overview of wireless network design and deployment practices utilized by the wireless communications industry;
- Overview of concepts behind wireless facilities planning and zoning with emphasis on familiarizing the Town with the Master Planning process;
- An introduction to a working vocabulary;
- A basic but thorough understanding of the technical aspects of the project will provide decision-makers with the background necessary to ensure the development of effective and legally defensible regulations.

TASK 2: Infrastructure Assessments

A. **Public Safety Interviews and Assessment -** Following the project initiation meeting ***FE*** will conduct interviews with the Town's WFWG and public safety representatives from County law enforcement, Town of Bedford police, fire, and EMS for one half-day. We will gather information about the existing public safety radio system, its size and characteristics, as well as current and future user needs, including the following, at a minimum:

- Voice performance (on-street coverage and reliability, and security)
- Voice performance (in-building coverage—OPTIONAL task)
- Data requirements and existing systems used for public safety
- Interoperability requirements
- Communications sites (towers, buildings)
- Dispatch consoles and accessory systems
- Microwave backhaul
- Spectrum
- Subscriber functionality
- Emergency backup

FE will assess the collected information to understand the current public safety radio system, infrastructure, and functionality, as well as ongoing user needs and system expectations. If additional information is required, it will be obtained via follow-up telephone calls. Where information is unavailable, ***FE*** will document appropriate assumptions based upon our experiences with other public safety agencies and networks. Our team recognizes that this task establishes the foundation for all future work, and we will gather sufficient information necessary to accurately document the user needs.

B. Infrastructure Assessments - CityScape will assess all wireless antenna, tower and base stations by visiting each site to take pictures and record observations. The fieldwork acquires all pertinent facility information as well as allows for the project team to become familiar with the Town and surrounding areas as all of this information is important in the analysis.

TASK 3: Inventory Catalog

A. Assessment Data Review - FE will review data and inventory records provided by the Town and information from the Town's radio system service provider to develop an assessment of the conditions and equipment at each site. FE will provide a survey template to be used by CityScape to document equipment and conditions at the five (5) existing communications sites (in Task 2 (B).

B. Draft Inventory Catalog – CityScape will prepare and present an initial draft inventory catalog of all existing wireless facilities including the public safety facilities. *Inventory of existing antenna sites include*: photograph; identification by latitude and longitude and street address; tower ownership; type of infrastructure; wireless services provided at each location; and observation of site conditions.

TASK 4: Engineering, Preliminary Mapping and Analysis

A. *CS* Engineering, Mapping and Analysis – Commencement and preliminary analysis of initial mapping, which may include:

- Existing inventory mapping;
- Existing infrastructure coverage mapping including all applicable variables (i.e. terrain, topography etc.).
- Special event, population, employment density mapping as applicable;
- Public property and asset mapping (i.e. light poles, traffic lights, ROW parcels, etc.) if applicable;
- Anticipated future coverage and capacity fill-in mapping including macro and small wireless facilities.
- Provide recommendations on filling in identified gaps in coverage;
- Identify strategies to develop revenue from identified public-owned property locations, if applicable.
- ***FE*** will review data and inventory records provided by the Town and information from the Town's radio system service provider to develop an assessment of the conditions and equipment at each site.

B. *FE* Public Safety Analysis and Mapping – Identification of Radio System Coverage Deficiencies and Enhancement Alternatives.

Once ***FE*** has completed and analyzed the information from the project initiation meeting, user needs interviews, and site/radio antenna data, ***FE*** will analyze system performance and identify alternatives for improvements in voice coverage and data availability.

FE coverage expert will work with the Town's project manager to determine how coverage plots should be depicted, including color schemes, topology, roads, patrol zones, and other characteristics unique to the Town of Bedford. ***FE*** will then load the existing transmitter locations and other relevant information into the ***FECoverage™*** model and generate coverage maps of the current public safety radio system using ***FEMapper™***. This will serve as the baseline to begin developing network alternatives.

FE will then provide ***FE Team Coverage™***, a powerful tool that interactively involves our clients in the system design process. The ***Team Coverage™*** experience builds consensus and facilitates "buy-in" of the eventual system and technology. As radio coverage is modeled and gaps are indicated, our subject matter expert will interactively and in real-time manipulate the model and display the effects of changing site equipment or placing additional sites in the network, such as at the Town's Guard Hill site. Workshop attendees will immediately be able to evaluate the impact of these changes and determine what needs to be done to meet user requirements**.** The interactive analysis will also take into consideration adjacent towns' systems and potential infrastructure sites.

At the conclusion of the workshop, ***FE*** will produce a mutually agreed upon set of coverage maps, customized to Town of Bedford needs, depicting major geographical landmarks, area topography, highway/road data, jurisdictional boundaries, and desired performance characteristics.

FE Team Coverage™ will be presented via the Internet in a ***two-hour workshop***. The coverage workshop will identify areas as desirable locations for new radio system transmitters or receivers, based on both coverage enhancements and Town aesthetic requirements. For each location identified through the Workshop, ***FE*** will work with stakeholders to identify potential structures in the area – existing towers, water tanks, or buildings – to determine if the Town has any assets that would be suitable for tower sites.

C. Remote Public Safety Teleconference – ***FE*** will present a two-hour online workshop as described above.

D. Public Workshop – ***CS*** will present the draft inventory catalog, preliminary mapping and initial master plan findings in a presentation workshop to the Town.

Task 5: Ordinance Review and Amendment Recommendations

A. Review Existing Land Use Development Standards and Processes – Regulatory review is an important part of the master planning process as it serves as the guideline for the ease of wireless deployment while setting design standards. These standards include concealment options for facilities, hierarchy of preferences, cross-reference review to other zoning criteria, including federal and state mandates and codes, permitted use charts, definitions, and other underlying zoning land use development standards will be used to uncover any possible inconsistencies and loopholes.

CityScape will review the materials provided by the Town with particular attention to:

- Strengths and weaknesses of the existing zoning regulations;
- Strategies to enhance the Town's permitting and application review process;
- Strategies to control and prioritize the location of new facilities;
- Strategies to protect the aesthetics in local and National Register historic districts and reduce the visual impact of new facilities and examine possibilities for concealed facilities and design guidelines;
- Compliances with federal and state mandated guidelines;
- Effectiveness of the intent of the zoning regulations and process.

Use of Public Properties – CityScape will address leasing public-owned property based on the public property assessments and the engineering data of the Master Plan and make recommendations on potential properties that

could provide the best opportunity to the Town. CityScape will also recommend possible public policy changes that could improve the process to meet the goals and potential opportunities of the Town. Additionally, Town-owned right of way parcels will be addressed.

TASK 6: Draft of Wireless Master Plan

A. Draft Wireless Master Plan- A preliminary review draft of the Wireless Master Plan will be provided to staff for review, comment, subsequent revision and Town sign off. The draft Wireless Master Plan document shall, at minimum, include:

- Town goals and maps from previous meetings;
- Analysis of population and population density trends, service providers, and public-owned land locations;
- Diagrams and pictures of specific and preferential towers and antenna types agreed to by the Town stakeholders;
- Engineering analysis illustrating the benefit of utilizing certain public-owned sites on revised propagation maps; regulatory recommendations based on master planning process and mapping;
- Wherever applicable, all mapping and data included in the Wireless Master Plan will be provided in ESRI ARCmap compatible format.

B. Emergency Response Radio System Master Plan – *FE* will develop a draft *Town of Bedford Assessment and Recommendations Report* that summarizes the results of the analysis and assessment activities included above. This report will become part of the Town of Bedford's Wireless Master Plan being developed by CityScape. The content of the report will minimally include:

- A summary of user needs and high-level requirements including coverage and capacity for public safety voice and data
- An overview of the Town's existing public safety radio system including current equipment and site infrastructure. The report will document the antenna locations and the current state of the system, including any equipment concerns.
- Analysis of existing technology and feasibility of new public safety radio technology applications
- Analysis of current radio coverage and challenges and the identified system performance gaps based on user needs, determined through our review of existing system documentation and interviews
- Coverage maps indicating current and potential future coverage, identifying potential new antenna sites that balance the needs of first responders with the Town's requirements for aesthetics and the preservation of property values
- Recommendations on how to move forward to meet the needs of emergency responders and public safety agencies

FE will incorporate comments to the public safety radio system sections and submit the final version to CityScape, for inclusion with the final project deliverable.

Task 7: Project Completion and Submittal of Final Documents

A. Finalize Master Plan - After all final input, CityScape will finalize the Master Plan to address all previous approved revisions and submit final document for Town review and approval. CityScape will submit the final Plan in electronic PDF format, along with all project deliverables (i.e. final maps and data tables). CityScape will submit the final Wireless Master Plan to staff for its final review, approval and print. Project will be completed upon submittal of all project deliverables of the final Wireless Master Plan and recommendations to the Town. The ***CS/FE Team*** will be available to the WFWG and designated Town staff to support the acceptance of the Master Plan.

B. Meeting/Workshop – The ***CS/FE Team*** will provide a workshop in an onsite meeting with Town stakeholders to present the findings and recommendations of the Wireless Master Plan.

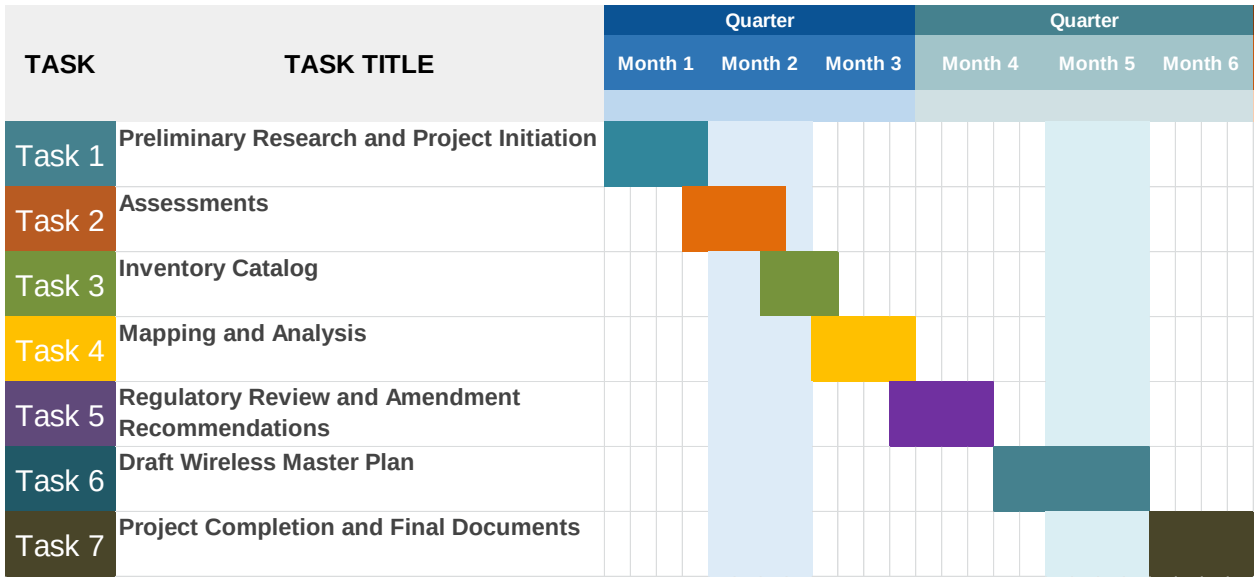
COST OF SERVICES AND DELIVERABLES

Task	Description	Timeline	Fee
TASK 1 – PROJECT COMMENCEMENT AND INITIATION			
A. Preliminary Research for Data Assessments	Requested Town data/research and assembly of tower/antenna database of all known existing tower and wireless antenna locations, including map layers from Town for base mapping.	2-3 weeks	$7,060.00
B. Initiation Meeting	Meeting for project kick-off and presentation to Town; strategies specific to facilitate orderly wireless network deployment and discuss Master Plan process, goals and objectives. (to be scheduled within 4 weeks of documentation received from Town)	1-2 days	$6,400.00
TASK 2 – INFRASTRUCTURE, OPERATIONAL AND EMERGENCY RADIO TELECOMMUNICATIONS NEEDS ASSESSMENTS			
A. Public Safety Interviews and Assessment	Interviews by FE with Town/County public safety representatives and assessment of collected data (following Initiation Meeting)	½ day	$8,400.00
B. Infrastructure Assessments	Assessments of existing wireless antenna, tower and base stations and identified public-owned properties; including each of the five (5) emergency radio system sites[1]	1-2 weeks	$7,200.00
TASK 3 – INVENTORY CATALOG			
A. Public Safety Assessment Data Review	Review of all assessment data and and/or inventory records provided by Town and Town's radio system service provider	2-4 weeks	$4,730.00
B. Infrastructure Assessment Data Review and Draft Inventory Catalog	Review of all infrastructure data and draft inventory catalog of all existing wireless facilities including public safety	3-4 weeks	$4,750.00
TASK 4 – ENGINEERING, PRELIMINARY MAPPING AND ANALYSIS			
A. Engineering Analysis and Propagation Mapping	Related mapping necessary to present inventory analysis, propagation coverage and engineering analysis including ten year anticipated growth forecast. Inventory catalog and site-specific recommendations.	4-6 weeks	$12,075.00
B. Public Safety Analysis and Mapping	Identification of radio systems coverage deficiencies and enhancement alternatives	4-6 weeks	$14,989.00
C. Remote Public Safety Teleconference	Two-hour on-line (via Internet) workshop presentation to Town by the FE Team	1 day	$2,230.00
D. Public Workshop	On-site Presentation/Workshop of preliminary mapping and initial Master Plan findings to Town	1-2 days	$3,000.00
TASK 5 – ORDINANCE REVIEW AND AMENDMENT RECOMMENDATIONS			
A. Review Existing Land Use Development Standards and Processes	Review Town's existing regulations including federal and state mandates and codes, permitted use charts, definitions and other applicable development standards	3-4 weeks	$6,500.00
TASK 6 – DRAFT OF WIRELESS MASTER PLAN			
A. Emergency Response Radio System Master Plan	Assessment and recommendations summary report; to include summary of all data and analysis overview of Town's existing public safety system and coverage maps for predicted future coverage. Report to be included in the Wireless Master Plan.	4-6 weeks	$9,400.00
B. Draft Wireless Master Plan	Preparation of the Wireless Master Plan and Telecommunications Law recommendations into a draft document form to include engineering analysis and recommendations.	4-6 weeks	$10,060.00

TASK 7 – PROJECT COMPLETION – SUBMITAL OF FINAL DOCUMENTS			
A. Submittal of Final Wireless Master Plan documents	Finalize Wireless Master Plan documents to include all approved revisions in electronic PDF format.	1-2 weeks	$1,740.00
B. Master Plan Presentation	Onsite meeting for presentation to Town Board	1-2 days	$6,216.00
	Total Master Plan (estimated timeline 18-26 weeks:		**$104,750.00**

1. Total pricing is a project fixed cost, including labor, travel and other direct costs. Proposed costs for this project are indicative of the efficiency of our operations, proven automated tools, vast experience completing similar projects, and view of the strategic nature of this project.
2. Town will be invoiced upon completion and submission of deliverables for each Task.
3. Project includes three (3) total presentation/meetings and one (1) on-line remote workshop. Additional on-site meeting/presentations may be added at a fixed fee of $3,000.00 to include all labor, travel and other direct costs.
4. Projected timeline with dates to be finalized in Task 1. Estimated timeline does not take into consideration required advertisement for public meetings or the clients existing workload or existing public meeting schedules. Town staff will schedule any public meetings required with necessary planning and community groups, public notification and arrangements for meeting dates, and times and locations in conjunction with the CS/FE calendar. Town staff will be responsible for public notification, location, meeting arrangements, and recording of sessions if applicable.
5. Scope of service process may be modified and/or reorganized throughout the process as necessary in order to meet Town requirements and timelines.

ESTIMATED TIMELINE OVERVIEW *(Projected 18-26 weeks completion)*



PER DIEM RATES:

If required by the Town, additional services outside of the scope of services may be added in accordance with the rate schedule below.

Effective January 1, 2019 through December 31, 2019

Regulatory Consultant	$ 300.00 per hour
Director/Engineering Consultant	$ 250.00 per hour
Director/Chief Consultant	$ 233.00 per hour
Senior Consultant	$ 195.00 per hour
Consultant	$ 168.00 per hour
Senior Analyst	$ 140.00 per hour
Analyst	$ 103.00 per hour
Administrative / Computer Services	$ 71.00 per hour

PER DIEM TERMS AND CONDITIONS

1. Labor rates do not include state or local taxes.
2. Travel and meals on a per diem basis will be invoiced at actual cost plus 20 percent to account for general and administrative costs.
3. Hours expended for travel in support of any time and materials task orders are billable hours.
4. Invoices will be rendered monthly. All invoices are due and payable 30 days from issuance. Late balances are subject to a finance charge of 1.5 percent per month (or fraction thereof).

BASIS OF PROPOSAL

1. This proposal assumes CS/FE will perform the tasks called out in the technical proposal (excluding optional tasks). The deletion of a task, a significant change in scope of one or more tasks, or use of a phased implementation approach may affect the overall price.
2. Any optional or additional tasking will be authorized by mutual agreement of *CS* and Town. Such tasking will be performed on a time and materials basis in accordance with the above rates or on a fixed price basis as mutually agreed upon in a task order by CS.
3. *CS/FE's* ability to fulfill this task depends, in part, on the willingness and ability of the Town of Bedford, Town participants, equipment vendors, service providers, third parties, and others to provide information in a timely manner, and upon the accuracy of the information as supplied. The accuracy of input data, whether provided in electronic or hard copy form, and the recommendations, actions, system designs, system procurements, and license filings resulting therefrom cannot, therefore, be warranted by CS/*FE* nor can the performance, suitability, or reliability of said systems be warranted by CS/*FE*. *FE* accepts no responsibility or liability to any third party in respect to any information or related content delivered by CS/*FE*. This information is subjective in certain respects, and, thus, susceptible to multiple interpretations and may be in need of periodic revisions based on actual experience and subsequent developments.