

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
Facilitating the Deployment of	)	PS Docket No. 11-153
Text-to-911 and Other Next Generation	)	
911 Applications	)	
	)	
Framework for Next Generation	)	PS Docket No. 10-255
911 Deployment	)	

**COMMENTS OF INTRADO INC.**

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## SUMMARY

Intrado commends the Commission for issuing this NG 911 NPRM, and urges the Commission to view text-to-911 as an evolutionary path to NG 911 capabilities, rather than as an interim and short term solution.

Intrado's comments present information related to a reliable SMS text-to-911 solution that is reliable and can be used for both text messaging and multi-media during the transition to an end-state IP voice NG 911 environment.

Testing indicates that with the functionality of a 911 message center, the technical limitations of peer-to-peer SMS messaging can be overcome. A text-to-911 solution clearly benefits persons with disabilities and those who would be placed in danger by making a voice call to 911. Intrado's analysis and estimate of the cost to wireless carriers and PSAPs to deploy an SMS text-to-911 solution demonstrates that the cost of implementation is reasonable.

Realizing that implementation of an SMS text to 911 solution is dependent on public safety answering point (PSAP) participation, Intrado suggests a staged approach using SMS text to a 911 relay center for use by persons with disabilities as a first stage, followed by a broader text-to-911 deployment as PSAP capabilities advance and PSAPs begin to deploy NG 911 functionality. This staged approach can be deployed using carrier network adaptations that will form the basis for a full text to 911 solution as PSAPs enhance their capabilities. Finally, the cost of a text relay center should be considered by the Commission as eligible for TRS funding.

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**COMMENTS OF INTRADO INC.**

Intrado Inc. (Intrado) respectfully submits the following comments in response to the Federal Communications Commission’s (FCC or Commission) Notice of Proposed Rulemaking in the above referenced proceeding.<sup>1</sup>

**I. INTRODUCTION**

The Commission’s leadership through this NPRM is critical to advancing next generation 911 (NG 911), and Intrado commends the Commission for recognizing the importance of this historic moment. Revolutionary advancements in emergency communications do not come

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<sup>1</sup> Notice of Proposed Rulemaking, *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications; Framework for Next Generation 911 Deployment*, PS Docket Nos. 11-153, 10-255, FCC 11-134, \_\_ FCC Rcd \_\_ (rel. Sept. 22, 2011) (NPRM).

often. By identifying the principles of an appropriate text-to-911 solution, the Commission has the opportunity to move NG 911 forward on its evolutionary path.<sup>2</sup>

There is now a vision for an end-state NG 911 architecture in an all internet protocol (IP) voice environment<sup>3</sup> that is being advanced by the industry through the work of industry experts<sup>4</sup>

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<sup>2</sup> The National Emergency Number Association (NENA), the NG 9-1-1 Institute and others have suggested to Congress the following consensus-based definition for NG 911:

NEXT GENERATION 9-1-1: The term ‘Next Generation 9-1-1’ means a securely managed IP-based system, utilizing broadband technology, comprised of hardware, software, data, applications, services, and operational policies and procedures that—

- A. Includes the features and functionalities of existing 9-1-1 services *and adds new capabilities*;
- B. Provides system interfaces based on recognized standards to support emergency communications;
- C. Processes *all types* of emergency calls;
- D. Acquires and integrates additional data useful to emergency call routing and response;
- E. Delivers emergency calls, and data to the appropriate public safety answering point and other appropriate emergency entities; and
- F. *Is the successor to, yet capable of, coexistence with legacy 9-1-1 systems.*

(Emphasis Added.)

<sup>3</sup> See NENA, *Detailed Functional and Interface Specification for the NENA i3 Solution – Stage 3*, NENA 08-003, Version 1.0 08-003, June 14, 2011 (NENA i3 Version 1.0), prefaced with a letter from Stephen F. O’Conor, President, “Understanding NENA’s i3 Architecture Standard,” stating “This NENA standard intentionally describes an *end-state* NG9-1-1 architecture, rather than an immediate “build-to” specification for a complete NG9-1-1 system.”), *available at* [http://www.nena.org/resource/collection/2851C951-69FF-40F0-A6B8-36A714CB085D/08-003\\_v1\\_Detailed\\_Functional\\_and\\_Interface\\_Specification\\_for\\_the\\_NENA\\_i3\\_Solution.pdf](http://www.nena.org/resource/collection/2851C951-69FF-40F0-A6B8-36A714CB085D/08-003_v1_Detailed_Functional_and_Interface_Specification_for_the_NENA_i3_Solution.pdf)

<sup>4</sup> NENA i3 Version 1.0 continues to be refined through ATIS, APCO, iCERT, and NENA’s Long Term Definition Working Group and NG 911 Transition Planning Committee. And one of the missions of the Communications Security, Reliability and Interoperability Council (CSRIC) Working Group 1—NG 911 is to identify outstanding issues with the i3 specification and categorize them as: (i) critical for deployment; (ii) critical for competition; (iii) desirable; (iv) long-term; or (v) non-critical. See Working Group #1: NG9-1-1 presentation dated September 23, 2011, *available at* <http://www.fcc.gov/pshs/advisory/csric3/1-WG%20Presentation%209-23-11.pptx>.

and standards setting bodies.<sup>5</sup> That end-state vision is not ready for deployment yet. As NENA has stated, “[b]roadly speaking, 9-1-1 systems will reach the end-state envisioned by the i3 Standard only over the long term. In the interim, transitional steps must be taken to maintain support for legacy interfaces from originating service providers such as wireline and cellular telephone carriers, and to accommodate legacy PSAP equipment.”<sup>6</sup>

The nation can take an immediate step toward increased capabilities and enhanced solutions by enabling the public to request emergency assistance through wireless text messages. However, rather than considering text merely as an interim solution, the Commission should consider text as a NG 911 gateway capable of implementation in stages. There are a number of potential text deployments, many of which have merit if they allow the public—in particular, persons with disabilities—to communicate using a wireless text solution. The best solution will be the one that builds a foundation for additional NG 911 capabilities, such as the transmission of photos, videos and other data.

In response to the Commission’s request for specific solutions and relevant data, Intrado’s comments present information related to a reliable Short Message Service (SMS) text-to-911 solution that, once deployed, can be used for both text messaging and multi-media during the transition to an end-state IP voice NG 911 environment. Realizing that implementation of an SMS text-to-911 solution is dependent on public safety answering point (PSAP) participation, Intrado suggests a phased approach using SMS text to a 911 relay center for use by persons with

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<sup>5</sup> For example, CSRIC Working Group 1 and ATIS Committees.

<sup>6</sup> NENA i3 Version 1.0, “Understanding NENA’s i3 Architecture Standard,” *available at* [http://www.nena.org/resource/collection/2851C951-69FF-40F0-A6B8-36A714CB085D/08-003\\_v1\\_Detailed\\_Functional\\_and\\_Interface\\_Specification\\_for\\_the\\_NENA\\_i3\\_Solution.pdf](http://www.nena.org/resource/collection/2851C951-69FF-40F0-A6B8-36A714CB085D/08-003_v1_Detailed_Functional_and_Interface_Specification_for_the_NENA_i3_Solution.pdf).

disabilities as a first stage, followed by text-to-911 deployment direct to PSAPs as their capabilities advance and they begin to deploy NG 911 functionality.<sup>7</sup>

**II. AN APPROPRIATE TEXT-TO-911 SOLUTION SHOULD HAVE TRADITIONAL ATTRIBUTES OF RELIABILITY AND PAVE THE WAY FOR FULL NG 911 DEPLOYMENT.**

In order to preserve the fundamental reliability and security of the existing national 911 system, an appropriate text solution should use the digits 911; be open and non-proprietary and interoperate among carriers, 911 service providers and PSAPs; use commercial techniques to ensure reliable receipt and delivery of 911 messages; integrate into PSAP call handling systems; use automatic cell sector location to route messages to the appropriate PSAP; and be cloaked with statutory liability protection to the same degree as wireless and IP-based voice communication methods. The importance of these attributes is evident—they are the cornerstones of the trusted legacy system in the United States. For example, use of a single emergency number and the identity of cell sector location information allow users to reach the appropriate PSAP and first responders for emergency assistance from wherever the caller happens to be. Access providers should not have to make flash-cut modifications or retrofit their networks—or incur costs or impediments arising from proprietary solutions, especially if the solution is to be deployed expeditiously. Similarly, to preserve the existing high level of PSAP services, text messages should be presented to PSAP call takers consistent with the manner in which voice calls are handled and processed today.

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<sup>7</sup> As the Commission is aware, there is important, complementary work underway at the United States Department of Justice (DOJ) to identify what is needed from public safety agencies in order to give persons with disabilities equal access to emergency services. See Advance Notice of Proposed Rulemaking, *Nondiscrimination on the Basis of Disability in State and Local Government Services; Accessibility of Next Generation 9-1-1*, CRT Docket No. 111, 75 Fed. Reg. 43446 (Jul 26, 2010) (ANPRM). Intrado encourages the Commission to closely coordinate its efforts with that of the DOJ in the foregoing ANPRM.

Finally, in order to avoid deployments that are short term efforts with limited return on investment and resources, a text solution should provide a path toward an expanded array of NG 911 features. The essence of NG 911 is that it provides advanced functionality in an environment in which PSAPs are enabled to receive multi-media from any device, anywhere, anytime, regardless of the technology. Service providers will continue to develop and deploy new communication technologies and devices for commercial purposes, and PSAPs must possess a high degree of flexibility, i.e., “capacity for change” to integrate and embrace new technologies and consumer devices as they are introduced to the evolving system.

SMS text messaging is an example of a widely used communication method that has evolved from commercial demand. It can be deployed in a manner that addresses all of the above principles and, most importantly, with network functionality that is the foundation and first step towards an NG 9-1-1 architecture—including functionality that captures location, a legacy gateway that allows for the transition of the existing access technologies to IP selective routing and connectivity to the PSAP. Once these elements are in place, PSAPs can receive text, multi-media and other data from emerging wireless technologies, such as Long Term Evolution (LTE) and IP-Multimedia Subsystem (IMS), without further adaption of their networks—and SMS text messaging can continue to be a means to contact 911 for as long as consumers wish to use it.

### **III. POTENTIAL BENEFITS OF AN SMS TEXT-TO-911 SOLUTION OUTWEIGH ANY CONCERNS OVER COST, RELIABILITY OR OBSOLESCENCE.**

#### **A. Concerns Over User-to-User Limitations In a Commercial Environment Can Be Overcome by Configuration and Operation Changes Within the Existing Design of Commercial SMS Networks.**

Those who question the use of SMS text messaging as a way to request emergency services raise concerns over lost, delayed or out-of-sequence messages or the fact that, in user-to-user scenarios, text messages function as individual datagrams, rather than as fluid conversations. While these are valid concerns, they can be addressed and overcome. Through commercial mechanisms, such as a 911 message center that manages the flow of 911 text messages to and from the handset and a text session manager which links text messages together, the SMS network can be adapted to function as a 911-grade communications infrastructure.

A reliable SMS text-to-911 solution that utilizes a 911 short code and provides connectivity directly from the handset to PSAPs with voice equivalent PSAP call handling and processing capability is feasible today, with few adjustments to wireless carrier and PSAP operations. The diagrams provided as Attachment A illustrate the call flow and essential elements of such a deployment.<sup>8</sup> While an SMS text-to-911 solution is essentially an end-to-end system, functional elements as well as costs can be allocated to wireless carrier networks and PSAPs consistent with how they are assigned today under the Commission's King County demarcation ruling.<sup>9</sup> While the functional elements may also be used in a fully deployed NG

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<sup>8</sup> The logical elements of the 9-1-1 Short Message Service Center (SMSC), Text Positioning Center (TPC) and Text Selective Router (TSR) are depicted in the first diagram in Attachment A to illustrate the flow of SMS messages in terms that are parallel to the existing wireless voice elements, including the Mobile Positioning Center (MPC) and Selective Router (SR). These nodes are capable of mapping and evolving to the NENA i3 architecture as those are further defined in standards. As depicted in the second diagram in Attachment A, the TPC can evolve to the NENA i3 Legacy Network Gateway (LNG) and the TSR can evolve to the NENA i3 Emergency Services Routing Proxy (ESRP).

<sup>9</sup> See May 7, 2001, Letter from Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau, to Marlys R. Davis, E911 Program Manager, Department of Information and Administrative Services, King County, Washington, C.C. Docket 94-102.

911 environment, the cost allocation can be changed if public policy and funding considerations dictate.

### **1. Adaptation of Wireline Carrier Networks.**

An SMS text-to-911 solution requires the addition of the following elements to existing wireless networks, if they do not already exist:

- An Idle Mode Location Server (IMLS) which allows the wireless network to locate the handset when it is not placing a voice call;
- A Text Positioning Center (TPC) which performs location coordination and provides routing instructions, much like a Mobile Position Center (MPC) functions for wireless voice calls today and includes a Text Session Manager (TSM), which enables text messages between the device and the PSAP to be linked together;
- A 911 Message Center, which is the functionality at the Short Message Service Center (SMSC) that manages 911 text messages and coordinates traffic with the TPC and the Text Selective Router (TSR) (the latter of which is part of the PSAP deployment); and
- SS7/IP trunks from the SMSC gateway which allow connectivity for text messages returning to the SMSC from the PSAP locations.

To further explain, the IMLS allows for the carrier's network to identify the cell sector location of handsets. The cell sector information is sent with the text message to the TSR and then on to the PSAP. Cell sector information is the current mechanism used by wireless carriers to determine the appropriate PSAP for 911 voice calls.

A TPC functions like a MPCs associated with wireless voice calls. It coordinates the location information and provides routing instructions for delivery of the text message to the appropriate PSAP. Upon a mobile device's initial text-to-911, the TPC will determine the appropriate PSAP to which to route the text request for assistance. The routing determination will be based upon the location of the cell sector to which the mobile device is connected. The TPC also has a text session control manager functionality that links the messages as they pass

from the PSAP call handler back through the carrier's network to the mobile device. A similar functionality also exists in MPCs for session management of voice calls.

The delays that are possible due to store and forward functionality of an SMS network are easily overcome by the use of the 911 Message Center, which enhances the network with capability to manage 911 messages as they proceed from the cell tower to a text selective router and ultimately to the PSAP call taker. This functionality can be obtained by adapting existing SMSCs, placing a new SMSC in the carrier's network or providing functionality through a third party hosted solution for multiple carriers. Reliability is ensured through operational procedures designed to minimize delays, essentially introducing a timing mechanism that allows the SMSC to continuously contact the mobile device, rather than placing the message in an arbitrarily timed queue for retry. This approach is analogous to how a metered on-ramp for a busy freeway works, with two lanes—one with a stoplight for regular cars and the other that allows direct entrance onto the highway for cars eligible to enter a High Occupancy Vehicle (HOV) lane. Cars entering the HOV lane are able to bypass the long queues at the on-ramp and enter directly onto the highway. An illustration of the traffic control process is provided in Attachment B.

Intrado tested the 911 Message Center by sending text messages through four wireless carriers' SMS networks and recorded the time elapsed and other data related to the reliability and latency of transmitted messages. Of the 31, 868 messages sent, 90 % were delivered within 3-4 seconds and 99% were delivered within 3-4 seconds for stationary tests and 7-8 seconds for mobile tests. Median latency was 2-4 seconds. The longest delivery time for any message was 66 seconds. A detailed description of the test and its results are provided in Attachment C.

## **2. Adaptation of PSAP Facilities.**

PSAPS can receive and process 911 text messages by obtaining the following:

- IP Connectivity to a TSR;
- TSR service, which will be provided by a third party service provider; and
- Call handling equipment capable of displaying text messages.

The necessary IP connectivity is essentially existing transport service that can be obtained from carriers today. The TPC converts the SMS text message to IP and the TSR acts like a soft switch, sending messages via data files to the PSAP. The network protocol is Session Initiation Protocol (SIP). Call handling equipment can range from a simple computer purchased at a retail store to call handling equipment that integrates voice and text communications into the same system for response, processing and storage. Depending on the existing state of the PSAP's equipment, the functionality can be obtained by a simple software push.

### **3. How It Works.**

When an individual initiates a 911 text message, the mobile device sends the SMS short code, 911, to the SMSC assigned to that mobile device. When the SMSC successfully receives the message, it acknowledges the receipt of the message and sends that acknowledgement back to the mobile device. The SMSC then sends the message to an emergency text gateway, which includes the functionality of a TPC and a TSR. The TPC will query the carrier's network to determine location and identify the appropriate PSAP to which to route the text message. The routing will be based upon the location of the cell sector to which the mobile device is connected. Additionally, the TSR will route the call to the appropriate PSAP over IP connectivity. The text messages are linked to create a "multi-message conversation" between the mobile device that initiated the text and the responding PSAP call taker. In other words, in the course of a conversation, messages from the text initiator will always be received by the same PSAP call taker. The text message will appear on the PSAP's call handling equipment in a

manner operationally similar to a voice call. The PSAP station will ring, and when the call taker answers the text request for assistance, the text message, along with location information will be displayed on the PSAP equipment. From this point, until the PSAP call taker releases the conversation, the SMS messages to and from the text initiator and the PSAP call taker will be linked.

When a PSAP sends a response back to the text initiator, it goes from the PSAP to a 911 SMSC associated with the carrier's network and on to the mobile device. When the mobile device receives the message, it acknowledges the message and that acknowledgement is sent back to the 911 SMSC and on to the caller taker's screen, letting the call taker know that the message was successfully delivered or delayed, as the case may be.

No additional technical standards need to be developed for this text deployment. The solution utilizes existing location based standards.

#### **B. Benefits of an SMS Text-to-911 Solution Are Clear.**

There are compelling public safety benefits to any text-to-911 solution. It is clear that consumers, including persons with disabilities, are using wireless devices as a primary means of communication.<sup>10</sup> Despite the prevalent use of wireless communications, the opportunity for persons with disabilities to reach emergency services from their wireless devices is very limited. Applications that enable persons with disabilities to communicate with a relay center using IP

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<sup>10</sup> As of June 2011, 29.7% of all US households were wireless-only households. CTIA, *Wireless Quick Facts*, <http://www.ctia.org/advocacy/research/index.cfm/aid/10323>) (last visited December 10, 2011); The FCC's Emergency Advisory Committee reported that 62.9% of the persons with disabilities of whom they surveyed use wireless mobile devices such as a cell phone or smart phone almost every day. Emergency Access Advisory Committee, *Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis* (July 21, 2011); <http://www2.fcc.gov/cgb/dro/EAAC/EAAC-REPORT.pdf>.

Relay from a wireless device are only available on smart phones and may be further limited to certain operating systems.<sup>11</sup>

The recent experience of Richard Ray, illustrates how having a text-to-911 solution would benefit persons with disabilities. In the attached letter, Mr. Ray stresses that individuals with disabilities use handheld wireless devices as their primary mode of communication and explains his experience in which a text-to-911 solution would have been potentially life saving.<sup>12</sup>

The actual use of an SMS text-to-911 solution in Black Hawk County, Iowa demonstrates its efficacy. While Black Hawk has not been able to discern whether any particular text initiator is disabled, Black Hawk's experiences demonstrate the value emergency texting has to anyone who cannot speak or where speaking places the caller in imminent danger. In Attachment E, Judy Flores, Director of the Black Hawk Consolidated Communications Center, identifies some of the text messages Black Hawk has received and the outcome of each of those requests for assistance.

Black Hawk views the implementation of its SMS text-to-911 a positive experience. In fact, Black Hawk is now taking text messages sent from any user of the same wireless carrier in the state and acting as a relay center for other PSAPs in the state. In Black Hawk's experience, PSAP call handling has worked seamlessly for text.<sup>13</sup>

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<sup>11</sup> Nielsenwire, *Forty Percent of U.S. Mobile Users Own Smartphones; 40 Percent are Android*, [http://blog.nielsen.com/nielsenwire/online\\_mobile/40-percent-of-u-s-mobile-users-own-smartphones-40-percent-are-android/](http://blog.nielsen.com/nielsenwire/online_mobile/40-percent-of-u-s-mobile-users-own-smartphones-40-percent-are-android/) (last visited December 12, 2011).

<sup>12</sup> Attachment D, Letter from Richard Ray, ADA Compliance Officer, City of Los Angeles Department of Disability, to California State Assembly Member Norma Torres dated November 9, 2011.

<sup>13</sup> See Attachment E.

Text-to-911 volumes in Black Hawk appear relatively low in isolation; however, to Intrado's knowledge, there is no publicity or outreach informing the public of the ability to text-to-911 in Black Hawk, either by the carrier or public safety. It would be reasonable to expect the volume of texts to 911 to increase dramatically with public education and outreach.

Another benefit of an SMS to IP solution is that it is likely covered by statutory liability protection. Federal law extends state liability protection to wireless carriers, IP-enabled voice service providers, or other communications providers. The liability parity provisions of the Wireless Communications and Public Safety Act of 1999 as amended by the New and Emerging Technologies 911 Improvement Act of 2008 (codified at 47 U.S.C. § 615) provide that:

A wireless carrier, IP-enabled voice service provider, or other emergency communications provider, and their officers, directors, employees, vendors, and agents, shall have immunity or other protection from liability in a State of a scope and extent that is not less than the scope and extent of immunity or other protection from liability that any local exchange company, and its officers, directors, employees, vendors, or agents, have under Federal and State law (whether through statute, judicial decision, tariffs filed by such local exchange company, or otherwise) applicable in such State, including in connection with an act or omission involving the release to a PSAP, emergency medical service provider or emergency dispatch provider, public safety, fire service or law enforcement official, or hospital emergency or trauma care facility of subscriber information related to emergency calls, emergency services, or other emergency communications services.<sup>14</sup>

The term "other emergency communications service provider" means—

(A) an entity other than a local exchange carrier, wireless carrier, or an IP-enabled voice service provider that is required by the Federal Communications Commission consistent with the Commission's authority under the Communications Act of 1934 to provide other emergency communications services; or

(B) in the absence of a Commission requirement as described in subparagraph (A), an entity that voluntarily elects to provide other emergency communications services and is specifically authorized by the appropriate local or State 9-1-1 service governing authority to provide other emergency communications services.<sup>15</sup>

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<sup>14</sup> 47 U.S.C. § 615A(a).

<sup>15</sup> 47 U.S.C. § 615B(9).

An “other communications service” is defined as “the provision of emergency information to a [PSAP] via wire or radio communications, and may include 9-1-1 and enhanced 9-1-1 service.”<sup>16</sup>

In order to receive the same the liability protection that is currently afforded to wireless and interconnected voice over internet protocol (VoIP) voice call providers, text solutions must be mandated or PSAPs must authorize the service. In the SMS text-to-911 solution, the PSAP will authorize the service by virtue of its purchase of text selective routing services.

### **C. Cost of Deployment is Reasonable.**

The NPRM seeks to determine “the feasibility of overcoming or mitigating SMS technical limitations at a reasonable cost to providers, PSAPs and consumers.”<sup>17</sup> In response to the Commission’s request, Intrado has undertaken an analysis, consistent with the system approach describe herein, that necessarily estimates costs for PSAPs, service providers and (by extension) consumers. The costs assume a direct IP interface to the PSAP and enhancements to PSAP call handling equipment to support the management and display of text sessions. The network protocol is SIP based and can evolve to that specified in the NENA i3 architecture. The cost estimates assume that the PSAP call handling equipment can be upgraded to support a text session (rather than completely replaced). Three approaches are provided: Table 1 represents total system cost estimates for national deployment by all wireless carriers and all PSAPs; Table 2 represents a restatement of cost estimates assuming that in eighteen states with low population density text-to-911 is deployed by one PSAP in the state (acting as a relay center for the other

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<sup>16</sup> 47 U.S.C. § 615B(8).

<sup>17</sup> NPRM, ¶ 55.

PSAPs); and Table 3 represents restated cost estimates assuming text-to-911 deployment to only one PSAP per state in all states.

Based on both publically available and internal proprietary data, Table 1, below, reports system cost estimates at the national level for a baseline of five years, as well as annually and monthly cost estimates (columns (a) and (d)). A baseline of five years represents the time horizon employed for the depreciation of investments and the allocation of non-recurring charges for service providers and for PSAPs.<sup>18</sup>

**Table 1. Cost Estimates for SMS Text to 9-1-1**

Level of Aggregation (a)	Wireless Service Provider (b)	PSAP Min. Positions (c)	PSAP Software (d)	System Totals (e)
National				
Five Years	\$20,000,000	\$276,771,360	\$6,160,000	\$302,931,360
Annual	\$4,000,000	\$55,354,272	\$1,232,000	\$60,586,272
Monthly	\$333,334	\$4,612,856	\$102,667	\$5,048,857

Additionally, Table 1 columns (b), (c), and (d) report system cost components for service providers and PSAPs. The service provider cost component represents requisite system functionality associated with location acquisition, session management, and the service provider’s responsibility related to message routing. (For example, the IMLS, TPC depicted in Attachment A, Diagram 1).

Next, the system cost components for PSAPs are two-fold. First, assuming a minimum of two positions per PSAP (column (c)) and a PSAP population based on the FCC’s *PSAP*

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<sup>18</sup> For simplification, the underlying assumptions are: (a) PSAP contracting practices with their chosen vendors allow for such spreading of investments and non-recurring costs from budgeted CAPEX funds; and (b) investment for service provider system functionality is depreciated over the same five-year time horizon utilizing the straight-line method and \$0.00 salvage value.

*Registry*,<sup>19</sup> total PSAP position cost estimates are reported for five years, annually and monthly.<sup>20</sup> Second, assuming 45% of the PSAP population will also require a software upgrade to enable SMS text, column (d) reports the estimate of this PSAP cost component.<sup>21</sup>

As the FCC recognizes, there are “over 6,800 PSAPs in the United States spanning a wide range of sizes and resources.”<sup>22</sup> Ultimately, costs will depend on how text is rolled out among them. For example, assuming that, similar to Iowa, certain states deploy initially with one SMS text-capable PSAP serving all other PSAPs in the state, PSAP implementation costs are reduced significantly. Table 2 below provides a restatement of the system implementation costs assuming that eighteen states with low population density will deploy SMS text-to-911 to one PSAP.<sup>23</sup>

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<sup>19</sup> FCC Master PSAP Registry (accessed May 27, 2011), <http://transition.fcc.gov/pshs/services/911-services/enhanced911/psapregistry.html>.

<sup>20</sup> Two SMS text positions per PSAP are the minimum requirement for redundancy.

<sup>21</sup> It is important to note what has not been included in the cost analysis. First, to avoid confounding previous cost estimates for IP connectivity, Intrado’s analysis does not include IP connectivity expense throughout this system. Nor does Intrado’s analyses include costs associated with either TTY or voice relay solution. Both these costs are considerable and stem from the Selective Router Access Provider (SRAP) [a per call fee required to set up a legacy voice call to the PSAP for the support of TTY tones or a voice relay call] and the cost of the TTY network equipment or the text relay call center. These costs are all incremental to the D-IP costs presented above; call handling equipment upgrade costs would not apply to legacy voice calls either by TTY or voice relay. With respect to service providers, the incremental costs associated with service providers’ SMSC modification(s) are presumed the purview of those providers because, as with PSAP operational expense, the variables are numerous, and data is not publicly-available, thus it is prudent for Intrado to defer to the wireless service providers to estimate this cost component.

<sup>22</sup> NPRM, ¶¶ 9 and 92.

<sup>23</sup> The underlying cost assumption is that states with a population density of less than sixty people per square mile will deploy a single PSAP initially. State population density data found at State and County Quick Facts, <http://quickfacts.census.gov/qfd/index.html> (last visited November 15, 2011).

**Table 2. Restatement of Cost Estimates for SMS Text-to-911  
(18 states with 1 PSAP)**

Level of Aggregation (a)	Wireless Service Provider (b)	PSAP Min. Positions (c)	PSAP Software (d)	System Totals (e)
National				
5 Years	\$20,000,000	\$213,442,320	\$4,752,000	\$238,194,320
Annual	\$4,000,000	\$42,688,464	\$950,000	\$47,638,864
Monthly	\$333,334	\$3,557,372	\$79,200	\$3,969,906

Total system costs reported on a national basis in Table 2 (column (e)) show reductions in five-year, annual and monthly costs of \$64.7M, \$12.9 M and \$1.1M respectively.

Next, extending this approach, Table 3 provides estimates of the cost to deploy SMS nationally, assuming only one text-capable PSAP per state.

**Table 3. Cost Estimates for SMS Text-to-911  
(1 PSAP/State)**

Level of Aggregation (a)	Wireless Service Provider (b)	1 PSAP / State (c)	Software upgrade 100% PSAPs (d)	System Totals (e)
National				
5 Year	\$20,000,000	\$2,102,880	\$104,000	\$22,206,880
Annual	\$4,000,000	\$420,576	\$20,800	\$4,441,376
Monthly	\$333.334	\$35,048	\$1,7334	\$370,115

Table 3 (column (e)) shows that the implementation costs based on one PSAP per state over 5 years, annually and monthly are lower by \$216M, \$43M, and \$3.6M, respectively, than those reported in Table 2.

Table 4 below summarizes total system costs for each of the scenarios provided above.

**Table 4. Summary of SMS Text-to-911 System Costs**

	System Totals 5 Years	System Totals Annually	System Totals Monthly
Table 1: WSP + Total PSAP Population	\$302,931,360	\$60,586,272	\$5,048,857
Table 2: WSPs + Subset of States w/ 1 PSAP	\$238,194,320	\$47,638,864	\$3,969,906
Table 3: WSPs + 1 SMS Text PSAP / State	\$22,206,880	\$4,441,376	\$370, 225

The above analysis provides the Commission with a base-line understanding of possible system costs and demonstrates that the ultimate cost of PSAP deployment of an SMS text-to-911 will depend on how deployment evolves. For example, PSAP deployment does not necessarily have to involve the entire nation or even an entire state, simultaneously; costs will be lower and, therefore, adaption will be driven by the opportunity for PSAPs to bundle text-to-911 with other NG 911 solutions.

**IV. A STAGED APPROACH IS APPROPRIATE**

SMS text-to-911 can be deployed in stages to accommodate PSAP adoption and avoid a “chicken or egg” dilemma. Initially, carriers may deploy an SMS solution for persons with disabilities using the same elements of the system; however, rather than routing the text messages to PSAPs, messages can be sent to a relay center, which would then place the call over the native voice network to the appropriate PSAP. A diagram of a staged deployment is provided in Attachment F. Users can pre-register, so that they are identified as appropriate users of the carrier’s 911 SMS solution when a text message is sent to the Text Positioning Center for location and routing to the relay center. Non-registered persons with disabilities could also register at the time a 911 text is sent, without complication. All other users would receive a

message telling them to make a 911 voice call, as they do today in locations where SMS text-to-911 is not deployed.

The relay center could be provided by the carrier or a third party and could be deployed on a regional or national basis. The value of this initial solution is twofold: 1) it provides a quick deployment to benefit persons with disabilities and 2) because the wireless carriers will have adapted their networks for the SMS text-to-911 solution, it will incent PSAPs to invest in the IP connectivity and call handling equipment necessary for an SMS to IP solution. At that point, all users—not just persons with disabilities—will be able to text-to-911. Because it utilizes the elements discussed in Section II, this first stage will lead to the next stage, which is SMS text-to-911, which will, in turn lead to a full end-state NG 911 deployment.

**V. THE COMMISSION SHOULD OPEN A DOCKET TO CONSIDER SMS RELAY AS ELIGIBLE FOR TRS FUNDING.**

Title IV of the Americans with Disabilities Act of 1990 (codified at 47 U.S.C. § 255) established the Telecommunications Relay Service (TRS) program and required the Commission to ensure intrastate and interstate telephone system access for the speech and hearing impaired that is “functionally equivalent to the ability of an individual who does not have a hearing impairment or speech impairment to communicate using voice communication services by wire or radio.”<sup>24</sup>

In 2002, the Commission made clear that WorldCom, Inc.’s Internet Protocol Relay service (IP Relay) was eligible for reimbursement from the TRS Fund. In that Order, the FCC found “that the phrase ‘telephone transmission service’ should be interpreted broadly...to include any transmission service involving [telephonic equipment or devices] to the extent that

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<sup>24</sup> See Pub. L. No. 101-336, §401, 104 Stat. 327, 366-69 (1990); 47 U.S.C. § 225 (a)(3).

such transmission provides the particular functionality that the definition specifies.”<sup>25</sup> While possible methods of determining the jurisdiction of an IP Relay call were explored by the Commission, it ultimately decided to approve interstate funding on an interim basis to promote the expeditious deployment of the service. The Commission stated: “We find...that it is in the public interest to authorize a compensation methodology for IP Relay quickly, in order to encourage the development of this service, and that to delay compensation pending the development of the methodology to determine cost allocation of IP Relay calls could impede the development of the service.”<sup>26</sup> An SMS text to a relay center solution provides functionality that the statute envisions and falls within the Commission’s broad interpretation of the statute. The Commission should expeditiously open a proceeding to determine that SMS 911 relay services are compensable as TRS services, to consider whether SMS 911 relay should be compensated under the interstate fund and to make any necessary modification to the rules to account for the fact that the service is a wireless, rather than a wireline service, such as taking into consideration the means by which location will be identified.

## VI. CONCLUSION

The information provided in these comments demonstrates that SMS text is a viable text-to-911 solution that will lead to full NG 911 capabilities. A staged approach can be taken that will allow persons with disabilities to utilize their mobile phones to contact 911 through a relay

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<sup>25</sup> *Provision of Improved Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, Petition for Clarification of WorldCom, Inc., Declaratory Ruling and Second Further Notice of Proposed Rulemaking*, 17 FCC Rcd 7779, 7783 (2002).

<sup>26</sup> *Id.*, 7786.

center in the near term and be deployed using carrier network adaptations that will form the basis for a full text-to-911 solution as PSAPs enhance their capabilities.

Respectfully submitted,

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