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Proposal Summary

This proposal builds upon approved FY 04 seed funding to continue work initiated during the FY 04 UASI funding cycle for implementation of the Regional Communications Interoperability that enables Emergency Operation Centers (EOC), Emergency Communication Centers (ECC) and Public Safety responder functions to be interconnected and in establishing a capability for real-time exchange of data and information. The FY 04 approved Interoperability Project starts these five initiatives: (1) inventory of systems for interoperability, (2) Connect EOCs, (3) I-Net interconnect, (4) broadband mobile wireless , (5) high performance search capability for data exchange. The project supports priorities established by the CAOs at their July 7, 2004 committee meeting, endorsed by the DEPC Committee, and provides the technical architecture and infrastructure required for interoperability. These include: (1) Establish minimum baseline interoperability standards for EOCs and ECCs voice, data, and video exchange, (2) Provide for reliable and redundant regional interoperability infrastructure, (3) Provide for integrated incident tracking systems, (4) Integrate jurisdictions' Computer Aided Dispatch (CAD) and other systems used in coordinated incident response, (4) Provide for automated communications and sharing between CAD, geographic information systems (GIS) and other emergency management systems, and (5) Provide for coordinated early notifications systems and procedures.

In December of 2004, $4.3 million dollars was "ear marked" by the CAOs and approved by the SPG to begin an interoperability project. The project, directed by the COG CIO Committee defined the comprehensive scope for a regional interoperability foundation and several pilot projects and projected costs for the initial project start-up. In addition, the NCR Executive Interoperability Committee (NEIC) works with the COG CIOs in further defining and prioritizing the parameters of this and future interoperability projects.

The ESF 2 (Emergency Support Function 2: Communications Infrastructure directed by COG CIOs) regional interoperability project has five major elements that provide a secure, private technology infrastructure required to facilitate: interoperability for voice, data, and video across the region; interconnecting Emergency Operations Centers, Public Safety Communications Centers (911 operations), other Public Safety and Emergency Management offices and support functions, and, communications for responder field/mobile operations at emergency event sites. The project includes several component activities including interconnecting fiber 'I-Net's and other jurisdiction networks; providing a regional interconnected broadband wireless infrastructure facility; and a high performance search capability. This project also works in collaboration with ESF # 5 (COG Emergency Managers) on the EOC Interoperability proposal started by the CIOs in the sub-project # 2 FY 04 funding, in developing a web based, neutral host data-exchange standard and tool to implement EOC to EOC and CAD to CAD data interoperability, and providing the services architecture and corresponding infrastructure for any required systems and applications that are used for regional coordinated response. The ESF 5 FY 05 proposal accomplishes the interoperability framework and application.

The outcome of this project provides the foundation communications and data exchange infrastructure for the region necessary to support all ESF requirements to achieve specific integrated operations between member systems over a robust, secure technology platform.

Establishing this physical and logical transport facility for the region provides a single, supportable utility and reduces costly overlapping infrastructures inferred from other ESF submissions to enable interoperability at the application level. With the regional infrastructure in place, the ESFs can focus resources and effort on work to integrate their specific data and applications for emergency support functions, and not have to create over-lapping infrastructures.

The main focus of the FY 2005 requirement will specifically achieve (in alignment with the NEIC approved Interoperability imperatives established for FY 04, and Emergency Managers):

- Interconnection of physical pathways (I-Nets) necessary for interconnection among regional government networks in the NCR- FY 05 completes design and starts the implementation of the interconnection;
- Design and initial build of a regional interoperable/interconnected broadband wireless network utility facilitating outdoor/mobile real-time interactive communications for high bandwidth information such as data streams, GIS and video transmission to the responders on the scene;
- Deployment of a high performance search capability (neutral host) and collaboration portal to allow secure authorized access to data housed in individual jurisdictions locations and emergency support functions, whether connected through the Internet, any network or a browser compatible wireless service. This includes incorporating the work initiated in FY 04 – 'EOC interconnectivity' and ESF 5 FY 05 proposal, which will specifically interconnect EOC applications.

The project includes required program management capability to provide assistance and manage the process of establishing and validating requirements, engineer the technology solution, and implementation.

This project will allow emergency managers and ECC managers to establish an emergency information exchange program and protocol needed to effectively respond to emergency events that affect multiple jurisdictions in the region. This is necessary to address the limitations and voids that exist today by interconnecting EOCs and ECCs and associated support communications and information systems to provide a real-time approach for sharing information and making informed decisions, and deployment more quickly. When significant emergency events occur they will affect the entire NCR in multiple ways. These include examples like collaborative on the scene response, emergency evacuation, coordinated public information, road closures, and advance knowledge of events that may impact one or multiple jurisdictions such as metro transportation system failures, etc. Without the ability to work collaboratively with modern communications capabilities and exchange information in a timely manner emergency managers can not effectively manage major events with optimum efficiency and effectiveness.

The scope has the future potential to tie-in other infrastructure needs of other ESF Committees that have interoperability projects including (1) Northern VA Hospital EOC connectivity and WMATA OCC sites connectivity (2) other data and application initiatives to include CapWIN,

and other Police system interoperability projects. To fully realize the value of and leverage the technology foundation this project provides, a process should be established that facilitates ESF-2 to review and map capability for availability of use of the regional infrastructure utility for transport and data exchange of other ESF projects that require efforts to share data, integrate systems or interoperate.

Computer equipment as well as training and exercises would be provided to each jurisdiction as part of the pilot and final project roll out. The end result of this initiative will be to ensure each NCR jurisdiction has the means to provide regional interoperability and share information and data in real time thus creating a “virtual environment”.

Project Goals, Objectives and Implementation Step

Essential tasks and activities necessary to achieve project goals and objectives:
Each goal must be supported by one or more objectives and each objective should include a series of tasks and one or more deliverable.

1. **Goal 1 –** Establish a comprehensive inventory of voice and data systems, data repositories and processes in the NCR used by the region that are used in public safety and emergency response functions. *(This work will be substantially complete with the FY 04 funding, but important to note as needed to accomplish the actual interoperability of the systems identified once the communications infrastructure projects noted in the next goals is in place)*

1.1. **Objective 1 –** identify the systems- system profile and gaps for each NCR jurisdiction/participating entity

- 1.1.1. **Implementation step 1** – develop system survey template and inventory database
- 1.1.2. **Implementation step 2** – collect required information from each jurisdiction/participating entity
- 1.1.3. **Implementation step 3 –** validate required systems and conduct gap analysis to identify missing capability in the area
- 1.1.4. **Implementation step 4 –** develop plan to address system capability gap

FY 05 Goals start here:

2. **Goal 2** – Enable structured inter-jurisdictional communications between EOCs, PSAPS, and other offices involved in emergency response in the NCR: <u>Interconnect the networks of each NCR jurisdiction</u>

2.1. **Objective 1-** Complete engineering of regional I-Net interconnect

- 2.1.1. **Implementation step 1 –** ascertain network requirements corresponding to needed applications and system interconnections
- 2.1.2. **Implementation step 2 –** determine locations requiring interconnection in FY2005
- 2.1.3. **Implementation step 3 –** determine network functional requirements
- 2.1.4. **Implementation step 4 --** document existing network infrastructure
- 2.1.5. **Implementation step 5 –** determine physical infrastructure alternatives
- 2.1.6. **Implementation step 6 –** conduct cost-benefit analysis of physical infrastructure alternatives
- 2.1.7. **Implementation step 7 –** develop technical standards
- 2.1.8. **Implementation step 8 –** develop operational procedures
- 2.1.9. **Implementation step 9 –** develop network plan for pilot project

2.2. **Objective 2 –** Complete System Design

- 2.2.1. **Implementation step 1 –** specify means of physical connection
- 2.2.2. **Implementation step 3 –** specify network electronics and management platform
- 2.2.3. **Implementation step 3 –** estimate cost of network

2.2.4. **Implementation step 4 –** review design with oversight committee and decision makers

2.3. **Objective 3 –** Construct Network

2.3.1. **Implementation step 1 –** acquire contractors for construction, equipment supply and integration

2.3.2. **Implementation step 2 --** obtain permits and agreements with infrastructure providers

2.3.3. **Implementation step 3 –** construct physical plant

2.3.4. **Implementation step 4 –** construct wireless connections (if applicable)

2.3.5. **Implementation step 5 –** prepare hub and NOC facilities

2.3.6. **Implementation step 6 –** install network electronics and management system

2.3.7. **Implementation step 7 –**network integration

2.3.8. **Implementation step 8 –** performance testing and verification

2.4. **Objective 4** – Activate Network

2.4.1. **Implementation step 1 -** Determine operational agreements and protocols

2.4.2. **Implementation step 1 –** Select and train operational staffing

2.4.3. **Implementation step 2 –** Conduct pilot project to connect EOCs and PSAPs

2.4.4. **Implementation step 3 –** Activate completed sections in production network

3. **Goal 3** – Enable structured inter-jurisdictional out-side communications for responders at incident scenes from EOCs, PSAPS, and other offices involved in emergency response in the NCR : Design a secure, private regional interconnected and interoperable broadband wireless network that provides outdoor data transport communications for Pubic Safety and Emergency Management events the NCR

3.1. **Objective 1-** Complete design and engineering of wireless broadband interconnect

3.1.1. **Implementation step 1 –** ascertain wireless requirements corresponding to needed applications and system interconnections

3.1.2. **Implementation step 2 –** ascertain existing wireless infrastructures in the NCR jurisdictions

3.1.3. **Implementation step 3 –** determine physical infrastructure alternatives

3.1.4. **Implementation step 4 –** conduct analysis of wireless infrastructure interconnect alternatives

3.1.5. **Implementation step 5 –** develop technical standards

3.1.6. **Implementation step 6 –** develop operational procedures

3.1.7. **Implementation step 7 –** determine locations requiring wireless interconnection for FY2005 and develop network plan for pilot project

3.2. **Objective 2 –** Complete System Design

3.2.1. **Implementation step 1 –** finalize solution and interconnection specifications

3.2.2. **Implementation step 2 –** determine network electronics and management platform

3.2.3. **Implementation step 3 –** review design with oversight committee and decision makers

3.3. **Objective 3 –** Construct wireless network

3.3.1. **Implementation step 1 –** acquire contractors for construction, equipment supply and integration

3.3.2. **Implementation step 2 --** obtain permits and agreements

3.3.3. **Implementation step 3 –** construct physical plant (access points)

3.3.4. **Implementation step 4 –** construct wireless connections

3.3.5. **Implementation step 5 –** install electronics and management system

3.3.6. **Implementation step 7 –**network integration

3.3.7. **Implementation step 8 –** performance testing and verification

3.4. **Objective 4** – Activate Network

3.4.1. **Implementation step 1 -** Determine operational agreements and protocols

3.4.2. **Implementation step 1 –** Select and train operational staffing

3.4.3. Implementation step 2 – Conduct pilot project: FY 005 range inside the beltway

4. **Goal 4:** Ensure reliable, secure collaboration capability for all regional emergency managers, EOCs, ECCs, PSAPs, and other responder offices; ensure the ability to securely discover and exchange incident data with regional partners; ensure the ability to track resource requests and task assignments across the region: Deploy high performance search capability (neutral host) within the collaboration portal being developed in ESF 5 (EOC Integrated Communications and Interoperability)

4.1. **Objective 1** – identify applicable search engine solutions complaint with DHSs standards

4.1.1. **Implementation step 1** – Determine standards and solutions alternatives

4.1.2. **Implementation step 2** - Gain agreement on standards

4.1.3. **Implementation step 3** – Identify data elements for interoperability processes

4.2. **Objective 2** – Determine neutral host site

4.2.1. **Implementation step 1** – evaluate candidate host site capabilities

4.2.2. **Implementation step 2** - determine host site

4.2.3. **Implementation step 3** – develop governance model

4.3. **Objective 3** – Implement search engine

4.3.1. **Implementation step 1** - acquire software tool and required infrastructure

4.3.2. **Implementation step 2** – identify pilot applications for first deployment and testing

4.3.3. **Implementation step 3** – design regional user interface portal

4.3.4. **Implementation step 4** – work with EOC managers to implement specific interoperability protocols and screens

Project Description

As stated in the project summary, providing a secure, interconnected infrastructure for communications across the NCR is critical to achieve well coordinated response among the jurisdictions and entities that respond to emergency events. This capability is the underpinning foundation that supports emergency managers and ECC managers to establish an emergency information exchange program and protocol needed to effectively respond to emergency events that affect multiple jurisdictions in the region. This is necessary to address the limitations and voids that exist today by relying on a variety of levels of commercially provided communications services that are also shared by business and the public for daily activities, thus competing interests.

Commercial networks for voice and data services were extremely limited based on the extent of use and damage on 9/11. Commercial wireless capability was severely reduced and available airwaves jammed, and jurisdictions were scrambling to put-up voice and data capabilities at the site of the attacks so that responders had on-site communications. Lack of well coordinated communications was identified as a significant deficiency in post 911 debriefing reports. Emergency managers have long advocated that EOCs, ECCs and PSAPs need directly connected, secure communications between them to support collaborative voice and data transmissions to improve decision making, event management and deployment of responder assets. Interoperable communications and information systems provide a real-time approach for sharing information and making informed decisions, identification of appropriate assets and equipment aligned with incident needs, and rapid deployment.

When significant emergency events occur they affect the entire NCR in multiple ways. These include examples like collaborative on the scene response, emergency evacuation, coordinated public information, road closures, and advance knowledge of events that may impact one or multiple jurisdictions such as metro transportation system failures, etc. Without the ability to work collaboratively with modern communications capabilities and exchange information in a timely manner emergency managers and public safety officials can not effectively manage major events with optimum efficiency and effectiveness.

Relevance to National Initiatives (Section IV, pages 32-40)

This project supports National Initiative (A) *National Incident Management System (NIMS)* objectives for all levels of government to work effectively and efficiently together to respond to domestic incidents.

This project creates the communications infrastructure, processes, protocols and information exchange capability that is needed to support coordinated response at the local level, determined by the Department of Homeland Security (DHS) as the lead entity for response management. Information exchange standards implemented in this project are coordinated and will be aligned with DHS standards.

The project also directly aligns with National Initiative (D) Achieving Tactical Interoperable Communications, addressing the nationally identified inadequacy and unreliability of wireless communications for public safety, which has been demonstrated, most vividly on 9/11, to impede response performance. Agencies were unable to effectively share critical voice and /or data information with other jurisdictions in day-to-day operations and emergency response to incidents, including acts of terrorism and natural disasters. Issues surrounding interoperable communications were consistent themes in ODP assessment data. Many states and localities have been developing strategies to address the challenges of interoperable communications.

This ESF 2 proposal provides a strategy and solution for the NCR, and responds directly to the mandate on page 36, RFA that *"each urban area receiving FY 05 UASI funds must develop a plan to achieve tactical interoperable communications across jurisdictions in the urban area and test the plan through the cycle of exercise activity required for the IED scenario*." The ESF 2 interoperable communications infrastructure provides a common facility for rapid provision of on-scene, incident based mission critical communications among all first responders (EMS, fire, EOC, and law-enforcement) with modern communications platforms. It also enables redundancy and back-up capability for regional EOCs and PSAPs.

From RFA page 8, this project addresses:

- Develop/enhance interoperable communications systems;
- Enhance emergency operations centers
  - Provides direct, secure interconnection of EOCs
  - Provides ability to integrate operations trough CADs and other systems
- Enhance cyber security (for interoperable data)
  - Provides a private, secured network that includes a security architecture to protect the infrastructure and information systems from physical and cyber incidents
- Enhance ability for regional response teams
  - Provides communications utility and improves response team coordination
- Supports/enhance sustainable homeland security exercise and training programs

Organization, Experience, and Qualifications of Applicant

This section shall describe the capability of the prospective grantee to fulfill the requirements of the Scope of Services and other essential information concerning the prospective grantee using guidance listed in the RFA. (*If the applicant is a NCR jurisdiction – this section can be abbreviated to state how the determination was made (committee vote, volunteered).*

The grantee has been determined by the NCR SPG, and COG CAO committees to possess the technical and program administrative skills, and best interests of the region to support and manage this critical NCR Interoperability initiative. This team's capabilities are a matter of record in response the FY04 UASI grant funding of the phase one planning/implementation component of this same regional interoperability program. The regional IT organizations represented by the CIOs have the experience and ability to drive the implementation to a successful conclusion.

Staffing Plan

Staffing Plan: I-Net

POSITION TITLE	% OF EFFORT	JOB Description and Qualifications
Physical Transport Infrastructure Steering Committee (PTSIC)	Four to six representatives of participating jurisdictions	• Selected by the MetroCIO committee of the Council of Governments • Members should have operational knowledge of components and technology involved
Contractor Staff		
Project Manager PTSIC, and NCR.	50%	• Primary point of contact with MetroCIO committee • Project decision making • Staff selection and management • Strategic planning and adaptation of the project to changing circumstances • Required Experience—management of government network implementation and planning outside physical plant • Degree: B.S. or higher in engineering or related field • Licensed professional engineer or demonstrated equivalent experience
Project Supervisor	100%	• Daily presence at OCTO • Responsible for interaction and oversight between jurisdictions and regional activities. • Tactical management--responsible for supporting field and planning activities • Supervision of contractor activities with respect to tasks and budget • Reporting to Project Manager • Reporting daily status to project participants • Required Experience--supervision of outside plant and network engineering projects • Degree: B.S. or higher in engineering or related field
Construction Manager	50%	• Conduct cost analysis of infrastructure alternatives • Estimating physical plant and alternative wireless and carrier costs

POSITION TITLE	% OF EFFORT	JOB Description and Qualifications
		• Determining strategies for physical interconnection • Inventorying existing plant and assets • Developing specifications for construction contractors • Overseeing construction • Inspecting and testing quality of construction • Responsible for coordinating contractual support for Design, Mapping, and obtaining permits and pole attachments, and access to rights of way • Required Experience--having supervised construction of physical plant for large government, enterprise, or carrier networks • Degree: B.S. or higher or licensed professional engineer
Network Engineer	50% to 75%	• Thoroughly document and understand network requirements of applications to operate on the network • Develop network strategies for transporting applications over network, • Plan network management system for monitoring and continuous fail-safe operation • Plan standards-based, open-architecture environment that is interoperable and scalable for future applications • Plan network transport of pilot application • Supervise selection of qualified integrator and equipment supplier • Oversee network integration and evaluate network performance • Evaluate network transport of the pilot application • Develop technical standards for network • Required experience—demonstrated experience in planning, specifying and overseeing implementation of large scale government networks
Network Architect	25%	• Determine and implement commonality among all NCR Interop projects that are affected by this project. • Enforce and coordinate activities of this project to make sure they are aligned with other NCR Interop Initiatives

POSITION TITLE	% OF EFFORT	JOB Description and Qualifications
		• Required Experience- Leadership Architect role in major industry. Proven track record of leading large initiatives. Understands hardware and software standards. Interfaced with industry standard bodies such W3C and OASIS.
Operational Staff		
Network Administrator	100% for last quarter of FY2005	• Administrator of operational network • Oversee Network Operations staff • Oversee contractors of operational network • Respond to inquiries from public and outside agencies and jurisdictions • Liaison with network administrators of participating jurisdictions and agencies • Seek funding via grant proposals appropriate to network and its applications
Network Operations Staff	100% for last quarter of FY2005	• Initially two staff, to expand in FY2006 • On call 24 hours a day • Provision services for participating jurisdictions • Configure operational network for NCR applications • Monitor and troubleshoot • Perform moves, adds and changes • Direct contractors of operational network • Keep hub facilities secure

The project team shall keep accurate personnel records for each employee, including name, address, social security number, a resume of education, training, previous employment, letter of employment and salary. When hiring staff, written work experience and personal references shall be obtained and documented. Information shall be available upon request from the Project Supervisor.

Staffing Plan: Data Hubs

POSITION TITLE	% OF EFFORT	JOB Description and Qualifications
Contractor Staff		
Project Manager	100%	• Primary point of contact with NCR. • Project decision making. • Responsible for interaction and oversight between jurisdictions and regional activities. • Staff selection and management. • Vendor management

		• Procurement management • Strategic planning and adaptation of the project to changing circumstances. • Degree: B.S. or higher in engineering or related field
Program Financial Manager	10%	• Complete the majority of the ongoing and month-end financial analysis reporting • Perform cost analysis/financial modeling on program processes/products/tasks • Develop and maintain current and historical program statistics and matrices • Update and maintain multi-period/year program budgets/forecast using the PMO budgeting tools and software • Perform budget to actual variance analysis as well as detail account analysis • Build and maintain reporting formats to meet various reporting needs • Reporting to Project Manager • B.S./B.A. in Accounting/Finance/Economics or a related degree with at least 4 to 8 years of experience as an Analyst.
Software installation and integration consultants	100%	• Project manage implementation and operations of the search engine software tool • Coordinate implementation and operations with various jurisdictions technical responsible • Support regional training effort • Degree: B.S. or higher in engineering or related field
Data Hub server installation technicians	100%	• Thoroughly document and understand network requirements of applications to operate on the network • Plan network management system for monitoring and continuous fail-safe operation
Operational Staff		
Data Hub Implementation Manager	25%	• Implementation and integration of Data Hub solution into the regional operational environment • Oversee software and hardware installation and implementation contractors • Liaison with network administrators of participating jurisdictions and agencies

The project team shall keep accurate personnel records for each employee, including name, address, social security number, a resume of education, training, previous employment, letter of employment and salary. When hiring staff, written work experience and personal references shall be obtained and documented. Information shall be available upon request from the Project Supervisor.

Staffing Plan: Broadband Wireless

POSITION TITLE	% OF EFFORT	JOB Description and Qualifications
Contractor Staff		
Project Manager	100%	• Primary point of contact with NCR • Project decision making • Responsible for interaction and oversight between jurisdictions and regional activities • Staff selection and management • Vendor management • Procurement management • Strategic planning and adaptation of the project to changing circumstances • Degree: B.S. or higher in engineering or related field
Deputy Project Manager	100%	• Daily presence at OCTO • Tactical management--responsible for supporting field and planning activities • Supervision of contractor activities with respect to tasks and budget • Reporting to Project Manager • Reporting daily status to project participants • Degree: B.S. or higher in engineering or related field
Program Financial Manager	75%	• Complete the majority of the ongoing and month-end financial analysis reporting • Perform cost analysis/financial modeling on program processes/products/tasks • Develop and maintain current and historical program statistics and matrices • Update and maintain multi-period/year program budgets/forecast using the PMO budgeting tools and software • Run ad hoc analysis on business opportunities/business trends

		• Perform budget to actual variance analysis as well as detail account analysis • Build and maintain reporting formats to meet various reporting needs • Reporting to Project Manager • B.S./B.A. in Accounting/Finance/Economics or a related degree with at least 4 to 8 years of experience as an Analyst.
Project Coordinator	70%	• Administers, coordinates, manages, and provides administrative, logistics and ancillary support to the management and technical staff. • Ensure that the day-to-day administrative and logistical needs of the Program are addressed as necessary. • Gathers and assimilates data for special reports, budget submissions, and meetings. • Reporting to Project Manager • Graduation from an accredited four-year college, or significant coursework and/or experience in Program Administration.
Network Manager	100%	• Project manage implementation and operations of the network • Technical interface with the vendors • Coordinate implementation and operations with various jurisdictions technical responsible • Define and implement network deployment and network operations processes • Report status and usage of the network • Reporting to Project Manager • Required experience required in deploying Public Safety wireless wide area broadband data network • Degree: B.S. or higher in engineering or related field
Network Engineer	100%	• Thoroughly document and understand network requirements of applications to operate on the network • Plan network management system for monitoring and continuous fail-safe operation • Plan standards-based, open-architecture environment that is interoperable and scalable for future applications • Plan network transport of pilot application • Oversee network integration and evaluate network performance

		• Responsible for backhaul and core network troubleshooting • Develop technical standards for backhaul and core network • Document and update network configuration • Required experience-demonstrated experience in planning, specifying and overseeing implementation and operations of big Enterprise IP networks • Degree: B.S. or higher in engineering or related field
Site Leasing Manager	100%	• Obtain/Update/Negotiate sites lease • Assess zoning and permitting requirements • Support permit filings and zoning hearings • Facilitates sites surveys • Ensure site access as necessary for vendors and NCR personnel • Keep an updated data base of sites' relevant information such as contact information, leases/permits and other agreements • Experience in acquiring sites for Cellular and Public Safety wireless networks in the Washington DC metropolitan area
RF Engineer	100%	• Manages site implementation and RF network system implementation • Control and approves vendors' RF network and site design • Control and approve sites site construction • Manages equipment install, commissioning, and testing • Supervise system optimization • Evaluate network performance • Develop technical standards for RF network • Responsible for RF network troubleshooting • Document and update network configuration • Required experience-demonstrated experience in planning, specifying and overseeing implementation and operations of wireless broadband networks (cellular/3G) • Degree: B.S. or higher in engineering or related field
Operational Staff		
Network Manager	100% for last	• Administrator of operational network

	quarter of FY2005	• Oversee contractors of operational network • Respond to inquiries from public and outside agencies and jurisdictions • Liaison with network administrators of participating jurisdictions and agencies • Seek funding via grant proposals appropriate to network and its applications

The project team shall keep accurate personnel records for each employee, including name, address, social security number, a resume of education, training, previous employment, letter of employment and salary. When hiring staff, written work experience and personal references shall be obtained and documented. Information shall be available upon request from the Project Supervisor.

Program Budget

The program budget is broken down into the following three (3) subsections: I-Net, Data Hubs, and Broadband Wireless. The overall program budget is detailed below:

Budget Category	Amount
A. Personnel	$131,148.16
B. Fringe Benefits	$26,229.64
C. Travel	$14,061.10
D. Equipment	$11,926,620.00
E. Supplies	$600.00
F. Consultants/Contracts	$4,353,868.72
G. Other	$1,047,378.00
Total Direct Costs	$17,499,905.62
H. Indirect Costs	$-
TOTAL PROJECT COSTS	$17,499,905.62

Program Budget: I-Net

A. Personnel - List each position by title and name of employee, if available. Show the annual salary rate and the percentage of time to be devoted to the project. Compensation paid for employees engaged in grant activities must be consistent with that paid for similar work within the applicant organization.

Name/Position	Computation	Cost
Robert LeGrande, Deputy Chief Technology Officer	$72.11/hr 0 assumes 12 months at 44 hrs	$38,074.08
Network Administrator	100% of time for 4Q FY 2005, salary $100,000	$25,000.00
Network Operations Staff	100% of time for 4Q FY 2005, two employees, salary $60,000	$30,000.00
	Total	**$93,074.08**

B. Fringe Benefits - Fringe benefits should be based on actual known costs or an established formula. Fringe benefits are for the personnel listed in budget category (A) and only for the percentage of time devoted to the project. Fringe benefits on overtime hours are limited to FICA, Workman's Compensation, and Unemployment Compensation.

Name/Position	Computation		Cost
Network Administrator	100% of time for 4Q FY 2005,	$	5,000.00

	salary $100,000, 20% of salary		
Network Operations Staff	100% of time for 4Q FY 2005, two employees, salary $60,000, 20% of salary	$	6,000.00
Robert LeGrande, Deputy Chief Technology Officer	20% of salary allocated for the program period	$	7,614.82
	Total	**$**	**18,614.82**

C. Travel - Itemize travel expenses of project personnel by purpose (e.g., staff to training, field interviews, advisory group meeting, etc.). Show the basis of computation (e.g., six people to 3-day training at $X airfare, $X lodging, $X subsistence). In training projects, travel and meals for trainees should be listed separately. Show the number of trainees and unit costs involved. Identify the location of travel, if known. Indicate source of Travel Policies applied, Applicant or Federal Travel Regulations.

Purpose of Travel	Location	Item	Computation	Cost
Site Surveys, Meetings	Throughout NCR	60 miles .405, 400 trips of 60 mile, 10$ parking and Metro * 400	Mileage Reimbursement at IRS rate, Parking and metro reimbursement	$ 14,061.10
			Total	**$ 14,061.10**

D. Equipment - List non-expendable items that are to be purchased. Non-expendable equipment is tangible property having a useful life of more than two years. (Note: Organization's own capitalization policy and threshold amount for classification of equipment may be used). Expendable items should be included either in the "Supplies" category or in the "Other" category. Applicants should analyze the cost benefits of purchasing versus leasing equipment, especially high cost items and those subject to rapid technical advances. Rented or leased equipment costs should be listed in the "Contractual" category. Explain how the equipment is necessary for the success of the project. Attach a narrative describing the procurement method to be used.

Item	Computation	Cost
Network Electronics Equipment	Approximately 10 core network points of presence. Plus Mgmt Infrastructure	$1,140,000.00
Network Integration	25% of Network Electronics	$256,500.00
	Total	**$1,396,500.00**

E. Supplies - List items by type (office supplies, postage, training materials, copying paper, and other expendable items such as books, hand held tape recorders) and show the basis for computation. (Note: Organization's own capitalization policy and threshold amount for classification of supplies may be used). Generally, supplies include any materials that are expendable or consumed during the course of the project.

Item	Computation	Cost
	Total	

Deleted: $ -

F. Consultants/Contracts - Indicate whether applicant's formal, written Procurement Policy or the Federal Acquisition Regulations are followed.

Consultant Fees: For each consultant enter the name, if known, service to be provided, hourly or daily fee (8-hour day), and estimated time on the project. Consultant fees in excess of $450 per day require additional justification and prior approval from ODP.

Comment [MSOffice1]: Is this an issue?

Name of Consultant	Cost
Legal Support - 100 hours	$25,000.00
Construction – derived from Regional Interconnection Network in NVA prepared by CTC	$1,510,000.00
Consulting for I-Net and Data Hub Proj Mgmt, Planning Design, and Engineering	$752,500.00
Maintenance contract for network hardware -- last quarter of FY2005, 15% of equipment cost	$42,750.00
subtotal	**$2,330,250.00**

Consultant Expenses: List all expenses to be paid from the grant to the individual consultant in addition to their fees (i.e., travel, meals, lodging, etc.)

Item	Location	Computation	Cost
		subtotal	

Contracts: Provide a description of the product or services to be procured by contract and an estimate of the cost. Applicants are encouraged to promote free and open competition in awarding contracts. A separate justification must be provided for sole source contracts in excess of $100,000.

Item	Cost
subtotal	**$ -**

G. Other Costs – List items (e.g., rent, reproduction, telephone, janitorial or security services, and investigative or confidential funds) by major type and the basis of the computation. For example, provide the square footage and the cost per square foot for rent, and provide a monthly rental cost and how many months to rent.

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Description	Computation	Cost
Hub facility upgrades, preparation, and security improvements		$ 335,000.00
Project contingencies	Approximately 5% of project	$ 200,000.00
Program Management & Administration Fees	2.50%	$ 112,500.00
	Total	**$647,500.00**

H. Indirect Costs - Indirect costs are allowed only if the applicant has a Federally approved indirect cost rate. A copy of the rate approval, (a fully executed, negotiated agreement), must be attached. If the applicant does not have an approved rate, one can be requested by contacting the applicant's cognizant Federal agency, which will review all documentation and approve a rate for the applicant organization, or if the applicant's accounting system permits, costs may be allocated in the direct costs categories.

Description	Computation	Cost
	Total	**$ -**

Budget Category: I-Net	Amount
A. Personnel	$93,074.08
B. Fringe Benefits	$18,614.82
C. Travel	$14,061.10
D. Equipment	$1,396,500.00
E. Supplies	$0
F. Consultants/Contracts	$2,330,250.00
G. Other	$647,500.00
Total Direct Costs	**$4,500,000.00**
H. Indirect Costs	$-
TOTAL PROJECT COSTS	**$4,500,000.00**

Budget Narrative: I-Net

Personnel and Fringe Benefits

In FY2005, the I-Nets and Data Hubs will be designed, engineered, constructed, and integrated into the NCR environment. It is foreseen that select facilities and locations of will also become operational during the course of the year. . In the planning document, *A Regional Interconnection Network in Northern Virginia: Technical Considerations* (hereafter, *Regional Interconnection*), the recommended operational staffing to operate and manage a ten-hub network of the same scale as the FY2005 network is one administrator and three network engineers/technicians.

It is estimated that staff will be required for only the last quarter of FY2005. Moreover, since the network will not be fully operational, only the administrator and two network engineers/technicians will be needed. Costs for Personnel and Fringe Benefits were determined based on prevailing compensation for similar positions within DC-OCTO.

Travel

Network planning, construction and installation will require contractors to travel to meetings and sites throughout the NCR. It will require travel to work sites and surveys of rights-of-way. The cost estimate is based on 400 instances of travel. Each instance is estimated at 60 miles of car or truck travel (at $0.405 per mile), plus an estimate of $10 for other costs, such as parking and Metro fare.

Equipment

Costs are based on a 10-hub fiber network, of the scale anticipated in *Regional Interconnection.* Costs are from the *Regional Interconnection* study and assume a multi-service SONET multiplexer and a routing switch populated and equipped for the facility, plus network management software. Integration costs are assumed to be 25% of equipment costs, based on experience with similar projects.

Regarding Data Hub cost projections, a redundant data server is provided for each of the 19 COG jurisdictions to support data search and retrieval requirements. Additionally, the suite of software required to support this effort is included.

Equipment Supplies

Supplies are expected to be included within contractor overhead.

Consultants/Contracts

Contractors will be required to support various technical and administrative aspects of both the I-Net and Data Hub programs. Costs are based on a 10-hub network, of the scale anticipated in *Regional Interconnection* together with providing data hub capabilities in 19 regional jurisdictions. Projected costs for I-Nets are based on an estimate in *Regional Interconnection* for a Northern Virginia interconnection network, where fiber is built from key sites on existing jurisdiction networks to the key sites on adjacent networks. It is assumed that there will be at least two routes to each key jurisdiction network and two interconnection sites on each network, for necessary network survivability. Construction costs are based on prevailing labor and materials construction costs in the NCR.

Third party contractors will be needed for project management, planning, design, engineering, and testing and oversight of the network. These costs are expected to be 25% of the total project cost. This contractor will provide the following staff at these estimated commitment levels:

Contractor support will be required for data hub and network equipment repair and replacement for the last quarter of FY2005, as the network becomes operational. Costs are projected at 15% of the purchase price of electronics.

Legal contract support is anticipated for legal issue resolution and negotiations to achieve fiber route approvals. The nature of support will include negotiations with providers of cable plant (such as cable companies or fiber carriers), research and negotiations with owners of utility poles or rights of way, assistance in drafting memoranda of understanding between jurisdictions or other participants, such as federal and state government agencies, WMATA, PEPCO, WASA, and WSSC.

Equipment Other Costs

The network and data hub will require robust interconnection points and network management facilities. An estimate is drawn from *Regional Interconnection* to accommodate upgrades of existing facilities and construction (as necessary) of new facilities. Potential expenses may include acquisition of generators, uninterruptible power supplies, facility security, building wiring, lighting, physical monitoring systems (such as Webcams and intercoms), and equipment racks.

The 2.5% program Management and Administrative (M&A) fee will be allocated toward grant allowable expenses and services benefiting the program advancement and success. All M&A expenses will be allocated in strict adherence with the grant guidelines.

Program Budget: Data Hubs

A. Personnel - List each position by title and name of employee, if available. Show the annual salary rate and the percentage of time to be devoted to the project. Compensation paid for employees engaged in grant activities must be consistent with that paid for similar work within the applicant organization.

Name/Position	Computation	Cost
		0

B. Fringe Benefits - Fringe benefits should be based on actual known costs or an established formula. Fringe benefits are for the personnel listed in budget category (A) and only for the percentage of time devoted to the project. Fringe benefits on overtime hours are limited to FICA, Workman's Compensation, and Unemployment Compensation.

Name/Position	Computation	Cost
	Total	**0**

C. Travel - Itemize travel expenses of project personnel by purpose (e.g., staff to training, field interviews, advisory group meeting, etc.). Show the basis of computation (e.g., six people to 3-day training at $X airfare, $X lodging, $X subsistence). In training projects, travel and meals for trainees should be listed separately. Show the number of trainees and unit costs involved. Identify the location of travel, if known. Indicate source of Travel Policies applied, Applicant or Federal Travel Regulations.

Purpose of Travel	Location	Item	Computation	Cost
			Total	**0**

D. Equipment - List non-expendable items that are to be purchased. Non-expendable equipment is tangible property having a useful life of more than two years. (Note: Organization's own capitalization policy and threshold amount for classification of equipment may be used). Expendable items should be included either in the "Supplies" category or in the "Other" category. Applicants should analyze the cost benefits of purchasing versus leasing equipment, especially high cost items and those subject to rapid technical advances. Rented or leased equipment costs should be listed in the "Contractual" category. Explain how the equipment is necessary for the success of the project. Attach a narrative describing the procurement method to be used.

Item	Computation	Cost
Data Hub Network Servers and Integration	$15,000 per server in 19 jurisdictions	$285,000.00
Hub software	Data search and retrieval suite of tools	$290,000.00
	Total	**$575,000.00**

E. Supplies - List items by type (office supplies, postage, training materials, copying paper, and other expendable items such as books, hand held tape recorders) and show the basis for computation. (Note: Organization's own capitalization policy and threshold amount for classification of supplies may be used). Generally, supplies include any materials that are expendable or consumed during the course of the project.

Item	Computation	Cost
	Total	**0**

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F. Consultants/Contracts - Indicate whether applicant's formal, written Procurement Policy or the Federal Acquisition Regulations are followed.

Consultant Fees: For each consultant enter the name, if known, service to be provided, hourly or daily fee (8-hour day), and estimated time on the project. Consultant fees in excess of $450 per day require additional justification and prior approval from ODP.

Comment [MSOffice2]: Is this an issue?

Name of Consultant	Service Provided	Computation	Cost
		subtotal	**0**

Consultant Expenses: List all expenses to be paid from the grant to the individual consultant in addition to their fees (i.e., travel, meals, lodging, etc.)

Item	Location	Computation	Cost
		subtotal	**0**

Contracts: Provide a description of the product or services to be procured by contract and an estimate of the cost. Applicants are encouraged to promote free and open competition in awarding contracts. A separate justification must be provided for sole source contracts in excess of $100,000.

Item	Cost
Hub Server Installation	$125,000
Consulting for Data Hug Project Management, Planning Design and Enginnering	$275,000
subtotal	**$400,000.00**

G. Other Costs – List items (e.g., rent, reproduction, telephone, janitorial or security services, and investigative or confidential funds) by major type and the basis of the computation. For example, provide the square footage and the cost per square foot for rent, and provide a monthly rental cost and how many months to rent.

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Description	Computation	Cost
Program Management & Administration Fees	2.50%	$25,000.00
Total		**$25,000.00**

H. Indirect Costs - Indirect costs are allowed only if the applicant has a Federally approved indirect cost rate. A copy of the rate approval, (a fully executed, negotiated agreement), must be attached. If the applicant does not have an approved rate, one can be requested by contacting the applicant's cognizant Federal agency, which will review all documentation and approve a rate for the applicant organization, or if the applicant's accounting system permits, costs may be allocated in the direct costs categories.

Description	Computation	Cost
General Overhead		
Total		**$ -**

Budget Category – Data Hubs	Amount
A. Personnel	0
B. Fringe Benefits	0
C. Travel	0

D. Equipment		$575,000
E. Supplies		0
F. Consultants/Contracts		$400,000
G. Other		$25,000
	Total Direct Costs	**$1,000,000.00**
H. Indirect Costs		$-
	TOTAL PROJECT COSTS	**$1,000,000.00**

Budget Narrative: Data Hubs

Introduction

The primary goal of this initiative is to implement a regional Data Hub network to support the searching and retrieval of critical emergency management and responder information essential to interoperable information exchange. The goals of this regional network are as follows:

- Expand upon the information search engine capabilities implemented in the initial 2004 grant phase of the Data Hub program to include new regional information search and retrieval capabilities
- Provide Hub Data server hardware into each representative jurisdiction to support secure access and information retrieval through a secure portal.
- Enhance the search engine software implemented during phase one of the program to expand search and retrieval capabilities and users
- Integrate capabilities into a central management and administrative network to ensure reliable system access and performance.

Personnel and Fringe Benefits

No government direct labor and expenses are considered to implement this phase of the program. Future operations will be integrated into existing Help Desk and Information Technology departments of the represented government jurisdictions.

Travel

No costs anticipated that couldn't be covered under the general Management and Administration fees included into the "Other" cost presentation of this proposal.

Equipment

The primary expense of this program will be spent on the network equipment necessary to design, procure and install Data Hub servers into each participating jurisdiction together with the search and retrieval software required to support this effort.

Equipment pricing includes:

- Hub equipment consisting of core routers, home/visiting agents that allow regional roaming, and AAA servers that control access to the networks

- Data search engine software to facilitate the search, retrieval and storage of critical regional data
- Installation, commissioning, and testing of the above

Supplies

None anticipated.

Consultants

Consultants provide the management, engineering, and administrative functions of this program in addition to equipment and software installation and commissioning. Many of these consultants exceed the $450/day limit and their contracts are projected to exceed $100,000. Procurement of third part contractors and consultants will adhere to strict District of Columbia procurement guidelines and regulations.

Other costs

Other expenses include:

- A 2.5% management and administrative fee is included to cover office space, procurement, oversight management, and other management costs.

Program Budget: Broadband Wireless

A. Personnel - List each position by title and name of employee, if available. Show the annual salary rate and the percentage of time to be devoted to the project. Compensation paid for employees engaged in grant activities must be consistent with that paid for similar work within the applicant organization.

Name/Position	Computation	Cost
Robert LeGrande, Deputy Chief Technology Officer	$72.11/ hr - assumes 12 mo at 44 hrs/mo	$ 38,074.08
		$38,074.08

B. Fringe Benefits - Fringe benefits should be based on actual known costs or an established formula. Fringe benefits are for the personnel listed in budget category (A) and only for the percentage of time devoted to the project. Fringe benefits on overtime hours are limited to FICA, Workman's Compensation, and Unemployment Compensation.

Name/Position	Computation	Cost
Robert LeGrande, Deputy Chief Technology Officer	20% of Salary	$7,614.82
	Total	**$7,614.82**

C. Travel - Itemize travel expenses of project personnel by purpose (e.g., staff to training, field interviews, advisory group meeting, etc.). Show the basis of computation (e.g., six people to 3-day training at $X airfare, $X lodging, $X subsistence). In training projects, travel and meals for trainees should be listed separately. Show the number of trainees and unit costs involved. Identify the location of travel, if known. Indicate source of Travel Policies applied, Applicant or Federal Travel Regulations.

Purpose of Travel	Location	Item	Computation	Cost
			Total	**$-**

D. Equipment - List non-expendable items that are to be purchased. Non-expendable equipment is tangible property having a useful life of more than two years. (Note: Organization's own capitalization policy and threshold amount for classification of equipment may be used). Expendable items should be included either in the "Supplies" category or in the "Other" category. Applicants should analyze the cost benefits of purchasing versus leasing equipment, especially high cost items and those subject to rapid technical advances. Rented or leased equipment costs should be listed in the "Contractual" category. Explain how the equipment is necessary for the success of the project. Attach a narrative describing the procurement method to be used.

Item	Computation	Cost
Manufacturer		
Fixed Network Equipment	Number of sites * $200,000	$4,200,000.00
[1] Installation	Number of sites * $20,000	$420,000.00
Implementation management	$180 / hr - assumes 9 mo at 176 hrs + the number of sites + site engineering cost	$684,120.00
System Acceptance and Testing	Number of sites * $8,000	$168,000.00
[1] Antennas and transmission lines	Number of sites * $18,000	$378,000.00
[1] Antennas and lines construction	Number of sites * $45,000	$945,000.00
[1] Backhaul equipment	Number of sites * $5,000	$105,000.00
NOD	Number of NODs * $400,000	$2,400,000.00
Cards	600	$240,000.00
Reoccurring Cost		0
O&M cost per year	Number of sites * $5,000	$105,000.00
Spares	1	$100,000.00
Support Cost		0
Architecture and Engineering	Numbers of sites *$10,000	$210,000.00
	Total	**$9,955,120.00**

E. Supplies - List items by type (office supplies, postage, training materials, copying paper, and other expendable items such as books, hand held tape recorders) and show the basis for computation. (Note: Organization's own capitalization policy and threshold amount for classification of supplies may be used). Generally, supplies include any materials that are expendable or consumed during the course of the project.

Item	Computation	Cost
Office Supplies	$50 / month	$600.00

	Total	**$600.00**

F. Consultants/Contracts - Indicate whether applicant's formal, written Procurement Policy or the Federal Acquisition Regulations are followed.

Consultant Fees: For each consultant enter the name, if known, service to be provided, hourly or daily fee (8-hour day), and estimated time on the project. Consultant fees in excess of $450 per day require additional justification and prior approval from ODP.

Comment [MSOffice3]: Is this an issue?

Name of Consultant	Service Provided	Computation	Cost
Bryan Casey	Program Manager	$135.2 / hr - assumes 12 mo at 176 hrs	$285,542.40
TBD	Deputy Program Manager	$108.16 / hr - assumes 12 mo at 176 hrs	$228,433.92
TBD	Program Financial Manager	$75 / hr - assumes 12 mo at 132 hrs/mo	$108,900.00
TBD	Project Coordinator	$42 / hr - assumes 12 mo at 120 hrs/mo	$60,480.00
TBD	Network Manager	$135.2 / hr - assumes 12 mo at 176 hrs/mo	$285,542.40
TBD	Network Engineer	$90 / hr - assumes 12 mo at 176 hrs/mo	$190,080.00
TBD	Site Leasing Manager	$110 / hr - assumes 12 mo at 176 hrs/mo	$232,320.00
TBD	RF Engineer	$110 / hr - assumes 12 mo at 176 hrs/mo	$232,320.00
		subtotal	**$1,623,618.72**

Consultant Expenses: List all expenses to be paid from the grant to the individual consultant in addition to their fees (i.e., travel, meals, lodging, etc.)

Item	Location	Computation	Cost
		subtotal	**$-**

Contracts: Provide a description of the product or services to be procured by contract and an estimate of the cost. Applicants are encouraged to promote free and open competition in awarding contracts. A separate justification must be provided for sole source contracts in excess of $100,000.

Item	Cost
subtotal	**$-**

G. Other Costs – List items (e.g., rent, reproduction, telephone, janitorial or security services, and investigative or confidential funds) by major type and the basis of the computation. For example, provide the square footage and the cost per square foot for rent, and provide a monthly rental cost and how many months to rent.

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Description	Computation	Cost
Fiber optic site Backhaul (connect sites to hubs)	Number of sites at $1,000/month	$ 126,000.00
Management and Administrative Cost	2.5 of the total cost awarded	$ 248,878.00
	Total	**$374,878.00**

H. Indirect Costs - Indirect costs are allowed only if the applicant has a Federally approved indirect cost rate. A copy of the rate approval, (a fully executed, negotiated agreement), must be attached. If the applicant does not have an approved rate, one can be requested by contacting the applicant's cognizant Federal agency, which will review all documentation and approve a rate for the applicant organization, or if the applicant's accounting system permits, costs may be allocated in the direct costs categories.

Description	Computation	Cost
General Overhead		
	Total	**$ -**

Budget Category	Amount
A. Personnel	$38,074.08
B. Fringe Benefits	$7,614.82
C. Travel	$ -
D. Equipment	$9,955,120.00
E. Supplies	$600.00
F. Consultants/Contracts	$1,623,618.72
G. Other	$374,878.00
Total Direct Costs	**$11,954,216.72**
H. Indirect Costs	$-
TOTAL PROJECT COSTS	**$11,954,216.72**

Budget Narrative: Broadband Wireless

Introduction

The primary goal of this initiative is to implement a regional, broadband, wireless data network. The goals of this regional network are as follows:

- Provide outdoor coverage throughout the District of Columbia using transceiver (antenna) sites.
- Provide outdoor coverage in targeted homeland security hotspots in other National Capital Region counties and cities
- Provide primary and backup network nodes (switching equipment that controls transceiver sites and also controls mobility throughout the region) for each major municipality with hotspots: Fairfax, Montgomery, Price George, and Arlington Counties, the District of Columbia, the City of Alexandria and others throughout the region as appropriate. Hotspots within the NCR that are within other independent jurisdictions will share hub equipment with their nearest neighbor (e.g., Fairfax City sites would be hosted by the Fairfax County hub).

The design work for this effort is currently underway with a UASI 2004 grant and will culminate in one or several RFPs for the build out of the regional network. The technology and frequency selection for that design have not been decided, nor have vendors provided proposals for the set of, "to be determined", requirements for the network. Therefore, several critical assumptions have been made based on previous experience with the District's experimental pilot network and the pricing for that pilot network.

The key assumption is the spectrum allocation. The District's pilot network operates at 700 MHz to maximize coverage per transceiver site. If higher frequencies are used, far more sites are required in order to match coverage. With far more sites, additional labor is required to select, secure, install, and test each transceiver location. Therefore, significant changes in frequency assignment will result in a dramatic shift between equipment, personnel, and contractual costs.

Furthermore, this budget assumes the use of physical site locations that are "ready" for the broadband equipment. Antenna sites will need backup power, climactic systems, physical space, redundant power grids, space on towers and rooftops for antenna equipment, and easy access between equipment racks and antennas. Hub sites will need similar resources and close proximity to large amounts of bandwidth to handle traffic going to the Internet and between municipal networks.

Finally, different technologies will deliver different cost structures – one technology may have higher costs associated with hubs, while another may balance more towards the antenna sites. This budget assumes the same cost structure as the District's existing pilot network using Flarion Technologies equipment. It is important to note, however, that the NCR will bid out the equipment and construction of this network, and therefore, the cost structure will change based on the final frequency and vendor selection.

Personnel and Fringe benefits

Robert LeGrande, Deputy CTO of the District of Columbia will manage this project 25% of the time and will receive 20% in fringe benefits.

Travel

No costs anticipated that cannot be covered under the general Management and Administration fees included into the "Other" cost presentation of this proposal.

Equipment

The primary expense of this program will be spent on the network equipment necessary to build 21 radio network sites and six hubs to support the 21 radio sites to provide hotspot coverage within the National Capital Region.

Equipment pricing includes:

- Site electronics, including power amplifiers, site packet schedulers
- Antennas and RF cables connecting site electronics and the rooftop/tower-top antennas
- Hub equipment consisting of core routers, home/visiting agents that allow regional roaming, and AAA servers that control access to the networks
- Installation, commissioning, and testing of the above

Supplies

Documentation for the network is required for the overall program. General office supplies for the entire duration at $50/month will cover the essentials such as paper, pens, etc. Other general office supplies such as furniture, copiers, and white board will be supplied by the District of Columbia.

Consultants

Consultants provide the management, engineering, and administrative functions of this program. Many of these consultants exceed the $450/day limit and their contracts are projected to exceed $100,000.

Other Costs

Other expenses include:

- Broadband, fixed data service to provide data connections from 21 wireless broadband sites to six hub locations. Provides broadband connection to enable users to communicate throughout the national capital region with interconnection to the Internet via the hubs.
- General office expenses for telephone and conferences are included.
- A 2.5% management and administrative fee is included to cover office space, procurement, oversight management, and other management costs.

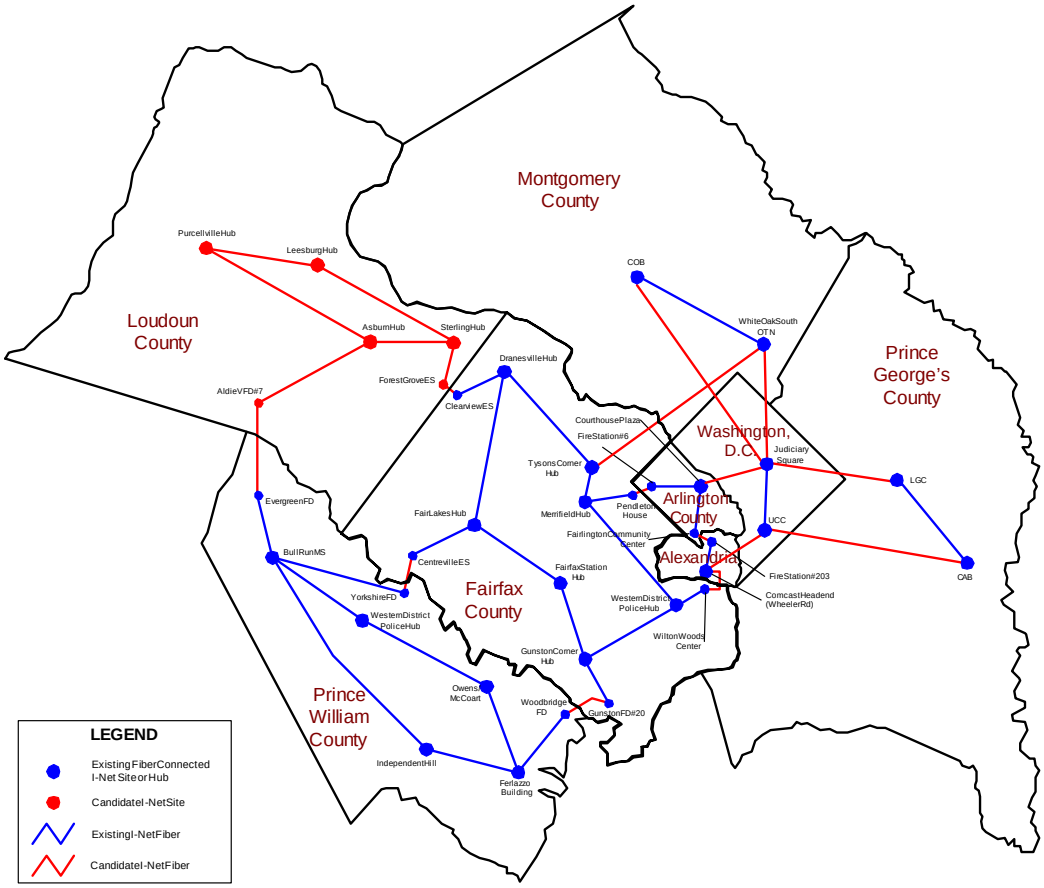
Note: The fiber optic backhaul support is provided by other entities and do not constitute "contracts" per se. Therefore, they are listed here in "Other Costs."

Certifications and Assurances

Appendices

Includes diagrams:

- I-Net Fiber Routing Map (Condensed)
- I-Net Fiber Routing Map (Full)
- Regional I-Net Capabilities
- Conceptual Net Architecture
- Wireless solution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Loudoun County
Prince George's County
Washington, D.C.
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Fairfax County
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SterlingHub
AldieVFD#7
ForestGroveES
ClearViewES
DranesVilleHub
EvergreenFD
BullRunMS
CentrevilleES
FairLakesHub
YorkshireFD
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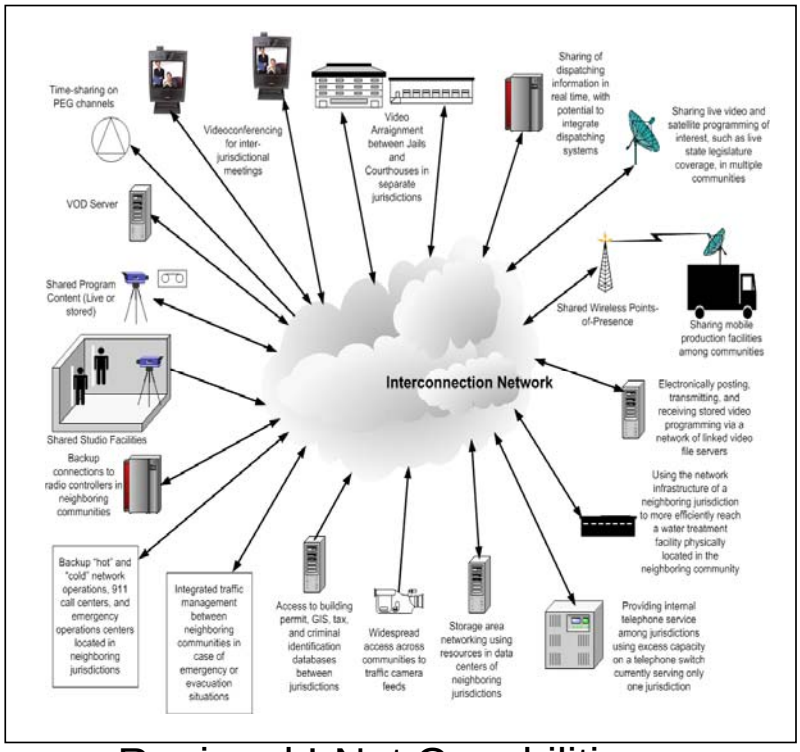
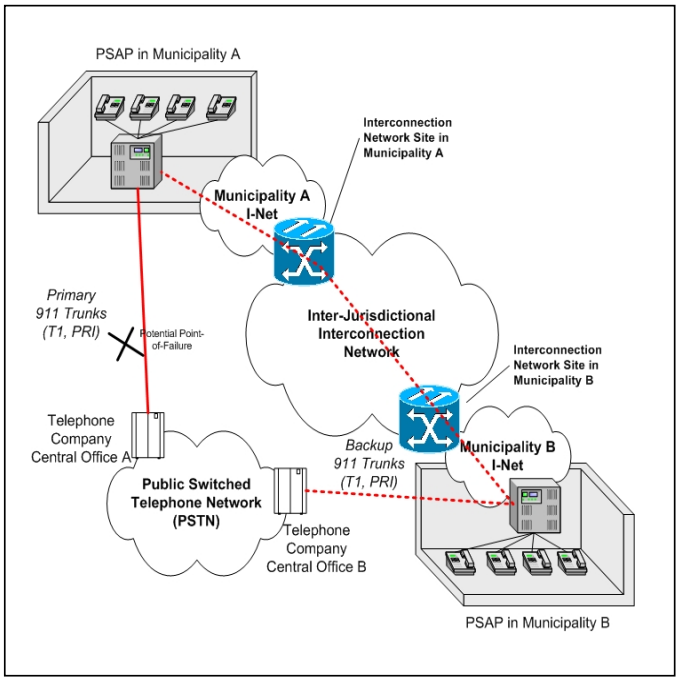
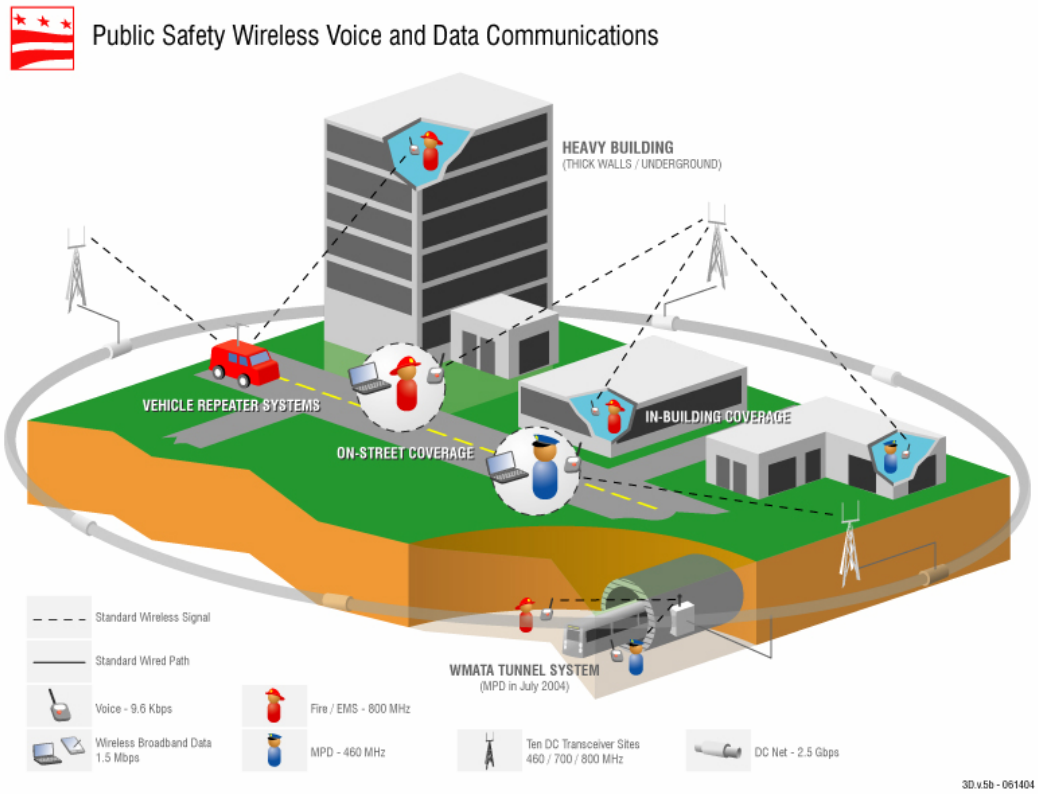


Regional I-Net Capabilities



Conceptual-Net Architecture


Public Safety Wireless Voice and Data Communications
HEAVY BUILDING
(THICK WALLS / UNDERGROUND)
VEHICLE REPEATER SYSTEMS
ON-STREET COVERAGE
IN-BUILDING COVERAGE
WMATA TUNNEL SYSTEM
(MPD in July 2004)
Standard Wireless Signal
Standard Wired Path
Voice - 9.6 Kbps
Wireless Broadband Data
1.5 Mbps
Fire / EMS - 800 MHz
MPD - 460 MHz
Ten DC Transceiver Sites
460 / 700 / 800 MHz
DC Net - 2.5 Gbps
3D.v.5b - 061404