Testimony To The
INTERIM PUBLIC SAFETY AND TRANSPORTATION COMMITTEE
Prepared January 14, 2010 by the
North Dakota Association of Counties
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CONCERNING 9-1-1 SERVICES AND INFRASTRUCTURE

Chairman O'Connell and committee members; thank you for the invitation to speak to the Committee's study of 9-1-1 services and infrastructure. As discussed at your previous meeting, NDCC Chapter 57-40.6 places the responsibility for implementing the Emergency Services Communications System (or 9-1-1) with local government; however it establishes the Emergency Services Communications Coordinating Committee (ESC[3]) to coordinate planning and make recommendations to the Legislature (NDCC 57-40.6-12). The section of statute and the current members of the ESC[3] are attached to this testimony (Item 1).

Before I respond to the Committee's requests, I will briefly note the "Timeline" document that I have also provided. As you know the Interim Taxation Committee is studying the emergency services communications system fee. They requested a presentation on the history of 9-1-1 and its funding, both within North Dakota and across the nation. As your study and theirs are so closely related, I thought you may wish to have a copy of this document as well.

I am here today as a member of the ESC[3], and wish to provide your Committee with information regarding its activities since the close of the Legislative Session. The group has met five times in the last six months, and will probably be meeting at similar frequency throughout the Interim. As the group's responsibilities are both extensive and over-lapping, I will address them as they are outlined in the statute.

a. Recommend to the legislative management changes to the operating standards for emergency services communications, including training or certification standards for dispatchers;

Long-term, this may very likely be the most important duty of this body. While North Dakota looked quite good in the recent national news investigation of "9-1-1 standards", the evaluation and updating of operating and training standards is still critical – particularly as we begin to incorporate new and additional data streams into our public safety answering points. The ESC[3] has collected and begun to analyze standards from surrounding states and from other states that have recently made changes. These examples, along with our current statutory standards (NDCC 57-40.6-10) have been distributed to the North Dakota 9-1-1 Association (an organization of local government and industry representatives) to solicit comments. The ESC[3] anticipates devoting meeting time to open debate of possible standards, and then a period of review and comment of draft proposals before presenting them to this Legislative Committee.

b. Develop guidelines regarding the allowable uses of the fee revenue collected under this chapter;

Official guidelines were developed through a series of public meetings and public comment periods throughout 2007. The final guidelines were made effective by the ESC^3 on January 1, 2008. Since that time, almost every meeting has included questions regarding their interpretation with respect to very specific communication costs. The guidelines were amended in June of 2009, adding a process for the ESC^3 to follow if there is credible information suggesting that a 9-1-1 jurisdiction is expending funds in a manner the does not comply with the guidelines. The jurisdictional reports (discussed below) have indicated that all jurisdictions have been in compliance since the guideline's effective date.

c. Request, receive, and compile reports from each governing body on the use of the proceeds of the fee imposed under this chapter, analyze the reports with respect to the guidelines, file its report with the legislative council by November first of each even-numbered year regarding the use of the fee revenue, and recommend to the legislative assembly the appropriate maximum fee allowed by section 57-40.6-02;

In compliance with the statutory requirement, every 9-1-1 jurisdiction submits reports on the use of their fee proceeds and this information has been compiled by the ESC^3 into formal reports to the Legislature in 2002, 2004, 2006, and 2008. (On file with the receiving Interim Committee's materials). There are two documents that are used to report the jurisdictional information. Every 9-1-1 jurisdiction completes the "financial" document (Attached - Item 2) and each of the jurisdictions operating a PSAP also completes a much more detailed "operational" document that defines equipment, staffing levels, call volumes, etc. With the close of county and city books on December 31, 2009, completion of these reports will again be requested, and the results compiled by the ESC^3 for presentation to this Committee.

d. Periodically evaluate chapter 57-40.6 and recommend changes to the legislative management;

Recommendations to update 57-40.6 were made and subsequently implemented in 2003, 2005, and 2007. These changes primarily addressed new and changing telecommunication technologies; ensuring that they were adequately addressed in the code. It seems likely that changes may be recommended during this interim to section 57-40.6-10 regarding operational and training standards, as discussed above.

e. Serve as the governmental body to coordinate plans for implementing emergency 911 services and internet protocol enabled emergency applications for 911.

This Committee received an overview regarding "internet protocol enabled emergency applications" or "Next Generation 9-1-1" (NG911) at its previous meeting from Mr. Gordon Van Auken of Kimball & Associates. Considerable time has been devoted to this topic by the ESC^3, and this is the primary reason that its meetings have been so frequent.

As you may be aware, the local 9-1-1 jurisdictions, working with both the landline and wireless telecom companies, have invested $12 million over the last eight years in upgrading and operating the communication network so that it can receive, route, and locate 9-1-1 calls from wireless (cell) and voice-over-Internet protocol (VoIP) devices. As the consultant explained at your last meeting, this was accomplished (in North Dakota and nationwide) by enhancing and leveraging the current "copper-pair", analog network used by traditional phone service since it was first installed in Grandin, ND in 1877.

Unfortunately, cellular and VoIP services are not the final words in communications. The Virginia Tech Shooting in 2007 publicized the technological shortcomings of the E9-1-1 system nationwide – something the FCC and USDOT had already begun to address in their "Next Generation 911 Initiative". As widely reported, many students at Virginia Tech were "texting" messages to 9-1-1 on their cell phones with the belief that they would go to the public safety answering point – which they did not. Even now, after the publicity, 75% of college students believe they can "text" 9-1-1. This is not possible.

Texting is the simplest and most common communication device that is driving the need for NG911 – but certainly not the only one. Before we talk about some of the others – let me very briefly review why it doesn't work, and then I can speak to what the ESC[3] is doing to address this.

Two (very much simplified) drawings are attached to this testimony (Item 3) that contrast the existing E911 system with Next Generation 911. Currently (as illustrated in the drawing on the left) traditional landline and cellular 911 calls are directed to one of two "911 Selective Routers" (often called 911 "tandems") in North Dakota. This device then routes the voice to the proper Public Safety Answering Point (PSAP) on dedicated voice-grade (analog) phone lines. It also sends a number with the voice. That number is then routed to a national database which translates the number into a carrier identifier, call-back number, and caller location (address or lat/long) which is transmitted back to that same PSAP. This traffic is handled by dedicated (low-speed) data links. Although each PSAP has at least two data links and two voice lines, this system does not have the robust redundancy that the federal government believes is essential, and more importantly it cannot transmit the large volume of data coming from many of the newer communication devices. This is how we are operating now and how nationwide the 911 system has worked since 1975.

The second drawing indicates (in very, very general terms) what the federal government is calling Next Generation 911 – and the migration they are urging all States make. You will see that the voice grade lines and the low speed data links of the previous drawing are replaced by a high-speed system of interconnected fiber optic and other broadband technologies. This network is depicted as a ring, as the expectation is that complete redundancy for all primary nodes will be integral to the design – essentially multiple paths to each node. Just as significantly, the "selective router" is replaced (or augmented) by a "911 gateway" that will direct the voice traffic that is currently routed, but also direct the text, pictures, video and other data along with (or in place of) the voice.

Now the technology: Virtually everyone in this room – if the national statistics are accurate – has a cell phone with them right now. Most of these can take pictures, video, and certainly text (if you have such a plan). People every day are taking pictures of accident scenes, videos of suspicious activity, and of course texting 9-1-1. Most of you could do that right now and this could be extremely valuable information for emergency responders – if it could actually be received and managed. The selective routers cannot switch that data and the voice grade lines feeding the PSAPs cannot handle that traffic.

Additionally, many of you might have cellular devices that have Internet access that would allow you to email a PSAP with a message, pictures, voice and video. This currently cannot happen. If you count the possibility of using a Voice over Internet Protocol connection with a state-of-the-art cell device, you could conceivably try to connect with a PSAP in three or four ways with four or five data streams – most of which cannot be transmitted by the voice grade phone lines that are the backbone of the 911 system.

But that is not all. Many major trucking firms are now employing crash notification systems that automatically dump megabytes of data if the truck's air bags are deployed, if the truck is overturned, or if the truck is on fire. Currently this data goes to a private dispatcher who in turn calls the appropriate PSAP (once they figure out which one it is) and relays this information verbally over the phone. Technologically, it is possible for this information to go directly to the PSAP and from there be routed to the appropriate responding vehicle – but the 911 network cannot transmit this data at this time.

Similarly, personal vehicle systems such as OnStar use the private dispatcher method, but would not necessarily need that (sometimes) delaying step if the network could route more than the driver's voice. The "Ford Sync" product gets around this by having the vehicle's computer "hijack" the driver's cell phone (if properly configured), dial 9-1-1, and send one of several recorded verbal messages to the PSAP – something the 911 network can handle.

Beyond personal calling and vehicle accidents, the explosion of technology in medicine, safety and security is equally challenging. Urban and highway monitoring cameras, bank security, home video systems, electronic medical records, and other technologies have the capability to capture and communicate (in real time) information that could be incredibly useful for law enforcement, ambulances, and other responders – if it could be transmitted appropriately.

The technology exists to carry these types of data, for emergency personnel to even reach out and control cameras, for map data and medical information to be transmitted directly to a mobile data terminal in an ambulance, for a helicopter to transmit aerial real-time video of a fire to the responding fire truck. The 911 system however, is designed for voice – period. And that is where Next Generation 911 comes in. Next Generation 911, in simplest terms, is the careful migration from the analog voice-grade 911 infrastructure to a broadband, digital data network with greater security and increased redundancy.

From the Kimball presentation at the last meeting, it will be obvious to you that the transition we are describing is tremendously more complex than this testimony and the two drawings suggest – and it is critical that NG911 implementation be done on a coordinated, statewide basis with significant interaction with our neighboring states as well. The Kimball Master Plan provides the framework to begin, and it enabled the ESC[3] (through ITD) to apply for a federal ENHANCE 911 Act Grant.

North Dakota's grant allocation was $500,000, however based on our NG911 Master Plan the ESC[3] submitted two proposals last summer – one for the base amount and another suggesting the investment of up to $1.8 million. North Dakota, because of our successful joint effort on the Wireless 911 implementation (6th State in the Nation), our proactive investment in a

NG911 Master Plan, and our ability to demonstrate that all ESCS fee revenue is dedicated to emergency communications, we were awarded $912,000 for implementation – essentially shifting over $400,000 from other states that had not been as proactive and well-organized.

Unfortunately, the Master Plan analysis estimates, on the high end, the transition costs at more than $13 million. This amount is a bit overwhelming when considering that counties, over the last 8 years, spent about $2.4 million annually in payments to phone companies for the existing 911 infrastructure.

North Dakota has until September of 2012 to expend the grant funds, and the ESC^3 is committed to a thorough analysis of our options before expenditures are made. As noted above, we must be interactive with surrounding states to meet the federal goals, and they in turn must be inactive with their neighbors. This effectively requires nationwide standards – most of which are still in development. The final attachment (Item 4) illustrates the progress being made on the national standards. A few states (notably Minnesota) have started their transition and have let contracts for implementation – requiring vendors to ensure compliance with the future standards.

The next steps for the ESC^3 will be to receive presentations from state technology experts within North Dakota as well as Minnesota and possibly Montana. We then anticipate requesting information (possibly in the form of RFIs) from telecommunication vendors. Only then will we move to the design of a North Dakota-specific implementation plan. As the federal funds must be used for "implementation" and cannot be used for "planning", we anticipate that much of this front-end work will need to be done by the ESC^3 – the members of which have full-time jobs elsewhere.

As a group however, the ESC^3 is committed to a smooth transition to a robust yet cost-effective infrastructure that can serve the emergency needs of North Dakota's citizens at least as long as the current network has been in place.

Thank you for this opportunity to present this information, and I look forward to further presentations as the ESC^3 continues its work.

57-40.6-12. Emergency services communications coordinating committee -- Membership -- Duties.

1. The governing body of a city or county, which adopted a fee on assessed communications services under this chapter, shall make an annual report of the income, expenditures, and status of its emergency services communication system. The annual report must be submitted to the emergency services communications coordinating committee. The committee is composed of four members, one appointed by the North Dakota 911 association, one appointed by the North Dakota association of counties, one appointed by the chief information officer of the state, and one appointed by the adjutant general to represent the division of state radio.

2. The committee shall:

   a. Recommend to the legislative management changes to the operating standards for emergency services communications, including training or certification standards for dispatchers;

   b. Develop guidelines regarding the allowable uses of the fee revenue collected under this chapter;

   c. Request, receive, and compile reports from each governing body on the use of the proceeds of the fee imposed under this chapter, analyze the reports with respect to the guidelines, file its report with the legislative council by November first of each even-numbered year regarding the use of the fee revenue, and recommend to the legislative assembly the appropriate maximum fee allowed by section 57-40.6-02;

   d. Periodically evaluate chapter 57-40.6 and recommend changes to the legislative management; and

   e. Serve as the governmental body to coordinate plans for implementing emergency 911 services and internet protocol enabled emergency applications for 911.

3. The committee may initiate and administer statewide agreements among the governing bodies of the local governmental units with jurisdiction over an emergency 911 telephone system to coordinate the procurement of equipment and services, fund the research, administration, and activities of the committee, and contract for the necessary staff support for committee activities.

Emergency Services Communications Coordinating Committee Members

Jerry Bergquist, Chairman – Stutsman County 911 Coordinator
Appointed by the North Dakota 911 Association

Mike Lynk, Vice Chairman – Director of State Radio
Appointed by the Adjutant General to represent the State Radio Division

Terry Traynor, Secretary – NDACo Assistant Director
Appointed by the North Dakota Association of Counties

Mike Ressler – Deputy CIO & ITD Director
Appointed by the Chief Information Officer of the State

Item 2

2009 911 Cost/Revenue Survey

This page is intended to gather Special ESCS (911) Fund activity only (the next page will get into total expenditures)

1. Name or names of all 911 jurisdictions for which this survey applies (i.e. Grant Co., Lake Region-5)

2. Enter name of contact person if there are questions regarding the survey information.

3. Enter amount (Fund Balance) of the dedicated emergency services communication system (911) fund carried into CY2009 from CY2008. (Total of landline and wireless if kept separate).

4. Enter 911 LANDLINE revenue collected in CY2009.

5. Enter 911 WIRELESS (cellular) revenue collected in CY2009.

6. Enter other revenue (if any) credited to the special 911 fund in CY2009 from interest or any other source.

7. Enter amount (Fund Balance) of the dedicated emergency services communication system (911) fund carried into CY2010 from CY2009. (Total of landline and wireless if kept separate).

8. Enter the total amount of dedicated ESCS (911) funds expended in CY2009. Should equal Beginning Balance (Q3) plus revenues (Q4+Q5+Q6) minus Ending Balance Q7.

9. Explain specific plans for current fund balance (if any), or include other comments that may clarify fund balance and revenue information on this page.

Next >>

This page is intended to capture ALL expenditures related to the implementation, maintenance, and operation of the emergency services communications system in CY2009 - NOT JUST 911 FUNDS, but ALL funds separated into 911 Funds and all other funds.

....ESCS (911) Funds...............Other Funds..Total Funds

10. EQUIPMENT:(purchase, lease, rental, upgrade, lease-purchase, service and maintenance)		**11.**		**12.**	
9-1-1 Equipment		.		.	
Radio Equipment		.		.	
Other Equipment		.		.	
13. Staffing: (Salary, Benefits & Payroll Taxes)		**14.**		**15.**	
9-1-1 Coordinators		.		.	
Call Takers/Dispatchers		.		.	
PSAP Managers/Support		.		.	
16. 911 Network Costs:		**17.**		**18.**	
NDACo Wireless Contract		.		.	
Qwest Tandem/Database		.		.	
Other Local Phone Line Charges		.		.	
Local Phone database updates		.		.	
Other Network charges		.		.	
19. Other Operations:		**20.**		**21.**	
Supplies (PSAP/Admin)		.		.	
Other Contracts (i.e.GIS)		.		.	
GIS (not contracted)		.		.	
Signage		.		.	
Training & Travel		.		.	
Public Education		.		.	
Facility (rent, util, maint.)		.		.	
Other (List below)		.		.	

22. Please explain any "other" expenses and add any comments you feel may be necessary.

[<< Prev]   [Done >>]

Item 3
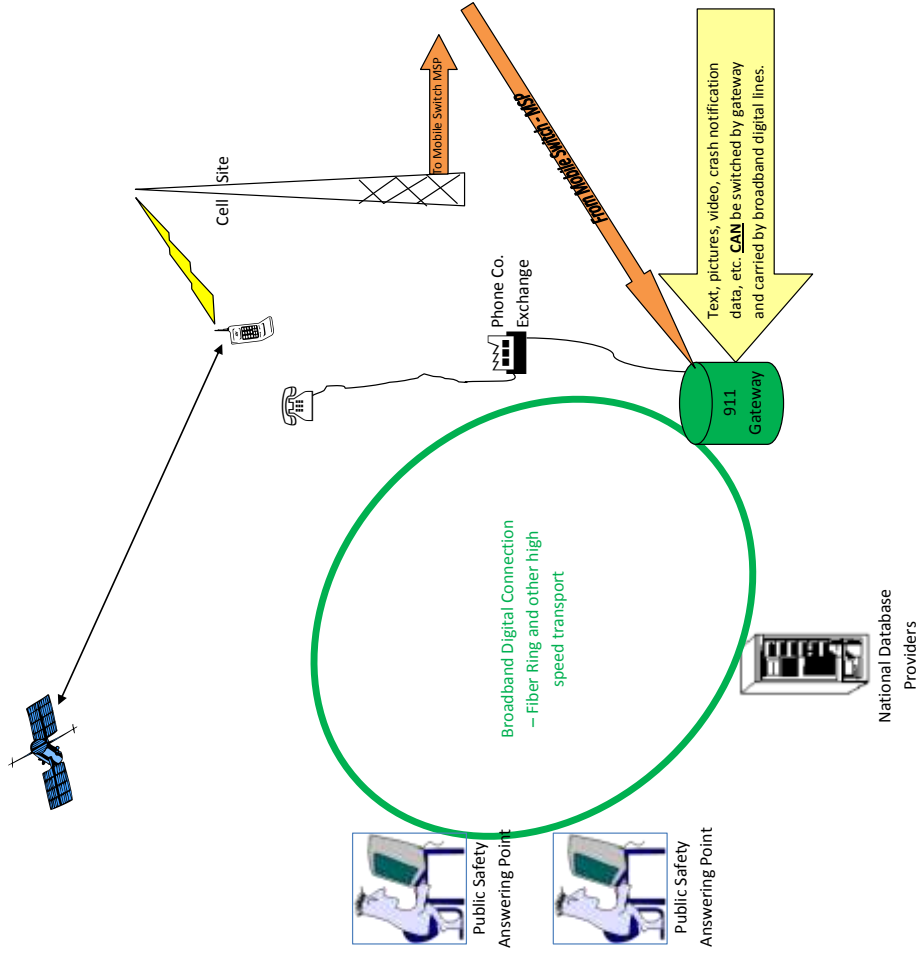
Next Generation 911 Network

(Generalized)

Cell Site

To Mobile Switch MSP

From Mobile Switch - MSP

Text, pictures, video, crash notification data, etc. **CAN** be switched by gateway and carried by broadband digital lines.

Phone Co. Exchange

911 Gateway

Broadband Digital Connection – Fiber Ring and other high speed transport

National Database Providers

Public Safety Answering Point

Public Safety Answering Point
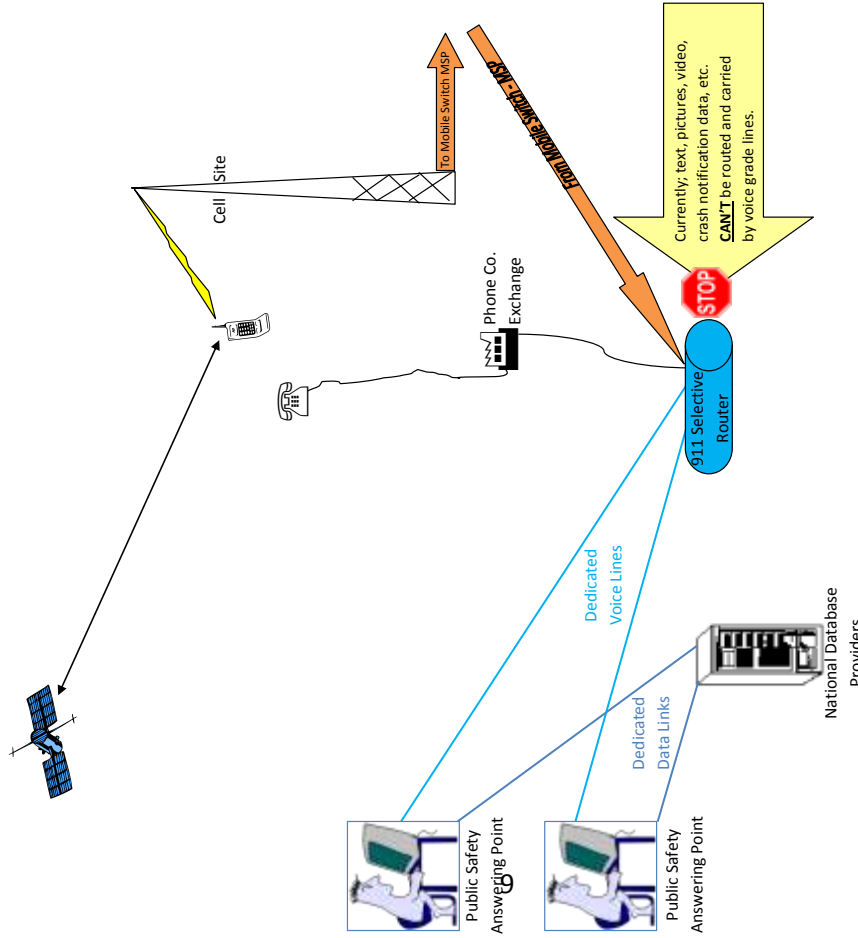
Current 911 Network

(Generalized)

Cell Site

To Mobile Switch MSP

From Mobile Switch - MSP

Currently; text, pictures, video, crash notification data, etc. **CAN'T** be routed and carried by voice grade lines.

Phone Co. Exchange

STOP

911 Selective Router

Dedicated Voice Lines

Dedicated Data Links

National Database Providers

Public Safety Answering Point

Public Safety Answering Point

Status of Major NENA NG9-1-1 Standards and Documents

			Content Completion		
Item#	**Document or Task Areas**	**Degree Complete 12/14/2009**	**Date (ready for review)**	**Expected Publication Date***	**Primary Work Group(s)**
	Green indicates published documents				
	Yellow indicates 4Q 2009 and 1Q 2010				
	Red indicates 2Q-4Q 2010				
1	08-502: NENA Generic E9-1-1 Requirements, Issue 1, July 2004	100%	published	published	All
	08-751 v1 i3 Requirements (Long Term Definition)	100%	published	published	LTD
3	08-752: Location Information to Support IP-Based Emergency Services, Issue 1, 2006 (TID)	100%	published	published	LTD
7	Functional and Interface Standards for NG9-1-1 (i3) 08-002 v1	100%	published	published	LTD
11	Synchronizing GIS with MSAG & ALI 71-501 v1	100%	published	published	NGDD
12	NENA Registry System 70-001 v1	100%	published	published	NGDD
13	NG9-1-1 Additional Data 71-001 v1	100%	published	published	NGDD
20	Virtual PSAP Management	100%	published	published	NGI
4	04-001: NENA Recommended Generic Standards for NG9-1-1 PSAP Equipment, Version 1	80%	Final 04/2010 SEE CELL NOTE	SEE CELL NOTE	CPE
41	Policy Whitepapers (there may be others)	100%	3Q 2009		NGPP
5	58-001: NENA IP-Capable PSAP Minimum Operational Requirements Standard, Issue 2, June 9, 2007 - REVISION TO INCLUDE USDOT ITEMS; expands to both System and PSAP	90%	Jan-10	plus 45 days	Ops Rqmts
9	08-003 IP Functions and Interfaces (i3) Stage 3 Design	99%	Dec-09	Mar-10	LTD
15	Building Policy Rules for Call Routing and Handling in NG9-1-1	100%	Dec-09	plus 45 days	NGBR
32	Human Machine Interface (HMI) Specs For PSAP Eqpt	95%	Jan 2010	plus 45 days	NGI
35	NG9-1-1 Security Standard	99%	12/11/09	plus 45 days	NG-SEC
40	NGPP NG9-1-1 PPT - update current PPT (in use)	25%	Jan 2010	plus 45 days	RH & NGPP
42	Policy Implementation Handbook	85%	Jan 2010	plus 45 days	NGPP
55	ICE Reports (date for first ICE session release of report) More to follow in 2010	100%	Dec-09	published	ICE WG
2	08-751: NENA i3 TRD, Issue 1, September, 2006	95%	1Q 2010	Original published	LTD
6	ESIND document (number not yet assigned)	60%	1Q 2010	plus 45 days	ESIND, NGI
8	08-002 IP Functional and Interface Standards for NG9-1-1 (i3) v2	99%	Jan 2010	plus 45 days	LTD
10	Consolidated Location Data Elements Doc #1: NENA Next Generation 9-1-1 (NG9-1-1) Civic Location Data Exchange Format (CLDXF) Standard Doc #2: FGDC-NENA Profile (Shows which parts of the FGDC Std relate to which parts of the NENA/PIDF-LO. Relates NENA/PIDF civic location terms to the address elements and attributes defined in the Content Part of the FGDC standard. Extends & restricts the FGDC standard to conform to NENA/PIDF location specs.	85% for both docs	1Q 2010	plus 45 days	NGDD
14	Location Validation/ECRF Doc #1: 02-010, V9, GIS Data Model Version 2 Doc #2: ECRF/LVF DB Implementation & Maintenance (title could change - placeholder)	95% / 30%	1Q2010 / 2Q 2010	plus 45 days	NGDD
16	Guidelines for Managing Policy Rules in NG9-1-1	0%	Mar 2010	plus 45 days	NGBR
17	PSAP Guide to GIS Technology	70%	Jan 2010	plus 45 days	NGDD
18	Guidelines for Managing NG9-1-1 Databases	0%	needed by 3/31/2010	plus 45 days	NGDD
19	Error Management and Auditing for NG9-1-1 Databases	5%	needed by 3/31/2010	plus 45 days	NGDD
22	Several support documents needed prior to Beta test	20%	needed by 3/31/2010	plus 45 days	NGI
43	Policy Implementation Strategy for Enabler Groups	10%	1Q 2010	plus 45 days	NGPP
50	Various NGTPC documents expected in 2010 (First cases in 1Q 2010 timeframe)	70%	1Q-2Q 2010	plus 45 days	NGTPC
65	Many documents and delivery methods	10%	1Q - 3Q 2010	plus 45 days	Ops, NGPP, EAB, APCO and others
80	NGTPC document (will be followed by others)	70%	1Q 2010	plus 45 days	NGTPC
21	Update current SOP documents to address changed and added NG9-1-1 functionality	5%	2Q 2010	plus 45 days	NGI
30	Roles and Responsibilities, others to be defined	0%	2Q 2010	SEE CELL NOTE	NGI
31	Documents not yet defined	0%	2Q 2010	plus 45 days	TBD
90	Beta Test Results Reports	5%	2Q 2010	plus 45 days	Joint Tech/Ops
60	NENA Certification Program for NG9-1-1 Components	5%	late 2010		[Future]
81	Documents not yet defined	10%	3Q 2010	plus 45 days	Ops with NGTPC
100	As appropriate for new information		3Q 2010	plus 45 days	All
110	First Application Test Results Reports	0%	4Q 2010	plus 45 days	Joint Tech/Ops

* "Expected Publication Date" means the first approved document for a topic, recognizing that many documents will be updated in 2010 or beyond.

ABBREVIATIONS	DESCRIPTION	ABBREVIATIONS	DESCRIPTION
CPE	Customer Premise Equipment	NGDD	Next Generation Data Development
EAB	Education Advisory Board	NGI	Next Generation Integration
ESIND	Emergency Services IP Network Design	NGPP	Next Generation Partner Program
ICE WG	Industry Collabration Event	NG-SEC	Next Generation-Security
LTD	Long Term Definition (i3)	NGTPC	Next Generation Transition Planning Comm.
NGBR	Next Generation Business Rules	RH	Roger Hixson
NGDD	Next Generation Data Development	TBD	To Be Determined

An emergency 911 telephone call must be answered by a dispatcher who has completed training through an association of public safety communications officials course or equivalent course. An emergency 911 dispatch center is required to offer emergency medical dispatch instructions on all emergency medical calls. Prearrival instructions must be offered by a dispatcher who has completed an emergency medical dispatch course approved by the division of emergency health services. Prearrival medical instructions may be given through a mutual aid agreement.