



**Recommended Federal Grants Guidance
Public Safety Communications & Interoperability Grants
May 2004**

I. Introduction

One of the major issues facing the Emergency Services Sector is the inability of emergency service workers including traditional “first responders” to communicate with one another when the need arises. These emergency first responders have long been defined as the “first arriving organized responders with the capability and mission to contain, mitigate, and resolve the emergency at hand.”¹ Their effective and efficient emergency response requires coordination, communication, and sharing of vital information among numerous public safety agencies. As recognized in the *National Strategy for the Physical Protection of Critical Infrastructures and Key Assets*, “most systems supporting emergency response personnel, however, have been specifically developed and implemented with respect to the unique needs of each agency.”² Such specification without regard to the need for interoperability tends to complicate the ability of those agencies to effectively communicate with others in the future. This fact is echoed by the public safety community in the National Task Force on Interoperability’s report *Why Can’t We Talk? Working Together To Bridge the Communications Gap To Save Lives*.³

In line with the needs of public safety and the National Strategy cited above, Federal Fiscal Year 2004 Appropriations make available grant funding to improve the effectiveness of public safety communications systems and to resolve interoperability issues. By definition, communications interoperability refers to the ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems- to exchange voice and/or data with one another on demand, in real time, when needed, and as authorized. The federal program offices recognize that many law enforcement, fire service, emergency medical service, and other emergency response personnel currently lack effective and modern communication systems within their respective organizations. The programs support the need to improve those systems so long as the improvement planning includes a vision for improved interoperability with other agencies.

In an effort to coordinate the way in which funding is allocated and to maximize the prospects for interoperable communications, some general grant criteria has been developed in concert with representatives of the public safety community. What follows is an outline of who is eligible for the grants, purposes for which grant funds can be used, and eligibility specifications for applicants.

¹ “Emergency First Responder Report.” Federal Emergency Management Agency, U.S. Fire Administration. January 1981.

² “National Strategy for the Physical Protection of Critical Infrastructures and Key Assets,” The White House. February 2003, page 43.

³ “Why Can’t We Talk? Working Together To Bridge the Communications Gap To Save Lives,” AGILE Program. February 2003.



II. Grant Criteria

II.A. Who Should Be Involved with Public Safety Communications Interoperability

Federal funds that are allocated for improving public safety communications and interoperability should only be provided to public safety agencies or organizations at the local, tribal, regional, or state level. This includes:

- Law Enforcement agencies
- Fire Service agencies
- Emergency Medical Service agencies
- An organization representing the aforementioned agencies

II.B. Lifecycle of Public Safety Communications Projects

While applying for equipments grants, applications should capable of addressing each of the following aspects within the lifecycle of public safety communications:

- *Planning* for public safety communication systems
- *Building* public safety communication systems
- *Upgrading/enhancing* public safety communication systems and equipment
- *Replacing* public safety communication systems and equipment
- *Maintaining* public safety communication systems and equipment
- *Training* public safety staff on issues related to emergency response communications
- *Managing* public safety communications projects

II.C. Common Public Safety Communications Goals

Grants will be awarded to applicants that aim to achieve the following goals identified and supported by the public safety community and each grant making agency.

1. Applicants should demonstrate how funds would be used to upgrade or enhance "Mission Critical" networks with interoperable communications equipment for everyday use to ensure the safety and well being of First Responders and the public they serve.
2. Applicants should provide a clear and demonstrated plan for accomplishing improved interoperability between First Responders of local, tribal, regional, and state public safety agencies,



or other partnering agencies or organizations from local, tribal, regional, state, and federal jurisdictions; particularly in times of natural disaster and major criminal or terrorist acts.

II.D. Common Criteria for All Grant Applicants

In order to receive funding, the applicant must be able to convey an understanding of the first responder needs and a clear path towards interoperability. Each grant application must explain how the proposed project would fit into an overall effort to increase interoperability. Even if the funding sought is only for a piece of an interoperability endeavor (i.e., training for staff, procurement of new equipment), an executive summary should be provided to illustrate to the funding agency the broader context of the agency/jurisdiction's interoperability plans. Such an explanation could include information on the governance structure overseeing the effort; a communications system plan; a deployment plan; an operations, maintenance, and training plan; and a financial plan.

At a minimum, the applicant must:

- Define the vision, goals, and objectives of what the applicant is ultimately trying to accomplish and how the proposed project would fit into an overall effort to increase interoperability.
- Describe the specific problems or needs that are to be addressed.
- Identify any potential partners and their roles and staffing requirements, and provide information on any existing agreements such as a Memorandum of Understanding (MOU) or Mutual Response Agreement.
- Propose a detailed budget and timeline.
- Include an operational plan that addresses how the effort will be funded now and in the future.

Section IV of this document provides a thorough list of questions that applicants can use to help ensure that they have taken into account the needs of public safety, potential partners, and considered short- and long-term goals.

II.E. Standards

When procuring equipment for communication system development and expansion, a standards-based approach should be used to begin migration to multi-jurisdictional and multi-disciplinary interoperability. Specifically, all new systems *should* be compatible with the ANSI/TIA/EIAA-102 Phase 1 (Project 25 or P25) suite of standards. This recommendation is intended for government owned or leased land mobile public safety radio equipment and its purpose is to make sure that such equipment or systems are capable of interoperating with other public safety land mobile equipment or systems. It is not intended to apply to commercial services that offer other types of interoperability solutions and does not exclude any application if it demonstrates that the system or equipment being proposed will lead to enhanced interoperability. With input from the user community, these standards have been developed to allow for backward compatibility with existing



digital and analog systems and to provide for interoperability in future systems. The FCC has chosen the P25 suite of standards for voice and low-moderate speed data interoperability in the new nationwide 700 MHz frequency band and the Integrated Wireless Network (IWN) of the U.S. Justice and Treasury Departments has chosen the Project 25 suite of standards for their new radio equipment. P25 has also been endorsed by the US Department of Defense for new LMR (Land Mobile Radio) radio systems.

However, the first priority of federal funding for improving public safety communications is to provide basic, *operable* communications within a department with safety as the overriding consideration. Funding requests by agencies to replace or add radio equipment to an existing non-P25 system will be considered if there is an explanation as to how their radio selection will allow for improving interoperability or eventual migration to interoperable systems. This guidance does not preclude funding of non-Project 25 equipment when there are compelling reasons for using other solutions. Absent these compelling reasons, SAFECOM intends that Project 25 equipment will be preferred for digital systems to which the standard applies.

II. F. Governance

There needs to be consistent leadership and management to ensure that the planning, equipment procurement, training, and funding are in place when developing a public safety communications improvement or interoperability project. A common governing structure should improve the policies, processes and procedures of any major project by enhancing communication, coordination, and cooperation; establishing guidelines and principles; and reducing any internal turf battles. This group should consist of local, tribal, state, and federal entities as well as representatives from all pertinent public safety disciplines. Frequently when multiple agencies/jurisdictions are involved, this management is in the form of a governing body that makes decisions, solicits funding, and oversees the implementation of an interoperability initiative.

III. Criteria for Public Safety Communications Equipment Grants

Building, Upgrading, Enhancing, Replacing and Maintaining Public Safety Communications Systems and Equipment

Public safety interoperable communication grants can be used to build, upgrade, enhance or replace communications equipment. Communication systems and equipment are expensive, and before a procurement decision is made, there must be an assessment of the current communication system and future needs.

The following questions provide guidance for fulfilling public safety communications goals.



Has the applicant already completed a plan that illustrates the agency's/jurisdiction's commitment to the aforementioned public safety priorities?

- Please provide an executive summary that clearly illustrates how the proposed effort will lead to enhanced public safety communications interoperability.
- What type of multi-jurisdictional or multidisciplinary agreements does the agency possess (i.e., MOUs, interstate compacts, mutual response agreements)?

Has the applicant considered public safety's operational needs of the communications equipment?

- In what type of topography/terrain does the agency operate?
- In what types of structures does the agency need to communicate? (i.e., tunnels, high-rise buildings)
- What methods of communication does the agency use? (i.e., email, paging, cellular calls, portable radio communications)
- What is the process for dispatching calls?
- Is the communications center independently owned and operated by the agency? Does it serve several public safety agencies in the jurisdiction? Is it a multi-agency, multi-jurisdictional facility?
- Does the agency have the ability to patch across channels? If so, how many patches can be simultaneously set up? Is a dispatcher required to set up and break the patches down?
- What is the primary radio language used by the agency when communicating with other agencies or organizations? (i.e., 'plain' English, code)
- What types of equipment can immediately be deployed to provide short-term solutions for improved communications?

Has the applicant considered the system requirements to ensure interoperability with systems used by other disciplines or other levels of government?

- What type of equipment is currently used by the agency?
- Is there a regional, multi-jurisdictional, or statewide system in place that requires interoperability in order to communicate with other agencies? If so, how do you plan on interoperating/connecting to that system?
- Is the equipment compatible with the Project 25 suite of standards?
- For data-related systems, is the applicant using XML standards?
- How scalable is the system? Can it be used locally between agencies and jurisdictions, statewide, and at a multi-state or national level?
- What internal and external security requirements exist in the architecture to secure information and maintain privacy levels for data as required by law?
- Is the infrastructure shared with any other agency or organization? Is it owned or leased?
- Does the agency use analog or digital radio systems or both?
- Is the system conventional or trunked?
- Which radio frequencies are used to communicate with other public safety agencies?
- How many channels does the agency have solely designated for communicating with other agencies?



IV. Supplemental Criteria for Public Safety Equipment Grants

Planning for, building, upgrading, enhancing, replacing, maintaining, training staff, and managing projects for a public safety communications system are arduous tasks that require both short- and long-term strategies. Whether it is the development of a technical plan, training exercise, or system upgrade, any effort that ultimately leads to improved interoperability must include participation from all of the relevant agencies, jurisdictions, or other organizations that contribute to an effective emergency response.

This participation is frequently exhibited through a governing structure that improves the process of any major project by enhancing communication, coordination, and cooperation; establishing guidelines and principles; and reducing any internal turf battles. This group should consist of local, tribal, state, and federal entities as well as representatives from all pertinent public safety disciplines.

Answers to the following questions will help provide the applicant with a fuller vision of how its proposed project or effort will ultimately improve interoperability.

IV.A. Planning for public safety communication systems

There are two types of planning for public safety communications, technical and governance. Technical planning for public safety communications projects may include needs and requirements assessments, developing the network architecture of a system, propagation studies, and similar technical proposals. Governance planning for public safety interoperability projects may include development of needs assessments, strategic plans, and financial plans. Questions that an applicant for communication systems planning funds should address are listed below.

The following questions will provide the grant making agencies with an understanding of the applicants planning efforts.

Has the applicant considered the communication needs and requirements of its public safety community?

- With whom does the agency/jurisdiction need to communicate?
- How does the agency/jurisdiction need to communicate?
- What information needs to be exchanged?
- When does the agency/jurisdiction need to communicate and exchange information? (i.e., daily, weekly, infrequently)
- Under what circumstances does the agency need to communicate? (i.e., frequently occurring emergencies, major crimes or incidents, large-scale disasters)



Does the applicant plan to include nearby agencies/jurisdictions from other disciplines, or other local, tribal, state or federal partners in its planning effort?

- Who are the stakeholders that need to be involved in the planning?
- Which decision makers should be involved in planning?
- What type of technical and field expertise will be needed to develop the plan?
- Will outside expertise be needed to develop this plan?
- What are the roles and responsibilities of all agencies that are involved? (Include a list of partnering agencies)
- Are there any mutual response agreements in place?
- What type of governing structure exists to improve the processes involved in executing any planned project?

Does the potential plan taken into account both short- and long-term goals?

- What should be done in the first phase (most critical)?
- How many phases will the plan require?
- How much time is needed to accomplish the plan?
- What are the technical solutions available to address the problem?
- What funding is available to address the problem?
Grant funds (federal, state, local, private), General funds

IV.B. Training public safety staff on issues related to emergency response communications

In order for equipment to be used properly and effectively in emergency situations, Emergency Service personnel must be trained through joint exercises that afford them the ability to practice standard operating procedures, become familiar with the equipment, and enhance their capacity and preparedness to respond to all types of emergencies. Eligible applicants should exhibit multidisciplinary and multijurisdictional training in their overall public safety communications plan.

Do the applicant's training plans include exercises with other agencies/jurisdictions?

- Do the agency's training plans include participation from all levels and functions of emergency response? (i.e., local, state, federal, fire, law enforcement, emergency medical services)
- How often will training take place?
- Who will conduct the training?
- Where will the training be held? Will it be on-site or at a specified training facility?
- What maintenance efforts will exist to keep personnel up-to-date with changes in procedure, equipment functions, or other relevant policies?
- How will lessons-learned from training exercises be applied to operational procedures? Will there be post-exercise evaluations or analyses?



IV.C. Managing public safety communications projects

There needs to be consistent leadership and management to ensure that the planning, equipment procurement, training, and funding are in place when developing a public safety communications improvement or interoperability project. Frequently when multiple agencies/jurisdictions are involved, this management is in the form of a governing body that makes decisions, solicits funding, and oversees the implementation of an interoperability initiative. Organizations that govern such projects must be comprised of the relevant law enforcement, fire, and emergency agencies in order to qualify for grant awards.

Is the communications project consistent with similar efforts in the region?

- Does the applicant have agreements in place with other agencies/jurisdictions that illustrate the cooperative and interoperable approach to managing the communications improvement or interoperability project?

Does the project have the support of the relevant governing body (local or state authority)?

- What other funding sources has the applicant sought for the ongoing administrative costs of program management?

V. Generic Examples of Linking Disparate Public Safety Communications Systems

Applications may request funding for technologies not listed in Section V, as long as applicants demonstrate how the technology selected clearly improves multi-jurisdictional multi-disciplinary interoperability.

There are multiple approaches for linking disparate networks. Descriptions of common technologies are provided below.

Although there are more robust solutions available today, repeaters still provide improved interoperability for agencies needing to link disparate systems.

- ◆ **Cross band Repeaters** retransmit signals input from one frequency band to an output in a different frequency band. Cross band repeaters range from simple devices supporting frequency transfers across two bands (e.g., ultra high frequency [UHF] and very high frequency [VHF]) to more complex devices capable of bridging multiple frequency bands (e.g., UHF, VHF Low Band, VHF High Band, and 800 MHz).

Numerous initiatives are already underway to implement short-term integration technologies that provide a reasonable level of interoperability among disparate networks.



- ◆ **Network-to-Network Gateways** – provide radio interoperability during missions requiring communications between diverse organizations using different radios and different frequencies. Network-to-network gateways offer a standard way to link wireless infrastructures. Within minutes after arriving on the scene of an incident, a portable gateway can be quickly programmed to support the frequencies of participating agency radios. Many of these solutions also allow disparate networks to share data and provide a bridge to the public switched telephone network (PSTN). Although gateways can be either fixed or mobile, this program promotes the purchase of mobile, deployable devices.

Minimum specifications have been developed for instances where network-to-network solutions are to be implemented. Where such interconnect devices are to be used, the following specifications should be followed:

A. OPERATING MODES

- The device must be able to retransmit the audio of radios that operate in different parts of the radio spectrum, use different modulation and access techniques, and use analog or digital encoding. The audio shall be distributed or switched throughout a shared audio distribution bus where it can be presented to and shared amongst all or a selected subset of radios interfaced to the device.

B. CAPACITY

- The device must support a minimum of four LMR radios in different operating modes. The ability to support cellular phones and connection to the public switched telephone network (PSTN) is desirable.

C. POWER AND PHYSICAL

- The device must be capable of being powered either from vehicular power, battery power, or portable AC power sources.
- The device must accommodate being rack mounted or standing alone in a portable enclosure. The device must be able to withstand shock and vibration typically encountered in field operations activity.
- The device must include documented cable specifications for audio (speaker and microphone) and control (push-to-talk - PTT) in order to interface with the basic audio and transmit controls for standard off the shelf LMR radio manufacturers' subscriber units that are typically employed by public safety.
- The device must have input mechanisms or modules that can support balanced or unbalanced 2 or 4-wire circuits.
- The device must have input mechanisms or modules that can transmit (TX) Audio, receive (RX) Audio, PTT, and Carrier Operated Relay/Carrier Operated Squelch (COR/COS) signaling. Ability for supporting tone remote control (TRC) and Voice Operated Transmit (VOX) signaling is desirable. Some form of adjustable automatic gain control should be provided for each device interface.



D. CONTROL AND ADMINISTRATION

- The device must provide local control to establish two or more talk groups of the radios/phone interfaces that are provided.
- The device must provide adjustable audio/PTT delay to the radio interfaces, in order to allow the supported radios and associated infrastructure to reach full transmit power and to accommodate unknown repeater operating parameters such as hang times and squelch trails.
- The device must be easily configurable with short set up times.

Similar to fixed network-to-network gateways, some consoles provide similar support either manually or electronically.

- ◆ **Console Interfaces** (i.e., “patches”) route audio signals from one console to another console, either by dispatcher intervention or by a pre-wired configuration through the console electronics; thereby, supporting direct connections between disparate systems.

Many states and regions have significant investments in large scale, shared networks, briefly described below. These networks offer a high degree of interoperability within their geographic coverage areas and can be linked to other networks through network-to-network gateways. Some of these networks meet the ANSI/TIA/EIAA-102 Phase 1 (Project 25) suite of standards.

Shared Networks - have common backbone infrastructures and interfaces. These are often single vendor solutions covering large geographic areas and/or commercial networks. The typical model calls for participating jurisdictions to purchase subscriber radios compatible with the network, and pay a monthly service fee.



VI. Resources

Additional information for applicants to use when constructing their grant applications and for seeking additional funding sources can be obtained at the following websites.

AGILE Program The AGILE Program within the Office of Science and Technology at the National Institute of Justice has a mission to assist state and local law enforcement agencies to effectively and efficiently communicate with one another across agency and jurisdictional boundaries. It is dedicated to studying interoperability options and making valuable information available to law enforcement, firefighters, and emergency technicians across the country.

<http://www.agileprogram.org/>

Association of Public Safety Communications Officials – International, Inc. (APCO) APCO is the world's oldest and largest not-for-profit professional organization dedicated to the enhancement of public safety communications.

<http://www.apcointl.org/>

Bureau of Justice Assistance Local Law Enforcement Block Grants (LLEBG) Funds from the LLEBG program may be used for procuring equipment, technology, and other material directly related to basic law enforcement functions.

<http://www.ojp.usdoj.gov/BJA/>

Federal Emergency Management Agency (FEMA) This site offers information on federal disaster assistance and funding.

<http://www.fema.gov/>

Justice Technology Information Network (JUSTNET) The official web site for the National Law Enforcement and Corrections Technology Center system, JUSTNET lists many grants and funding sources in the Virtual Library. It also contains various publications on communications interoperability issues.

<http://www.justnet.org/>

COPS Interoperable Communications Technology Program. This grant program, administered by the U.S. Department of Justice, Office of Community Oriented Policing Services (COPS), provides equipment funding to law enforcement agencies to enhance multi-jurisdictional public safety interoperable communications and information sharing across the nation.

<http://www.cops.usdoj.gov/>

National Institute of Justice (NIJ) NIJ is the research and development agency of the U.S. Department of Justice and is the only federal agency solely dedicated to researching crime control and justice issues. This page lists the most recent solicitations issued by NIJ.

<http://www.ojp.usdoj.gov/nij/>



National Public Safety Telecommunications Council (NPSTC) NPSTC is a federation of associations representing public safety telecommunications. NPSTC serves as a resource and advocate for public safety telecommunications issues.

<http://www.npstc.du.edu/>

National Task Force on Interoperability (NTFI) Recognizing that solutions to the national problem of public safety communications interoperability could only be achieved through cooperation between all levels of government, 18 national associations representing state and local government and public safety officials formed a task force to address this issue. NTFI's recommendations have been published in the form of a brochure, guide, and supplemental resources.

<http://www.agileprogram.org/ntfi/>

National Telecommunications and Information Administration (NTIA) NTIA, an agency of the Department of Commerce, works to spur innovation, encourage competition, help create jobs, and provide consumers with more choices and better quality telecommunications products and services at lower prices.

<http://www.ntia.doc.gov/>

Office for Domestic Preparedness (ODP) Equipment Grant Program The goal of the ODP Equipment Grant Program is to provide funding to enhance the capacity of state and local jurisdictions to respond to, and mitigate the consequences of, incidents of domestic terrorism involving the use of a Weapon of Mass Destruction (WMD). Communications equipment is included on the authorized equipment purchase lists for these ODP grants.

<http://www.ojp.usdoj.gov/odp/>

Office of Justice Programs (OJP) Information Technology Initiatives The OJP Information Technology Initiatives web site offers access to timely and useful information on the information sharing process, initiatives, and technological developments. The funding section of this site provides information on both federal and private funding sources, examples of innovative funding ideas, and tips on researching funding legislation.

<http://www.it.ojp.gov/>

Office of National Drug Control Policy, Counterdrug Technology Assessment Center (CTAC) Technology Transfer Program The CTAC Technology Transfer Program assists state and local law enforcement agencies in obtaining the necessary equipment and training for counterdrug deployments and operations.

<http://www.whitehousedrugpolicy.gov/>

SAFECOM Program SAFECOM was established as the federal umbrella program to help local, tribal, state, and federal public safety agencies to improve public safety response through more effective and efficient interoperable wireless communications. The SAFECOM website provides additional SAFECOM documents.

<http://www.safecomprogram.gov/>



Technology Opportunities Program (TOP) The Technology Opportunities Program (TOP) from the National Telecommunications and Information Administration gives grants for model projects demonstrating innovative uses of network technology.

<http://www.ntia.doc.gov/top/>

U.S. Department of Homeland Security (DHS) A cornerstone of the DHS philosophy revolves around a commitment to partner closely with other federal agencies, state and local governments, first responders, and law enforcement entities to ensure the security of the United States. Its website explains how DHS and local governments can work together.

<http://www.dhs.gov/>

U.S. Department of Justice (DOJ) DOJ offers funding opportunities to conduct research, to support law enforcement activities in state and local jurisdictions, to provide training and technical assistance, and to implement programs that improve the criminal justice system.

<http://www.usdoj.gov/>

U.S. Fire Administration Assistance to Firefighters Grant Program The purpose of the program is to award one-year grants directly to fire departments of a state to enhance their abilities with respect to fire and fire-related hazards.

<http://www.usfa.fema.gov/fire-service/grants/afgp/grants.shtm>