



*Public Safety WINS, Version 2  
Policy Solutions—Standards and Technology*

**FINAL**

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## Policy Solutions Introduction

The recent acts of domestic terrorism have elevated and highlighted the importance of public safety wireless interoperability. As such, seamless interoperable communications between public safety related agencies, across all levels of government, has become a top priority. Seamless interoperability can be achieved only when stakeholders work together to address the key policy issue areas identified by the Public Safety Wireless Network (PSWN) Program. The PSWN Program has worked to understand the importance of each policy issue and has identified actions and approaches to meet current and future interoperability challenges. Our solutions offer insight, guidance, and resources for stakeholders in their efforts to improve interoperability. This section also provides a detailed review of the impact of each issue on interoperability and what constitutes success in addressing the issue .

## Standards and Technology—Relevance to Interoperability

The development of technology standards and implementing standards-based solutions in public safety communications are important factors in addressing interoperability challenges. Especially in times when the domestic security of the Nation is threatened, the effective implementation of standards is critical. This use of defined standards in equipment manufacturing may allow equipment from different vendors to seamlessly communicate. Additionally, the use of defined standards, such as backward system compatibility will allow newer systems to communicate with legacy systems.

Public safety communications did not face standards issues until recently when new technology began influencing the public safety community to move from conventional analog equipment to trunked radio systems. However, without common standards, system users suffer because of lack of compatibility, limited integration of products from different manufacturers, long development cycles, limited interoperability, and lack of cost-incentive based competition among equipment manufacturers. The public safety community responded by developing standards for public safety trunked radio systems, known as Project 16. But the standards issue has recently resurfaced with the advent of the new digital technologies that are being offered.

Vendors have developed proprietary, trunked, digital systems that can severely limit interoperability. Each vendor's system uses a different, proprietary protocol to access and control the system. Some vendors use different digital encoders (vocoders) to digitize messages that are not compatible with those used by other vendors. Different encryption techniques (e.g., Digital Encryption Standard [DES], Ron's Code 4 [RC4]) are currently used by different vendors that do not allow for interoperability or compatibility among secure transmissions. Digital signal modulation allows for significantly more efficient use of spectrum and supports a greater variety of system features and capabilities, but requires different infrastructure than analog signal modulation. The result of these differing approaches is incompatibility. For the public safety community, incompatibility at the wrong time can be the difference between life and death.

The Association of Public Safety Communications Officials (APCO) started its effort to develop digital standards (Project 25, now known as Telecommunications Industry Association/Electronics Industry Association [TIA/EIA] 102) more than 10 years ago. TIA/EIA 102 has developed into a suite of standards that address many issues affecting interoperability. But as technology continues to evolve, more work will need to be done. Historically, only a few individuals from the public safety community have been involved in this process because many public safety agencies have been hesitant to commit the personnel and funding needed to support these long-term efforts. However, without the participation of the users and the users stating their needs and requirements, the standard setting procedure may be driven by the manufacturers with the public safety community being forced to choose from equipment that may not meet its needs.

The public safety community must actively support the development of standards for communications equipment, and then must use those standards in the procurement of new equipment. Only by requiring vendors to supply standard compliant equipment will the issue of equipment incompatibility be solved. Moreover, as new technologies continue to evolve the

establishment of standards based equipment will become even more critical in the effort to enhance interoperability and compatibility.

Success in the area of standards will be achieved when the public safety community has fully interoperable equipment. The following matrix illustrates the common milestones that public safety agencies may exhibit as they progress towards that desired end state —

New	Developing	Established	Mature
<ul style="list-style-type: none"> <li>• Researching and understanding the regional standards in use</li> <li>• Identifying the interoperability technologies that fit state priorities and budget</li> <li>• Researching the standards development process</li> <li>• Understanding the lack of competition in the marketplace</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporating regional standards in system acquisition specifications</li> <li>• Ensuring new technology being acquired is capable of interoperability</li> <li>• Participating in the standards development process</li> <li>• Researching alternative wireless communications options available in the marketplace</li> </ul>	<ul style="list-style-type: none"> <li>• Implementing a system consistent with regional standards</li> <li>• Participating in innovative demonstrations of interoperability</li> <li>• Increasing user input in the standards development process</li> <li>• Accelerating the pace of standards development</li> <li>• Piloting alternative wireless communications</li> </ul>	<ul style="list-style-type: none"> <li>• Operating on all major regional standards in order to ensure multijurisdictional compatibility</li> <li>• Participating actively in the standards development process</li> <li>• Promoting a single set of voice and data standards, issued by a single standards-setting body</li> <li>• Promoting a single set of standards for the necessary wireline system interfaces, issued by a single standards-setting body</li> <li>• Supporting competitive pricing from primary system and after-market vendors in addition to the ability to purchase “off-the-shelf” equipment</li> <li>• Implementing alternative wireless communications (e.g., commercial services)</li> </ul>

## Target Audiences Introduction

The PSWN Program understands that it cannot resolve the five policy challenges alone and that many people must assume the responsibility to achieve success in each policy area. These five challenges must be addressed by local, state, federal, and tribal public safety entities and the broader set of public safety communications stakeholders, including the U.S. Congress, regulatory agencies, civic leadership forums, and equipment manufacturers. These key public safety entities and stakeholders are jointly responsible for the resolution of interoperability issues. This section is designed to allow members of each group to identify specific actions they can take related to each issue area that can ultimately lead to the successful development of an interoperability solution..

## Relevance to State Decision Makers

State decision makers must understand the importance of standards and their effect on public safety wireless communications systems. The lack of standards-compliant wireless communications systems endangers lives, especially in times of domestic security related emergencies. Without standards, public safety agencies are forced to use proprietary systems that may not allow them talk to one another. In turn, when public safety communications systems in the state do not coordinate together, the lives of citizens and the responding public safety personnel may be at risk.

Standards-based systems can ease interoperability among all levels of public safety providers within the state. Standards allow infrastructure components to communicate with each other freely. Voice and data standards can also be incorporated into the state's communications infrastructure, providing additional system capabilities. This enhanced compatibility will increase operational efficiencies across the state, and eventually across the Nation.

Using standards-compliant equipment can reduce system costs and increase competition in the wireless communications systems marketplace. With standards-based systems, public safety agencies in the state can purchase standards-compliant equipment based on cost and not proprietary technology. Standards also influence the design, manufacturing, and marketing of products around the world. Open standards, when adopted, create larger markets instead of many fragmented markets. In larger markets, everyone can benefit from the effect of economies of scale and other economic factors that help reduce cost and increase value.

## Actions/Solution Steps for State Decision Makers

State decision makers can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. They can educate the state's public safety agencies about the relevance of standards in several ways. They can also monitor the results of ongoing wireless communications standards development efforts and become familiar with standards-setting bodies (e.g., International Telecommunications Union [ITU], European Telecommunications Standards Institute [ETSI], Telecommunications Industry Association [TIA], Electronic Industries Alliance [EIA], American National Standards Institute [ANSI]), their methodologies, and their acceptance criteria. Active participation in the standards process will also raise awareness of the importance of standards in the state and will help state decision makers determine how best to help the public safety community.

The following resources will prove useful to state decision makers in educating the state's public safety agencies about the relevance of standards—

- TIA Web site, ([www.tiaonline.org/standards/search.cfm?keyword=project+25](http://www.tiaonline.org/standards/search.cfm?keyword=project+25))
- ITU Web site, ([www.itu.int](http://www.itu.int))
- ANSI Web site, ([www.ansi.org](http://www.ansi.org))
- Public Safety Wireless Communications Standards Awareness Guide*
- Standards Primer*
- The Role of the States in Public Safety Wireless Interoperability*

State decision makers can provide leadership by demonstrating a commitment to standards for public safety communications infrastructures. They can ensure adequate funding is available for experienced state personnel to travel and participate in standards development efforts. State decision makers can also establish incentives for state public safety officials to develop standards-compliant systems, and they can initiate a statewide public safety forum leveraging the size of the state's public safety community to address standards issues and to provide a voice on the critical need for interoperable systems. In addition, they can support pilot and proof-of-concept solutions in the state using standards-compliant equipment. Through these efforts, state decision makers can demonstrate a commitment to standards for public safety communications infrastructures.

State decision makers can require standards-compliant systems by ensuring standards compliance is a requirement in any request for proposal (RFP) for statewide systems. State decision makers can also require new technologies (e.g., commercial services, multiband or multimode equipment, voice-over-Internet Protocol [VoIP]) be considered as potential alternatives for new statewide system architectures. They can analyze and present the cost and efficiency benefits of standards-compliant systems to the public safety community. These actions will help ensure that standards are adequately addressed to meet interoperability requirements.

## Relevance to Regional Decision Makers

Regional decision makers must understand the importance of standards and their effect on public safety wireless communications systems. The lack of standards-compliant wireless communications systems endangers lives, especially in times when the domestic security of the Nation is threatened. Without standards, public safety agencies are forced to use proprietary systems that may not allow them to talk to one another. In turn, when public safety communications systems in the region do not work together, the lives of citizens and the responding public safety personnel may be at risk.

Standards-based systems can ease interoperability among all levels of public safety providers within the region. Standards allow infrastructure components to communicate with each other freely. Voice and data standards can also be incorporated into the region's communications infrastructure providing additional system capabilities. This enhanced compatibility will increase operational efficiencies across the region.

Using standards-compliant equipment can reduce system costs and increase competition in the wireless communications systems marketplace. With standards-based systems, public safety agencies in the region can purchase standards-compliant equipment based on cost and not proprietary technology. Standards also influence the design, manufacturing, and marketing of products around the world. Open standards, when adopted, create larger markets instead of many fragmented markets. In larger markets, everyone can benefit from the effect of economies of scale and other economic factors that help reduce cost and increase value.

## Actions/Solution Steps for Regional Decision Makers

Regional decision makers can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. They can educate the public safety agencies within the region about the relevance of standards in several ways. They can monitor the results of ongoing wireless communications standards development efforts and become familiar with standards-setting bodies (e.g., International Telecommunications Union [ITU], European Telecommunications Standards Institute [ETSI], Telecommunications Industry Association [TIA], Electronic Industries Alliance [EIA], American National Standards Institute [ANSI]), their methodologies, and their acceptance criteria. Active participation in the standards process will also raise awareness of the importance of standards in the region and will help regional decision makers determine how best to help the public safety community.

The following resources will prove useful to regional decision makers in educating the region's public safety agencies about the relevance of standards—

- TIA Web site, ([www.tiaonline.org/standards/search.cfm?keyword=project+25](http://www.tiaonline.org/standards/search.cfm?keyword=project+25))
- ITU Web site, ([www.itu.int](http://www.itu.int))
- ANSI Web site, ([www.ansi.org](http://www.ansi.org))
- Public Safety Wireless Communications Standards Awareness Guide*
- Standards Primer*
- The Role of the States in Public Safety Wireless Interoperability*

Regional decision makers can provide leadership by demonstrating a commitment to standards for public safety communications infrastructures. They can ensure adequate funding is available for experienced regional personnel to travel and participate in standards development efforts. Regional decision makers can establish incentives for public safety officials in the region to develop standards-compliant systems, and they can initiate a regional public safety forum leveraging the size of the region's public safety community to address standards issues and to provide a voice on the critical need for interoperable systems. In addition, they can support pilot and proof-of-concept solutions in the region using standards-compliant equipment. Through these efforts, regional decision makers can demonstrate a commitment to standards for public safety communications infrastructures.

Regional decision makers can require standards-compliant systems by ensuring standards compliance is a requirement in any request for proposal (RFP) for regional systems. Regional decision makers can also require new technologies (e.g., commercial services, multiband or multimode equipment, voice-over-Internet Protocol [VoIP]) be considered as potential alternatives for new regional system architectures. They can analyze and present the cost and efficiency benefits of standards-compliant systems to the public safety community. These actions will help ensure that standards are adequately addressed to meet interoperability requirements.

## Relevance to the Public Safety Community

The public safety community must understand the importance of standards and their effect on public safety wireless communications systems. The lack of standards-compliant wireless communications systems endangers lives, especially in times when the domestic security of the Nation is threatened. When a jurisdiction's communications system does not work with neighboring communications systems, the lives of citizens and the responding public safety personnel in the affected jurisdictions may be at risk.

Standards-based systems ease interoperability among all levels of public safety providers within each jurisdiction. Standards allow infrastructure components to communicate with each other freely. Voice and data standards can be incorporated into jurisdictional communications infrastructure providing additional system capabilities. This enhanced compatibility will increase operational efficiencies in and across jurisdictions.

Standards are being developed for public safety wireless systems. Standards development groups such as the Project 25 (P25) committee have been formed and have made significant strides in informing the two-way radio industry of the public safety community's needs and establishing common system standards for digital public safety radio communications. Terrestrial Trunked Radio (TETRA) is also a digital trunked radio standard defined by the European Telecommunications Standardization Institute (ETSI). Both entities support and promote the use of standards for public safety wireless communications systems.

## Actions/Solution Steps for the Public Safety Community

The public safety community can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. Its members can actively participate in the standards development process by reviewing and providing comment on suggested technical standards as they relate to the public safety community. The public safety community can also ensure that date-certain timelines and schedules are adopted to accelerate the standards development process and to ensure that the latest technologies are brought to market by multiple vendors. The community can monitor the results of ongoing wireless communications standards development efforts and become familiar with standards-setting bodies (e.g., International Telecommunications Union [ITU], European Telecommunications Standards Institute [ETSI], Telecommunications Industry Association [TIA], Electronic Industries Alliance [EIA], American National Standards Institute [ANSI]), their methodologies, and their acceptance criteria. Active participation in the standards process will also raise awareness of the importance of standards with public safety officials and how standards can help improve interoperability.

The following resources will prove useful to the public safety community in educating public safety officials about the relevance of standards—

- TIA Web site, ([www.tiaonline.org/standards/search.cfm?keyword=project+25](http://www.tiaonline.org/standards/search.cfm?keyword=project+25))
- ITU Web site, ([www.itu.int](http://www.itu.int))
- ANSI Web site, ([www.ansi.org](http://www.ansi.org))
- Public Safety Wireless Communications Standards Awareness Guide*
- Standards Primer*

The public safety community can require standards-compliant systems by ensuring standards compliance is a requirement in any request for proposal (RFP). They can also support and/or initiate pilot and proof-of-concept solutions in the jurisdiction using standard-compliant equipment. Additionally, the public safety community can require new technologies (e.g., commercial services, multiband or multimode equipment, voice-over-Internet Protocol [VoIP]) be considered as potential alternatives for new system architectures. These actions will also ensure that standards are adequately addressed to meet interoperability requirements.

The public safety community can also present a unified voice on the critical need for standards-compliant interoperable systems for the public safety community. They can meet with equipment manufacturers and software developers to discuss the critical importance of the development and adoption of standards. They can also meet with state or regional decision makers to discuss the benefits of implementing standards-based systems.

## Relevance to Civic Leadership Forums

Civic leadership forums must understand the importance of standards and their effect on the safety of citizens. The lack of standards-compliant public safety wireless communications systems endangers lives, especially in times when the domestic security of the Nation is threatened. In turn, when public safety communications systems do not work together, the lives of citizens and the responding public safety personnel may be at risk.

Civic leadership forums provide venues for dialogue that enhance active and informed citizenship. Through these forums, citizens gain knowledge about the affect standards and technology, or lack thereof, has on public safety. Additionally, civic leadership forums serve as an effective organizational tool to obtain standards for public safety communications systems.

Civic leadership forums have considerably enhanced capacities to contribute to public problem solving. Civic leaders play a key role in bringing to light issues of public concern. Advocating and other awareness efforts led by civic leadership forums can heavily influence key decision makers to recognize the importance of standards, and to actively promote measures that address these concerns.

## Actions/Solution Steps for Civic Leadership Forums

Civic leadership forums can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. They can obtain a general understanding of the relevance of public safety wireless communications standards.

The following resources will prove useful to civic leadership forums in understanding the importance of standards to public safety wireless communications—

*–Public Safety Wireless Communications Standards Awareness Guide*

*–Standards Primer*

By understanding the relevance of public safety wireless communications standards, civic leadership forums can effectively promote the use of standards-compliant wireless systems during attendance at outreach forums and conference events, and educate the state's legislators about the benefits of implementing standards-compliant systems.

## Relevance to the United States Congress

The United States Congress must understand the importance of standards and their effect on efforts to protect citizens. The lack of standards-compliant wireless communications systems across the Nation endangers lives. Without standards, public safety agencies are forced to use proprietary systems that may not allow them to talk to one another. In turn, when public safety communications systems do not work together, the lives of United States citizens and the responding public safety personnel may be at risk, especially when the domestic security of the Nation is threatened. These homeland security issues make the state and federal compromise of public safety land mobile radio standards critical.

The development of standards fosters technological innovation for wireless systems in numerous ways. Standards-compliant products can be developed that cater to public safety users across the Nation. Subscriber units can be tailored to operate on standards-compliant communications infrastructure across the Nation, providing additional system capabilities for the end user. Additionally, emerging voice and data capabilities can be incorporated into public safety infrastructures across the Nation or alternatively realized by contracting with existing commercial services providers. New technologies can be developed to improve the provisioning of public safety services. The development and adoption of standards can promote economic development across the Nation and should therefore be aggressively supported.

## Actions/Solution Steps for the U.S. Congress

The U.S. Congress can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. The U.S. Congress can effectively advocate for the use of standards-compliant wireless systems. It can also identify any standards challenges facing the home jurisdiction's public safety wireless communications system and understand the standards requirements for the public safety community across the Nation. These actions will help members of the U.S. Congress understand the public safety community's need for standards-compliant wireless communications systems.

The following resources will prove useful to the U.S. Congress in understanding the importance of standards to public safety wireless communications—

*–Public Safety Wireless Communications Standards Awareness Guide*

*–Standards Primer*

*–The Role of the Federal Government in Public Safety Wireless Interoperability*

The U.S. Congress can provide leadership on the importance of standards to promote the use of standards-compliant technology in several ways. It can mandate adequate funding be available for experienced personnel to travel and participate in standards development processes, develop incentives for public safety officials across the Nation to develop standards-compliant systems, conduct congressional hearings addressing standards issues, and include regulations for requiring the use of standards-based technology in any rulemakings or policies developed regarding public safety communications.

## Relevance to the Federal Communications Commission (FCC)

The FCC must understand the importance of standards and their effect on public safety wireless communications systems. The FCC, as a regulatory entity can influence public safety wireless communications systems development. It can endorse standards development in rulemakings and can influence state and local public safety communities, and indirectly, the federal public safety community on the benefits of standards-compliant systems. The FCC is also in position to endorse approaches (e.g., development of standards) that would enable the efficient use of spectrum to support wireless users. These homeland security issues make the state and federal compromise of standards issues and platforms critical.

The development of standards fosters technological innovation for wireless systems in numerous ways. Standards-compliant products can be developed that cater to public safety users across the Nation. Subscriber units can be tailored to operate on standards-compliant communications infrastructure across the Nation, providing additional system capabilities for the end user. Additionally, emerging voice and data capabilities can be incorporated into public safety infrastructures across the Nation or alternatively realized by contracting with existing commercial services providers. New technologies can also be developed to improve the provisioning of public safety services. The development and adoption of standards can promote economic development across the Nation and should therefore be aggressively supported.

## Actions/Solution Steps for the Federal Communications Commission (FCC)

The FCC can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. It can monitor the results of ongoing wireless communications standards development efforts and become familiar with standards-setting bodies (e.g., International Telecommunications Union [ITU], European Telecommunications Standards Institute [ETSI], Telecommunications Industry Association [TIA], Electronic Industries Alliance [EIA], American National Standards Institute [ANSI]), their methodologies, and their acceptance criteria.

The following resources will prove useful to the FCC in understanding the relevance of standards to public safety wireless interoperability—

- TIA Web site, ([www.tiaonline.org/standards/search.cfm?keyword=project+25](http://www.tiaonline.org/standards/search.cfm?keyword=project+25))
- ITU Web site, ([www.itu.int](http://www.itu.int))
- ANSI Web site, ([www.ansi.org](http://www.ansi.org))
- Public Safety Wireless Communications Standards Awareness Guide*
- Standards Primer*
- The Role of the Federal Government in Public Safety Wireless Interoperability*

The FCC can actively participate in the standards development process through rulemaking influence. It can review and provide comment on suggested technical standards as they relate to spectrum management issues. The FCC can also participate in the standards development process to help guarantee that date-certain timelines and schedules are adopted to accelerate the standards development process and to ensure that the latest technologies are brought to market by multiple vendors.

## Relevance to Equipment Manufacturers

Equipment manufacturers must understand the importance of standards and their effect on public safety wireless communications systems. Public safety customers want and need standards. By supporting the development of standards, equipment manufacturers will be able to maximize opportunities to build goodwill and strengthen customer loyalty with the public safety community. In addition, by offering standards-based equipment, equipment manufacturers would be better able to respond to current domestic security issues as well as comply with public safety community requirements.

Recently vendors have made available complex systems with much-needed features that are based on proprietary protocols and operate in spectrum (e.g., 800 megahertz) that most older systems cannot access. Many public safety agencies have chosen to implement this newer technology to obtain the added features or operate in different public safety spectrum. This sequence of events has resulted in "islands" of systems that are not compatible with the equipment and systems of those around them.

The development of standards provides new business opportunities for interoperable communications equipment. By supporting the proliferation of standards, equipment manufacturers may be able to expand the market to users previously unable to afford the implementation of newer technologies. By offering standards-based equipment, equipment manufacturers could also enjoy shortened product development life cycles, potentially lowering total development costs while increasing return on investment. The current public safety land mobile radio market represents more than 52,000 agencies, 2.2 million public safety personnel, and more than \$18 billion in equipment, and will continue to represent a sizable business opportunity in the future.

As the federal government prepares to distribute an estimated \$3.5 billion in homeland security related grant monies to state and local public safety agencies, communications interoperability has been outlined as a major priority by the Federal Emergency Management Agency (FEMA), the Department of Defense (DoD), and many others. As such, successful manufacturers and marketers of standards-based equipment stand to capture significant portions of an expanded market.

## Actions/Solution Steps for Equipment Manufacturers

Equipment manufacturers can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. They can actively participate in the standards development process by reviewing and providing comment on suggested technical standards as they relate to the public safety community. This participation will also help to ensure that date-certain timelines and schedules are adopted to accelerate the standards development process and to ensure that the latest technologies are brought to market by multiple vendors. Equipment manufacturers can monitor the results of ongoing wireless communications standards development efforts and become familiar with standards-setting bodies (e.g., International Telecommunications Union [ITU], European Telecommunications Standards Institute [ETSI], Telecommunications Industry Association [TIA], Electronic Industries Alliance [EIA], American National Standards Institute [ANSI]), their methodologies, and their acceptance criteria. Active

participation in the standards development process will help equipment manufacturers understand how standards-based equipment will benefit the public safety community and where future market opportunities may lie.

The following resources will prove useful to the equipment manufacturers in understanding the relevance of standards to public safety wireless interoperability—

- TIA Web site, ([www.tiaonline.org/standards/search.cfm?keyword=project+25](http://www.tiaonline.org/standards/search.cfm?keyword=project+25))
- ITU Web site, ([www.itu.int](http://www.itu.int))
- ANSI Web site, ([www.ansi.org](http://www.ansi.org))
- Public Safety Wireless Communications Standards Awareness Guide*
- Standards Primer*

Equipment manufacturers can produce standards-compliant equipment for the public safety community. They can design and manufacture subscriber units and infrastructure components compliant with established standards, develop infrastructure compliant equipment with open standards in the very high frequency (VHF) band, and coordinate with public safety agencies to develop and implement pilot and proof-of-concept solutions by providing standards-compliant equipment. Working with the public safety community during the development of standards-compliant equipment will promote the importance of standards in public safety communications systems, help equipment manufacturers' marketing efforts, and create a purchasing incentive for public safety agencies through more affordable pricing.

The continued development of new technologies (e.g., commercial services, multiband or multimode equipment, voice-over-Internet Protocol [VoIP]) for consideration as potential alternatives for new public safety system architectures will ensure that equipment manufacturers stay abreast of emerging technologies and continue to develop equipment to enhance the compatibility of public safety communications systems.

## Relevance to the Federal Law Enforcement Wireless Users Group (FLEWUG)

The FLEWUG must understand the importance of standards and their effect on public safety wireless communications systems. The lack of standards-compliant wireless communications systems endangers lives, especially when the domestic security of the Nation is threatened. When federal communications systems do not work with neighboring communications systems, the lives of United States citizens and the responding public safety personnel may be at risk. These homeland security issues make the state and federal compromise of standards critical.

Standards-based systems ease interoperability among all levels of public safety providers within each jurisdiction. Standards allow infrastructure components to communicate with each other freely. Voice and data standards can be incorporated into jurisdictional communications infrastructure providing additional system capabilities. This enhanced compatibility will increase operational efficiencies across jurisdictions.

## Actions/Solution Steps for the Federal Law Enforcement Wireless Users Group (FLEWUG)

The FLEWUG can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. The FLEWUG can actively participate in the standards development process by reviewing and providing comment on suggested technical standards as they relate to the public safety community. The FLEWUG can ensure that date-certain timelines and schedules are adopted to accelerate the standards development process and ensure that the latest technologies are brought to market by multiple vendors. They can also monitor the results of ongoing wireless communications standards development efforts and become familiar with standards-setting bodies (e.g., International Telecommunications Union [ITU], European Telecommunications Standards Institute [ETSI], Telecommunications Industry Association [TIA], Electronic Industries Alliance [EIA], American National Standards Institute [ANSI]), their methodologies, and their acceptance criteria. The FLEWUG can actively participate in the standards process to raise awareness of the importance of standards with public safety officials and how standards can help improve interoperability.

The following resources will prove useful to the FLEWUG in educating federal public safety officials about the relevance of standards—

- TIA Web site, ([www.tiaonline.org/standards/search.cfm?keyword=project+25](http://www.tiaonline.org/standards/search.cfm?keyword=project+25))
- ITU Web site, ([www.itu.int](http://www.itu.int))
- ANSI Web site, ([www.ansi.org](http://www.ansi.org))
- Public Safety Wireless Communications Standards Awareness Guide*
- Standards Primer*
- The Role of the Federal Government in Public Safety Wireless Interoperability*

The FLEWUG can mandate standards-compliant systems by ensuring standards compliance is a requirement in any request for proposal (RFP). They can also support and/or initiate pilot and proof-of-concept solutions in the department or agency using standard-compliant equipment to ensure that standards are adequately addressed to meet interoperability requirements. Additionally, the FLEWUG can require new technologies (e.g., commercial services, multiband or multimode equipment, voice-over-Internet Protocol [VoIP]) be considered as potential

alternatives for new system architectures to ensure that standards are adequately addressed to meet interoperability requirements.

The FLEWUG can establish a Standards Integrated Program Team (IPT) as an expert group advising the FLEWUG on standards-related issues. This IPT will ensure that the FLEWUG has a sufficient understanding of the relevance of standards to interoperability to effectively promote the development of standards and technology as a high priority public safety communications systems issue.

## Relevance to Federal Decision Makers

Federal decision makers must understand the importance of standards and their effect on public safety wireless communications systems. A lack of standards-compliant wireless communications systems across the Nation endangers lives, especially at times when the domestic security of the Nation is threatened. Without standards, public safety agencies are forced to use proprietary systems that may not allow them to talk to one another. In turn, when public safety communications systems do not work together, the lives of United States citizens and the responding public safety personnel may be at risk. These homeland security issues make the state and federal compromise of standards critical.

The development of standards fosters technological innovation for wireless systems. Standards-compliant products can be developed that cater to public safety users across the Nation. Subscriber units can be tailored to operate on standards-compliant communications infrastructure across the Nation, providing additional system capabilities for the end user. Additionally, emerging voice and data capabilities can be incorporated into the public safety infrastructures across the Nation or alternatively realized by contracting with existing commercial services providers. New technologies can also be developed to improve the provisioning of public safety services. The development and adoption of standards can promote economic development across the Nation and should therefore be aggressively supported.

## Actions/Solution Steps for Federal Decision Makers

Federal decision makers can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. Federal decision makers can effectively promote the use of standards-compliant wireless systems. They can also identify any standards challenges facing their department's or agency's public safety wireless communications system and understand the standards requirements for the public safety community across the Nation.

The following resources will prove useful to federal decision makers in understanding the importance of standards to public safety wireless communications—

- Public Safety Wireless Communications Standards Awareness Guide*
- Standards Primer*
- The Role of the Federal Government in Public Safety Wireless Interoperability*

Federal decision makers can provide leadership on the importance of standards to promote the use of standards-compliant technology in several ways. They can support programs that address standards for public safety wireless communications and ensure adequate funding is available for experienced personnel in their department or agency to travel and participate in standards development processes. They can also establish incentives for public safety officials across the Nation to develop standards-compliant systems, and include regulations for requiring the use of standards-based technology in any rulemakings or policies developed regarding public safety communications.

Federal decision makers can mandate standards-compliant systems by ensuring standards compliance is a requirement in any request for proposal (RFP). They can also support pilot and

proof-of-concept solutions using standard-compliant equipment and verify that standards compliance is included in their department's or agency's narrowband transition plan to ensure that standards are adequately addressed to meet interoperability requirements.

## Relevance to the National Telecommunications and Information Administration (NTIA)

The NTIA must understand the importance of standards and their effect on public safety wireless communications systems. A lack of standards-compliant wireless communications systems across the Nation endangers lives, especially when the domestic security of the Nation is threatened. Without standards, public safety agencies are forced to use proprietary systems that may not allow them to talk to one another. In turn, when public safety communications systems do not work together, the lives of United States citizens and the responding public safety personnel may be at risk. These homeland security issues make the state and federal compromise of standards critical.

The NTIA, as a regulatory entity can influence public safety wireless communications systems development. The NTIA can endorse standards development in rulemakings, and can influence the federal public safety community on the benefits of standards-compliant systems. The NTIA is also in position to endorse approaches (e.g., development of standards) that would enable the efficient use of spectrum to support wireless users.

The development of standards fosters technological innovation for wireless systems in numerous ways. Standards-compliant products can be developed that cater to public safety users across the Nation. Subscriber units can be tailored to operate on standards-compliant communications infrastructure across the Nation, providing additional system capabilities for the end user. Additionally, emerging voice and data capabilities can be incorporated into the public safety infrastructures across the Nation or alternatively realized by contracting with existing commercial services providers. New technologies can also be developed to improve the provisioning of public safety services. The development and adoption of standards can promote economic development across the Nation and should therefore be aggressively supported.

## Actions/Solution Steps for the National Telecommunications and Information Administration (NTIA)

The NTIA can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. They can identify any standards challenges facing public safety wireless communications systems and understand the standards requirements for the public safety community across the Nation. These actions will help the NTIA recognize the public safety need for standards-compliant wireless communications systems.

The NTIA can monitor the results of ongoing wireless communications standards development efforts and become familiar with standards-setting bodies (e.g., International Telecommunications Union [ITU], European Telecommunications Standards Institute [ETSI], Telecommunications Industry Association [TIA], Electronic Industries Alliance [EIA], American National Standards Institute [ANSI]), their methodologies, and their acceptance criteria.

The following resources will prove useful to the NTIA in understanding the relevance of standards to public safety wireless interoperability—

- TIA Web site, ([www.tiaonline.org/standards/search.cfm?keyword=project+25](http://www.tiaonline.org/standards/search.cfm?keyword=project+25))
- ITU Web site, ([www.itu.int](http://www.itu.int))
- ANSI Web site, ([www.ansi.org](http://www.ansi.org))
- Public Safety Wireless Communications Standards Awareness Guide*
- Standards Primer*
- The Role of the Federal Government in Public Safety Wireless Interoperability*

The NTIA can actively participate in the standards development process by influencing rulemaking. They can review and provide comment on suggested technical standards as they relate to spectrum management issues. The NTIA can also participate in the standards development process to help guarantee that date-certain timelines and schedules are adopted to accelerate the standards development process and to ensure that the latest technologies are brought to market by multiple vendors.

## Relevance to the Public Safety Wireless Network (PSWN) Program

The PSWN Program must understand and address the importance of standards and their effect on public safety wireless communications systems. The PSWN Program is taking several steps to highlight the importance of developing standards in public safety communications systems. The program is involved in educating the public safety community on the issues surrounding standards. The PSWN Program is actively increasing local, state, federal, and tribal public safety agency awareness and coordination of the issues associated with standards. The program also develops "how-to" guides that provide public safety officials with an overview of key standards issues and suggested plans of action for addressing them.

The program is also involved in several discrete activities to help resolve public safety standards issues. These activities include monitoring ongoing standards issues, and piloting interoperability solutions to overcome standards challenges.

## Actions/Solution Steps for the Public Safety Wireless Network (PSWN) Program

The PSWN Program can take numerous steps to ensure that standards are adequately addressed to meet interoperability requirements. The PSWN Program can actively participate in the standards development process by reviewing and providing comment on suggested technical standards as they relate to the public safety community. The PSWN Program can also actively participate in the standards development process to help guarantee that date-certain timelines and schedules are adopted to accelerate the standards development process to ensure that the latest technologies are brought to market by multiple vendors. The PSWN Program can also monitor the results of ongoing wireless communications standards development efforts and become familiar with standards-setting bodies (e.g., International Telecommunications Union [ITU], European Telecommunications Standards Institute [ETSI], Telecommunications Industry Association [TIA], Electronic Industries Alliance [EIA], American National Standards Institute [ANSI]), their methodologies, and their acceptance criteria.

The following resources will prove useful to the PSWN Program in actively participating in the standards development process—

- TIA Web site, ([www.tiaonline.org/standards/search.cfm?keyword=project+25](http://www.tiaonline.org/standards/search.cfm?keyword=project+25))
- ITU Web site, ([www.itu.int](http://www.itu.int))
- ANSI Web site, ([www.ansi.org](http://www.ansi.org))

The PSWN Program can analyze and present the cost and efficiency benefits of standards-compliant systems to help educate the public safety community on the relevance of standards. Similarly, the distribution of publications and videos will educate and raise awareness of standards related issues across the Nation. The program can increase the public safety community's awareness of the standards development process by developing a publication describing the standards process and how to participate, and creating a high-level guide to understanding technical standards for wireless communications systems. The PSWN Program can also promote the use of standards during PSWN Program-sponsored outreach forums and conference events.

The PSWN Program can sponsor pilot and proof-of-concept solutions across the Nation using standard-compliant equipment to ensure that standards are adequately addressed to meet interoperability requirements. Additionally, the program can test and evaluate new technologies (e.g., commercial services, multiband or multimode equipment, voice-over-Internet Protocol [VoIP]) that are being considered as potential alternatives for new system architectures to ensure that standards are being adequately addressed to meet interoperability requirements.

The PSWN Program can provide leadership on the importance of standards to further the use of standards-compliant technology in several ways. The PSWN Program can ensure adequate funding is available for experienced personnel to travel and participate in standards development processes, promote the use of standards in rulemaking or policy development, provide interoperability assistance to the public safety community across the Nation, support the development of PSWN Program regional approaches, foster interoperability and system development information exchange among the members of the public safety community, and facilitate meetings with equipment manufacturers and software developers to discuss the critical importance of the development and adoption of standards.