WASHINGTON STATE
NEXT GENERATION 911 PLAN

The NG 911 Subcommittee
Report To the
Washington Enhanced 9-1-1 Advisory Committee

Adopted October 15, 2009
Version 10

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NG9-1-1 SUBCOMMITTEE ESTABLISHMENT BY THE WASHINGTON ENHANCED 9-1-1 ADVISORY COMMITTEE

On March 15, 2007, Dan Aycock, Chair of the Washington Enhanced 9-1-1 (E9-1-1) Advisory Committee, created the Six-Year Plan Subcommittee (hereafter, "the Subcommittee"), and appointed members. Chair Aycock directed Subcommittee members to

- Develop a six-year plan for the operational needs for each county, including, but not limited to, the build out of a Next Generation 9-1-1 (NG9-1-1) network and system;
- Develop a six-year plan for the capital needs for the State and each county's E9-1-1 system, including, but not limited to the build out of a NG9-1-1 network and system; and
- Incorporate the six-year plan into the State 9-1-1 Strategic Plan.

Because of the new information that has been discovered since the E9-1-1 Advisory Committee followed the recommendations in the 2007 Plan, new directions and ideas have surfaced.

- The Subcommittee was renamed the Next Generation 9-1-1 (NG9-1-1) Subcommittee in 2009, and continued its efforts to update the Plan.
- The Plan was renamed the NG 9-1-1 Plan
- New cost projections were included that were the result of a contract for the ESInet and Database that was signed by the E9-1-1 Program Office and the Qwest/Intrado on September 11, 2009.
- New opportunities for system-wide efficiencies through the consolidation of equipment were identified, and have been worked on by the subcommittee.

Objective

The Subcommittee will work to make technical and operational recommendations for the modernization of the statewide E9-1-1 system before the Washington State E9-1-1 Advisory Committee for consideration. It will enlist members to serve on the committee that have the expertise to ensure recommendations embody best practices, and result in a modernized system that is as good, but preferably exceeds our existing E9-1-1 system in the areas of: security; speed of delivery; reliability; and redundancy; and has the ability to receive voice and data from any device or service that can access 9-1-1, anytime and anywhere in Washington state. The committee will recommend changes that will ensure both efficiency and the most economical operation of the statewide system.

MEMBERS OF THE NG 9-1-1 SUBCOMMITTEE

Jim Quackenbush	Marlys Davis	Mary Allen
Keith Flewelling	Wayne Wantland	Lorlee Mizell
Dave Irwin	Dick Dickinson	Markus Volke
Deb Welsh	Millie Tirapelle	Rose Parr
Marty Knorr	Laura Caster	Jean Nealy
Rebecca Beaton	Ira Feuer	Glenn Tharp
Richard Kirton	Jacqueline Randall	

This group of dedicated professionals have worked tirelessly to produce this October 2009 update of the NG9-1-1 Plan for presentation to the Washington State E 9-1-1 Advisory Committee for adoption at the October 2009 Committee meeting.

NEXT GENERATION 9-1-1

EXECUTIVE SUMMARY

The current Enhanced 9-1-1 (E9-1-1) telephone network technology in place in Washington State was designed in the 1960s and remains nearly unchanged It consists of point-to-point analog technologies, in-band signaling and low-speed data transmissions, that are both costly and outdated. Although extremely reliable the current network can't keep up with technology, and therefore, is unable to provide comparable service for emerging communications devices such as Voice over Internet Protocols (VoIP) phones and is not capable of processing widely used data such as text messaging, pictures, video or telematics from vehicles.

Every time a new technology was introduced (e.g., wireless, VoIP) system functions were expanded (e.g., location determination), the existing E9-1-1 network and equipment required significant, convoluted, and costly engineering changes. These changes resulted in significant time delays and solutions that were not completely effective. The E9-1-1 network and infrastructure cannot support current technology and must transition to a modern Internet Protocol (IP)-based network capable of meeting future public safety needs both in Washington and across the Nation.

The Americans With Disabilities Act (ADA) requires that individuals with disabilities be provided the same methods of access to 9-1-1 as individuals without disabilities. A relevant example in the State of Washington is the deaf, hearing impaired or speech impaired. Because of the difficulty and general lack of portability of obsolete TDD/TDY devices, these individuals have embraced new technologies in their everyday lives. Wireless phones have brought portability, speed and ease of use to those with these disabilities. Yet when they have an emergency they are unable to access 9-1-1 via text leaving them vulnerable, and demonstrating this state's inability to meet the federal requirements of the ADA. The accommodation is reasonable and our efforts have begun. But without the commitment to funding the final phase of this process this state will fall short of meeting the ADA requirements.

Both the technology and Standards exist to begin the replacement of the current E9-1-1 network with a solution that will route 9-1-1 calls through an IP based network (ESInet). An IP-based network will allow for the delivery of additional data necessary for an effective public safety response. This network will improve call set up time, increase the speed at which voice and data arrive at the PSAP, thereby saving lives. A private managed IP network will replace the three existing service providers' (Qwest, Emarq [formerly Sprint], and Verizion) analog networks and provide for call load and host equipment sharing through the centralization of equipment. The latter will allow counties to retain local control over how 9-1-1 calls are handled, while minimizing the associated costs.

Because of the separate networks and Selective Routers in use today, a given PSAP is not always able to transfer the data associated with a given wireless or VoIP E9-1-1 call to a PSAP on another network. Inclusion of Automatic Number Identification (ANI) and Automatic Location Information (ALI) on all transferred calls will improve processing times and allow individuals to access E9-1-1 service from any device, anywhere in Washington State that will terminate at the appropriate IP PSAP.

The transition to NG9-1-1 will not occur overnight, and will need to progress in phases over a four year period assuming adequate funding is put in place in the near futur. Proceeding in phases will ensure first that the new network and database is as reliable and is more robust than our current system. All counties must be transitioned to Phase 2 before any county PSAPs move to the final phase deemed Phase 3 (full digital to digital voice and data from start to finish). The following describes the phased transition:

Phase 1 (Funded) - A state contract was awarded to QWEST and Intrado for a Next Generation 9-1-1 network and database pilot project in Benton, Ferry, Island, Lewis, Skamania, Spokane, Thurston, and Yakima Counties.

Phase 2 (Funded) – Implementation of the Next Generation 9-1-1 network and database in the remaining 31 county and Washington State Patrol E9-1-1 Public Safety Answering Points.

Phase 3 (On Hold Pending Funding) – Implementation of call answering equipment in accordance with national 9-1-1 standards. This will allow the 9-1-1 Public Safety Call Receivers to receive and process NG9-1-1 data and to access the NG9-1-1 features.

Before PSAPs can receive multimedia that will arrive with a 9-1-1 call, all PSAP equipment, including E9-1-1 call-taking equipment, Computer-Aided Dispatch (CAD), and mapping may need to be upgraded or replaced to ensure these new media types can be appropriately processed and stored. Call Receivers will need training to ensure all of the additional media is processed appropriately and consistently. The entire E9-1-1 system in Washington State, including policy, legislative, and regulatory, must undergo a thorough review to assure that the transition occurs in a technology and vendor neutral manner. All possible strategies must be analyzed to promote efficiencies within the statewide E9-1-1 system.

To migrate from the current E911 system to the modernized E9-1-1 system incorporating NG9-1-1, over the four year period requires keeping portions of the existing system in place during that migration. The costs can be seen within the Plan in the Section titled “The Costs of Modernization for the Statewide E911 System” pages 17 and 18 in Figure 8.

State and local 9-1-1 excise tax rates have not been increased since 1992. Both the counties and the State E9-1-1 Program have experienced a 38% decrease in their ability to fund the costs of E9-1-1 service. That is, if the excise tax rates had been adjusted for inflation, they would be $.74 and $.30 at the county and state levels, respectively. Proposed legislation would adjust the 9-1-1 excise tax rates to $.70 for counties and $.25 for the State, assuring the ability to fund the modernization of the statewide E9-1-1 system.

The State E9-1-1 Advisory Committee and State E9-1-1 Program Office must continue to ensure that standards for service delivery are in place as our state and the nation move forward with an NG9-1-1 solution. 9-1-1 authorities must ensure that every Washington resident and visitor is able to access 9-1-1 utilizing multimedia sources to receive the best quality 9-1-1 service. Our legislators, Governor, voice and data service providers and public safety agencies must all work together to ensure we have an appropriate funding solution that will support the modernization of our E9-1-1 system that serves all citizens within Washington State.

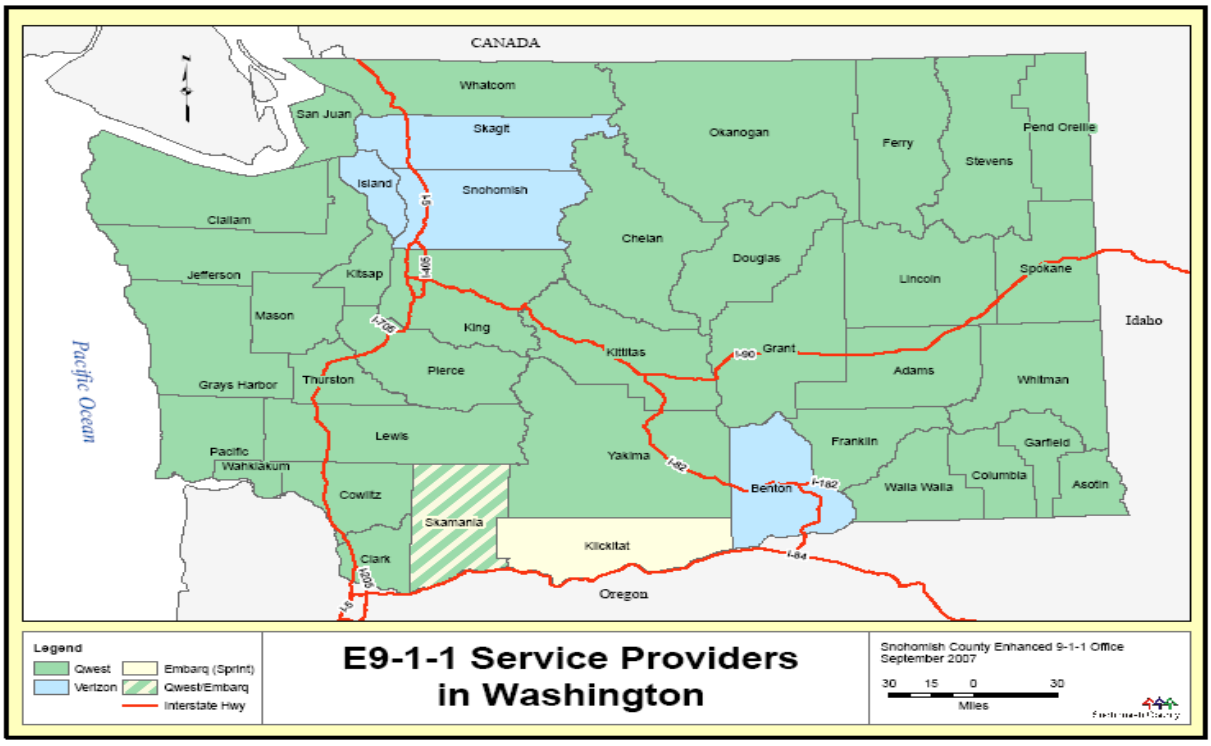
THE E9-1-1 SYSTEM IN WASHINGTON

The current E9-1-1 network in Washington is a patchwork of three separate networks maintained by Qwest, Embarq, and Verizon. The service areas are shown below.

Table 1
E9-1-1 Service Areas

Qwest			Embarq	Verizon
Adams	Grays Harbor	Pierce	Klickitat	Benton
Asotin	Jefferson	San Juan	Skamania[a]	Island
Chelan-Douglas	King	Skamania[a]		Skagit
Clallam	Kitsap	Spokane		Snohomish
Clark	Kittitas	Stevens		
Columbia	Lewis	Thurston		
Cowlitz	Lincoln	Wahkiakum		
Ferry	Mason	Walla Walla		
Franklin	Okanogan	Whatcom		
Garfield	Pacific	Whitman		
Grant	Pend Oreille	Yakima		

Notes:
a. Skamania County is served by Qwest on its western side and Embarq on the county's eastern side.

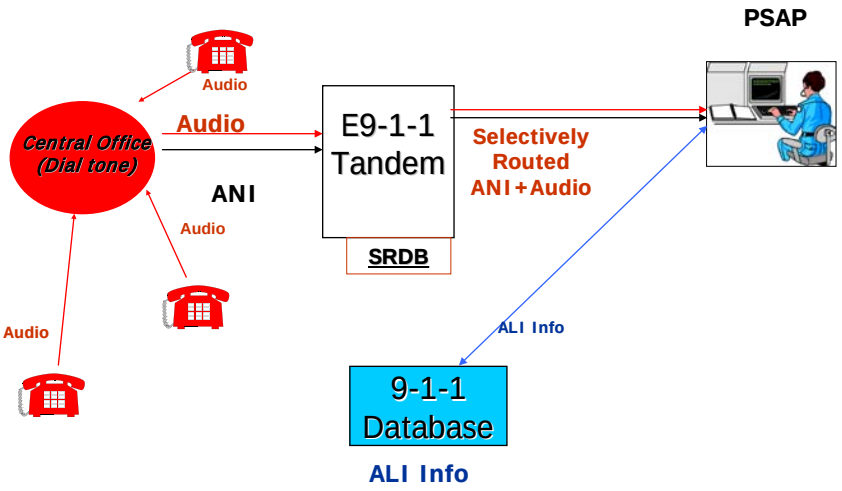


The patchwork system in place resulted from the way landline 9-1-1 service was implemented nationally in the 1960s and 1970s. The original E9-1-1 system, including technical network standards, was developed by the former AT&T, and is based on circuit-switched, or analog,

technology. The break-up of the telephone monopoly in the early 1980s resulted in a patchwork system of state or regional E9-1-1 networks with their own standards, connected to PSAPs with a variety of equipment with varying capabilities.[1] Figure 2 below depicts a traditional landline E9-1-1 call.

Figure 2

Wireline Enhanced 9-1-1



In a traditional landline environment, a caller dials 9-1-1 from his or her landline telephone. The audio, or voice, is routed through a secure and dedicated network, along with the caller's telephone number (or ANI, for Automatic Number Identification) to the Selective Router. The Selective Router compares the customer ANI with the routing instructions in the Selective Router Database (SRDB), and selectively routes the 9-1-1 call (audio and ANI) to the appropriate PSAP. Special E9-1-1 call-taking equipment at the PSAP takes the telephone number (ANI) and queries the 9-1-1 database for the caller's Automatic Location Information (ALI), along with the appropriate emergency response agencies. That information is sent back to the PSAP for display on the 9-1-1 call-receiver's screen.

An important part of the entire process described above is placement of the caller's location information in the 9-1-1 database. The information in the 9-1-1 database is provided by two groups. First, the 9-1-1 Authority (in Washington, the 9-1-1 Authority is the 9-1-1 County Coordinator) maintains an existing Master Street Address Guide (MSAG), which is a tabular database of street names and house number ranges with corresponding Emergency Service Zones (ESZ), and Emergency Service Numbers (ESNs). The ESN enables the proper routing of 9-1-1 calls.

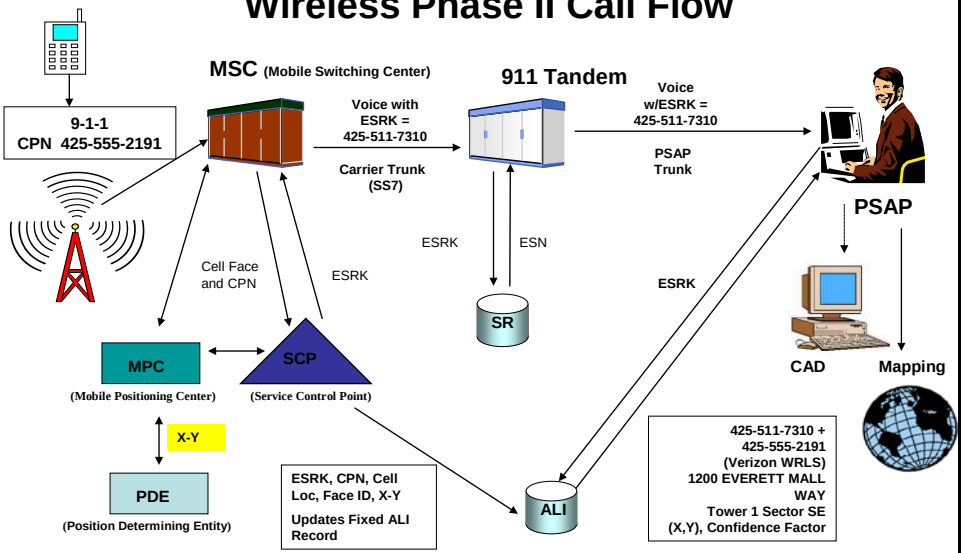
The second group is the communications carriers. When an individual signs up for telephone service, the Incumbent Local Exchange Carrier (ILEC) or competitive LEC (CLEC) updates the

[1] The E9-1-1 Institute IP Issues Committee, Business Operations Subcommittee, January 17, 2007.

database management system (DBMS) with a new, changed, or deleted service address, customer name, calling number, and other information.[2] The DBMS verifies the validity of the customer record against the MSAG, and loads that data into the 9-1-1 database, as well as the SRDB.

The introduction of wireless technology did not significantly affect the infrastructure of the E9-1-1 system. The change from landline to wireless was mitigated by service providers that translated wireless/cellular 9-1-1 calls to mimic landline 9-1-1 calls so they could be received and processed by PSAPs. Figure 3 below provides a network diagram of a Phase II wireless E9-1-1 call. In summary, a wireless 9-1-1 call routes from the serving Mobile Switching Center (MSC), which is essentially a wireless central office. From the MSC, the wireless 9-1-1 call travels on a dedicated network to the serving Selective Routers, where the call is then routed to the appropriate PSAP. When the PSAP queries the ALI database, there are instructions to route the request to the appropriate wireless ALI database. Unfortunately, the system cannot provide a caller's specific location, as with landline E9-1-1. It is ironic that the system built to handle landline E9-1-1 traffic now handles more wireless than landline 9-1-1 calls.

Figure 3
Wireless Phase II Call Flow



[2] According to the E9-1-1 Institute, with respect to wireless carriers and nomadic VSPs, customer data typically consists of "pseudo" records and third party database access instructions.

9-1-1 Must Keep Up With Technology

Consumers and businesses are increasingly dependent upon new communication technologies and devices. Communication services are changing rapidly, and it seems that new devices and services are being rolled out daily. These new services enable the transfer of huge amounts of data, including text, pictures, videos, and messaging. However, the current E9-1-1 system in place in Washington—and the rest of the nation—has limited messaging capability (limited to query and response), limited data content, and is constrained by the limited capabilities of the three separate E9-1-1 networks and PSAP call-taking and dispatch equipment.

The current E9-1-1 system was never designed to receive calls and data from these new and emerging technologies. As a result, through cumbersome adaptations, E9-1-1 is being asked to perform functions it was not designed to handle, using outdated analog technology, to deliver vital information to the PSAP. The reliance on this technology has prevented the delivery of vital information that could save someone's life. Although the current E9-1-1 network has served the public safety industry well over the last 40 years, the E9-1-1 network must be able to accommodate the data demands of wireless and VoIP E9-1-1, as well as public safety technologies of the future. That is, while new high-speed digital networks have been developed and deployed, the E9-1-1 industry has not kept up with technology or the demands for more information.

The Americans With Disabilities Act (ADA) requires that individuals with disabilities be provided the same methods of access to 9-1-1 as individuals without disabilities. A relevant example in the State of Washington is the deaf, hearing impaired or speech impaired. Because of the difficulty and general lack of portability of obsolete TDD/TDY devices, these individuals have embraced new technologies in their everyday lives. Wireless phones have brought portability, speed and ease of use to those with these disabilities. Yet when they have an emergency they are unable to access 911 via text leaving them vulnerable, and demonstrating this state's inability to meet the federal requirements of the ADA. The accommodation is reasonable and our efforts have begun. But without the commitment to funding the final phase of this process this state will fall short of meeting the ADA requirements in a reasonable and timely manner.

Because of the three separate E9-1-1 networks used today in Washington State, PSAPs are not always able to transfer the data associated with a given wireless E9-1-1 call to another PSAP, if those two PSAPs are on separate networks. There are significant time delays associated with having to obtain location information from the wireless caller, and those delays negatively affect the quality of E9-1-1 service across the state.

The explosive growth in communications technology, providing information from a variety of sources, is forcing 9-1-1 authorities (at every level of government) and PSAPs to change the way they operate to provide equivalent services to consumers. To support these trends, 9-1-1 Authorities and PSAPs must migrate to a platform that enables these communications devices to access E9-1-1 service. The evolution of communications technology provides a rare opportunity for the Washington State Military Department (State E9-1-1 Program Office), 39 counties, and the Washington State Patrol (WSP) to make major improvements in the current E9-1-1 infrastructure. These improvements include the capability for multimedia services that will enhance public safety and save lives.

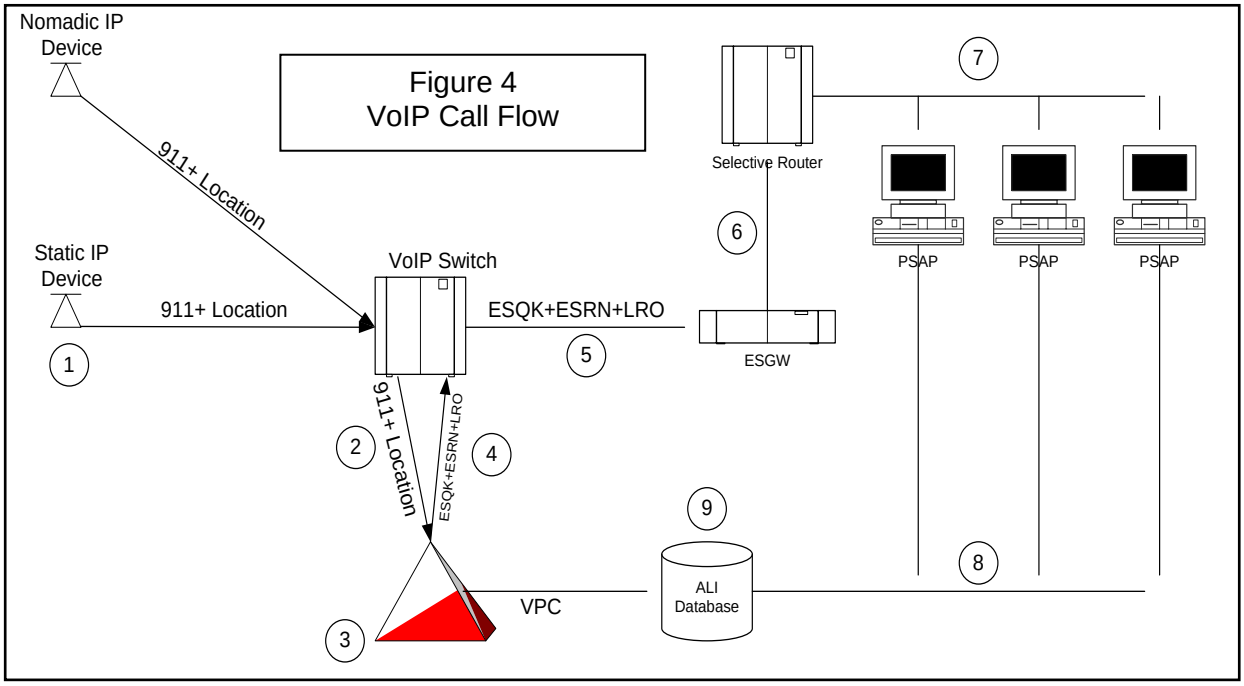
The United States and other countries have been in the "Digital Age or Information Era" since the late 1980s and into the 21st century. Internet Protocol (IP) based networks are used throughout the United States and the current E9-1-1 system continues to lag further behind technologically. The current E9-1-1 system will continue to degrade, and will be unable to meet the needs of 9-1-1 callers and requests for emergency assistance using the advanced

capabilities of modern devices. Landline and wireless service providers and many other commercial communications systems have been using IP-based networks for many years. Traditional communications companies are transforming their circuit switched networks into packet switched networks to accommodate the transport of voice, data, and video over Internet Protocol networks.

Every time a new technology was introduced (e.g., wireless, VoIP) or system functions were expanded (e.g., location determination), the existing E9-1-1 network and equipment required significant, convoluted, and costly engineering changes. These changes resulted in significant time delays and solutions that were not completely effective. The E9-1-1 network and infrastructure cannot support current technology and must transition to a modern IP-based network capable of meeting future public safety needs.

The IP-based network will allow for the delivery of additional data necessary for an effective public safety response. This network will improve call set up time, increase the speed at which voice and data arrive at the PSAP, thereby saving lives. A private managed IP network will replace the three existing service providers' analog networks and provide for call load and host equipment sharing. The latter will allow counties to retain local control over how 9-1-1 calls are handled and dispatched, while minimizing the associated costs.

Figure 4 below depicts a network call flow diagram for VoIP E9-1-1 service.
The circled numbers in this diagram depict the steps of the 9-1-1 call progression.



NEXT GENERATION 9-1-1

Much work has been done in many forums to design a 9-1-1 network and system to meet consumer expectations and improve the quality of 9-1-1 service and public safety. Nationally the plan is for an IP network where 9-1-1 "callers" can use any analog or digital device to access and request emergency assistance from an IP capable PSAP. This vision is called Next Generation 9-1-1 (NG9-1-1), according to the National Emergency Number Association (NENA),

> *"…NG9-1-1 is...an IP based replacement for E9-1-1 features and functions that supports all sources of emergency access to the appropriate PSAPs, operates on reliable, secure, managed multi-purpose IP networks, and provides expanded multimedia data capabilities for PSAPs and other emergency responders…."*

In other words, NG9-1-1 is a secure, private managed IP-based network to process and manage multi-media services such as voice and text messaging, data, and video. Once fully implemented, NG will

- Facilitate 9-1-1 call and data sharing;
- Provide a robust, redundant, and secure statewide emergency network;
- Provide equal access for all 9-1-1 callers, particularly the deaf and hard of hearing;
- Allow emergency responders to be better prepared for situations prior to arriving on the scene, potentially saving more lives;
- Provide significant benefits in disaster planning and recovery;
- Facilitate and enable Incident/Mutual Aid Collaborations;
- Make greater use of information from outside sources;
- Provide efficient statewide backup and overflow during crises, periods of high call volume, and planned and unplanned outages;
- Support current and future communications devices;

Implementing Next Generation 9-1-1 in Washington State

The transition to NG9-1-1 will occur in phases over a period of approximately four (4) years, and will require extensive and expensive changes. This will require the temporary co-existence of the existing legacy network. Before a PSAP can take advantage of additional data, all PSAP equipment, including E9-1-1 call-taking equipment,[3] Computer-Aided Dispatch (CAD), mapping, and other support equipment, must be upgraded or replaced. That is, all equipment currently associated with a 9-1-1 call must be capable of receiving, displaying, and storing the data. In addition, call-receivers will need extensive training to process and manage all the additional data.

Implementation of NG911 In Washington State is occurring in three phases.

Phase 1 (Funded)- Network and database pilot project in Benton, Ferry, Island, Lewis, Skamania, Spokane, Thurston, and Yakima Counties, in accordance with adopted national standards. http://www.nena.org/sites/default/files/08-001_20051205.pdf this is the link to i2 "Interim VoIP Architecture (i2)

[3] 9-1-1 call-taking equipment is often referred to in the 9-1-1 industry as Customer Premise Equipment (CPE).

Phase 2 (Funded)– Network and database implementation in the remaining 31 county and Washington State Patrol E911 Public Safety Answering Points. http://www.nena.org/sites/default/files/08-001_20051205.pdf this is the link to i2 "Interim VoIP Architecture (i2)

Phase 3 (On Hold Pending Funding)– Implementation of 911 call and data processing equipment in accordance with national 911 standards.[4] This will allow the 911 Public Safety Call Receivers to receive and process NG911 data and to access the NG911 features. http://www.nena.org/sites/default/files/08-002%20V1%2020071218.pdf this is the link to i3 "NENA Functional and Interface Standards for Next Generation 9-1-1 Version 1.0 (i3)

Washington State has begun the migration of PSAPs to the NG911 ESInet and database (Phase 1). By implementing Phase 1 and then moving into Phase 2, we will have positioned the State for migration and implementation to Phase 3 without an additional two year delay once those standards are adopted. Continuation on to Phase 3 is dependent upon adequate funding for both implementation and ongoing operations.

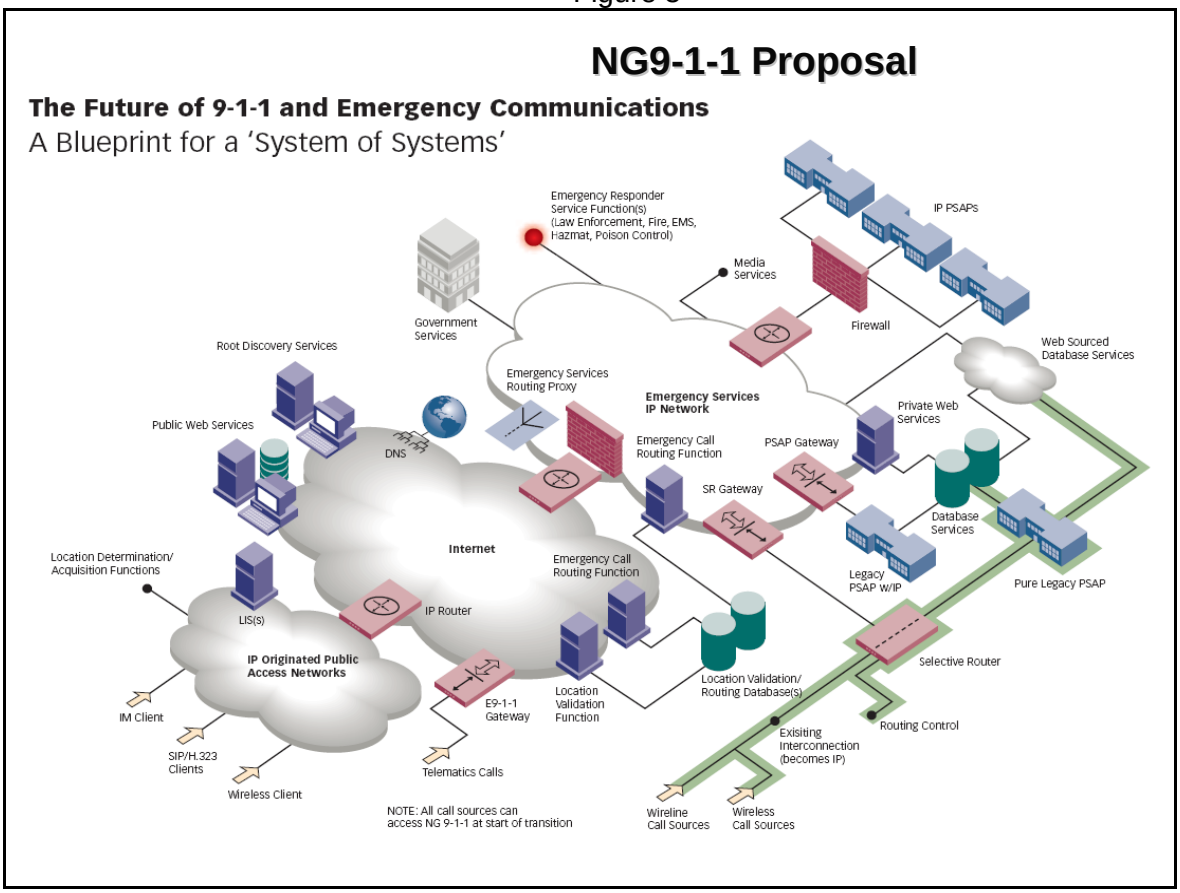
The Washington Military Department (E911 Program Office) signed a contract with Qwest/Intrado on September 11, 2009 for provision of the ESInet and Database.

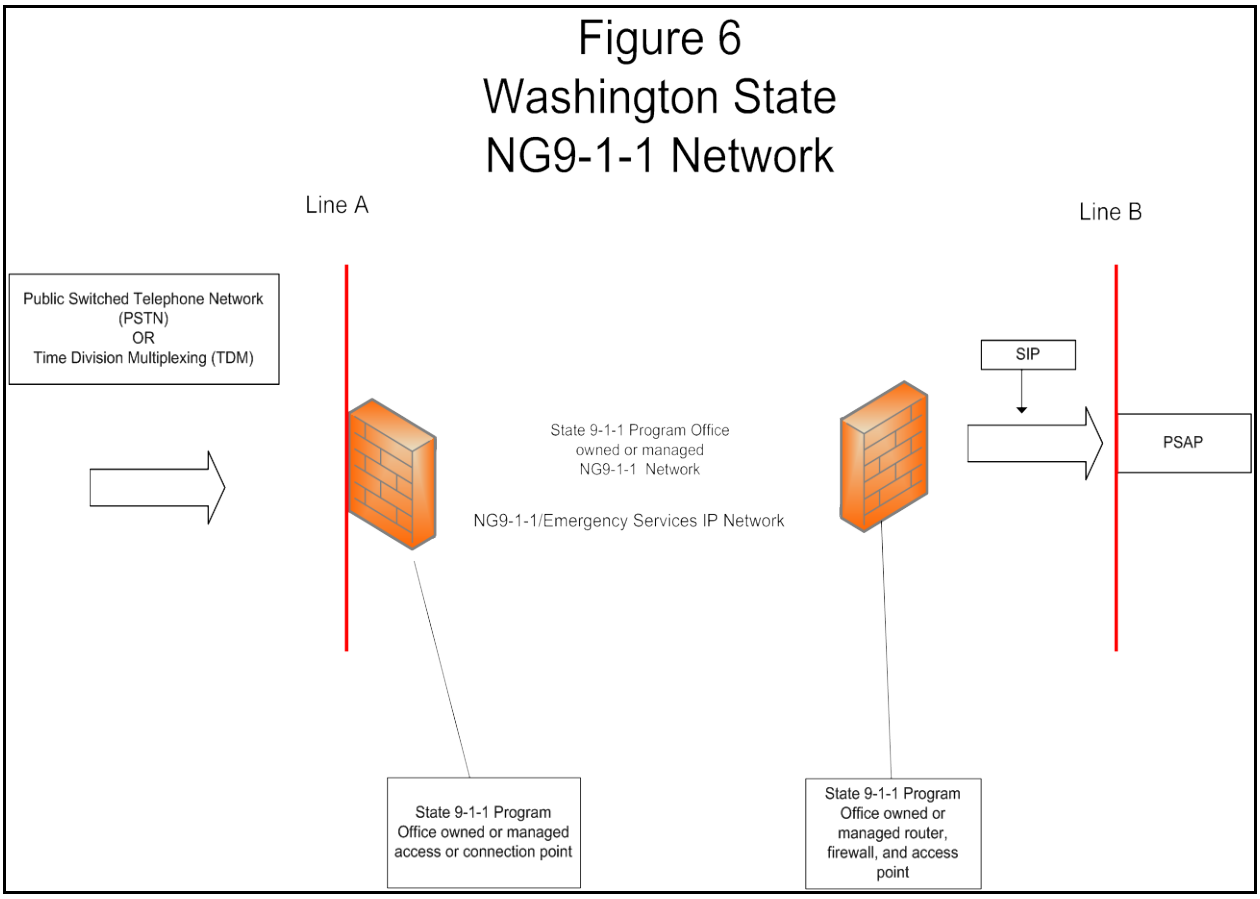
Subcommittee Recommendations

- The NG911 system be implemented in accordance with national standards. The proposed NG9-1-1 system is illustrated in Figure 5 in the following section. Figure 6 illustrates the network portion of Phases 1 & 2.
- The State E9-1-1 Program Office should manage the network and the gateways/access points at the ingress and egress of the network. The State E9-1-1 Program Office needs to ensure the security and reliability of the network, and must therefore own or at least control access to the network.
- The network must be able to connect with the legacy networks and databases.
- The network must be capable of performing to the *5-9's Standard*, which establishes a system up time or operational at 99.999 percent of the time. Compliance with this standard means that in one year, the system may not be down for more than five minutes. This standard is essential for the effective operation for E9-1-1 service.
- The Washington Administrative Code (WAC) be updated to reflect any changes to the RCW and to ensure that the transition occurs in the most cost effective and efficient manner possible.
- Recognizing the migration to Phase 1 has begun, it's important that Phases 2 & 3 follow in close succession to avoid additional costs associated with maintaining dual networks.

[4] National standards are in development and are expected to be adopted by the end of 2010.

Figure 5


NG9-1-1 Proposal
The Future of 9-1-1 and Emergency Communications
A Blueprint for a 'System of Systems'
Emergency Responder Service Function(s) (Law Enforcement, Fire, EMS, Hazmat, Poison Control)
IP PSAPs
Media Services
Government Services
Firewall
Root Discovery Services
Web Sourced Database Services
Emergency Services Routing Proxy
Emergency Services IP Network
Private Web Services
Public Web Services
DNS
Emergency Call Routing Function
PSAP Gateway
SR Gateway
Database Services
Internet
Location Determination/ Acquisition Functions
Emergency Call Routing Function
Legacy PSAP W/IP
Pure Legacy PSAP
LIS(s)
IP Router
IP Originated Public Access Networks
Selective Router
Location Validation/ Routing Database(s)
E9-1-1 Gateway
Location Validation Function
Routing Control
IM Client
Exisiting Interconnection (becomes IP)
SIP/H.323 Clients
Telematics Calls
Wireless Client
NOTE: All call sources can access NG 9-1-1 at start of transition
Wireline Call Sources
Wireless Call Sources



The Washington State Next Generation 9-1-1 Network

Following is a list of requirements and assumptions concerning the NG9-1-1 Network:

- In the NG9-1-1 environment, any device capable of accessing 9-1-1 service will be able to connect through the device's carrier or provider.
- The consumer will access 9-1-1 from a cell phone, landline phone, VoIP service, etc. The voice and/or data will be delivered to the PSAP at one time, instead of separately as today. The call will enter the IP cloud via a gateway, which will also route the call.
- All carriers/providers will need to connect to the State E9-1-1 Program Office owned or managed IP Connection Point, which will convert the analog signal to IP.

- Each provider will have to provide its own access to the gateway, and shall have to meet state standards and requirements for access. Each provider shall be responsible for the costs of connecting to and meeting the gateway requirements, including Automatic Location Identification (ALI) data, MSAG validation, and selective routing or providing for the originating Emergency Services Routing Proxy (ESRP).

- All data and voice from the IP cloud to the PSAP will be IP-based, via Session Initiated Protocol (SIP). PSAPs will have to meet state requirements for access, firewall, level of service, and CPE capability, among others.
- There will need to be a router, firewall, etc., between the originating border control and the terminating border control of the IP cloud and PSAPs.
- The network should be Multiple Protocol Label Switching (MPLS) or equivalent . Local governmental agencies will continue to retain control over their respective emergency response functions, including call-receivers. Local jurisdictions will also retain responsibility for managing their respective MSAGs and mapping.
- Implementation of NG9-1-1 will foster the migration to the centralization of equipment and sharing of host equipment. That is, 9-1-1 "calls" will continue to be received locally, but the host equipment can be shared across multiple PSAPs or counties. The implementation of a NG9-1-1 network makes it more cost effective to deploy a common network to serve multiple counties. Where it makes sense, the network should be used to facilitate the pooling of operational and capital resources.
- The State E9-1-1 Program Office will need to control access to the network.
- The State E9-1-1 Program Office should be responsible for the costs associated with the gateways and the clouds. That is, from Figure 6 above, the State E9-1-1 Program Office should be responsible for the costs inside Lines A and B.
- PSAPs will be responsible for the costs to the right of Line B. It should be noted that the State 9-1-1 Office will continue to pay PSAP costs to the right of Line B. This diagram is only used to mark the various points of responsibility.
- Service providers will be responsible for the costs to the left of Line A.
- The State E9-1-1 Program Office will need to set standards and specifications, with the advice and assistance of the E911 Advisory Committee, designed with sufficient capacity to support all legacy and IP applications for statewide public safety needs.
- The network should be robust and designed with sufficient diversity and redundancy to ensure survivability. No single point of failure should be able to significantly impact the day-to-day 9-1-1 and PSAP operations. The network needs to support the new and evolving NENA technical and operating standards for IP networks and 9-1-1 call-taking equipment.

- The network should permit connection to the existing E9-1-1 network and the Public Switched Telephone Network (PSTN).

- The Subcommittee recommends that the State E9-1-1 Program Office set standards for voice compression and Quality of Service (QOS).

- The State E9-1-1Program Office should require diverse routing from the PSAP to the first Point-of-Presence (POP) in the IP network, with the realization that technology and cost factors may require some adjustments to that standard.

The Next Generation 9-1-1 Database in Washington

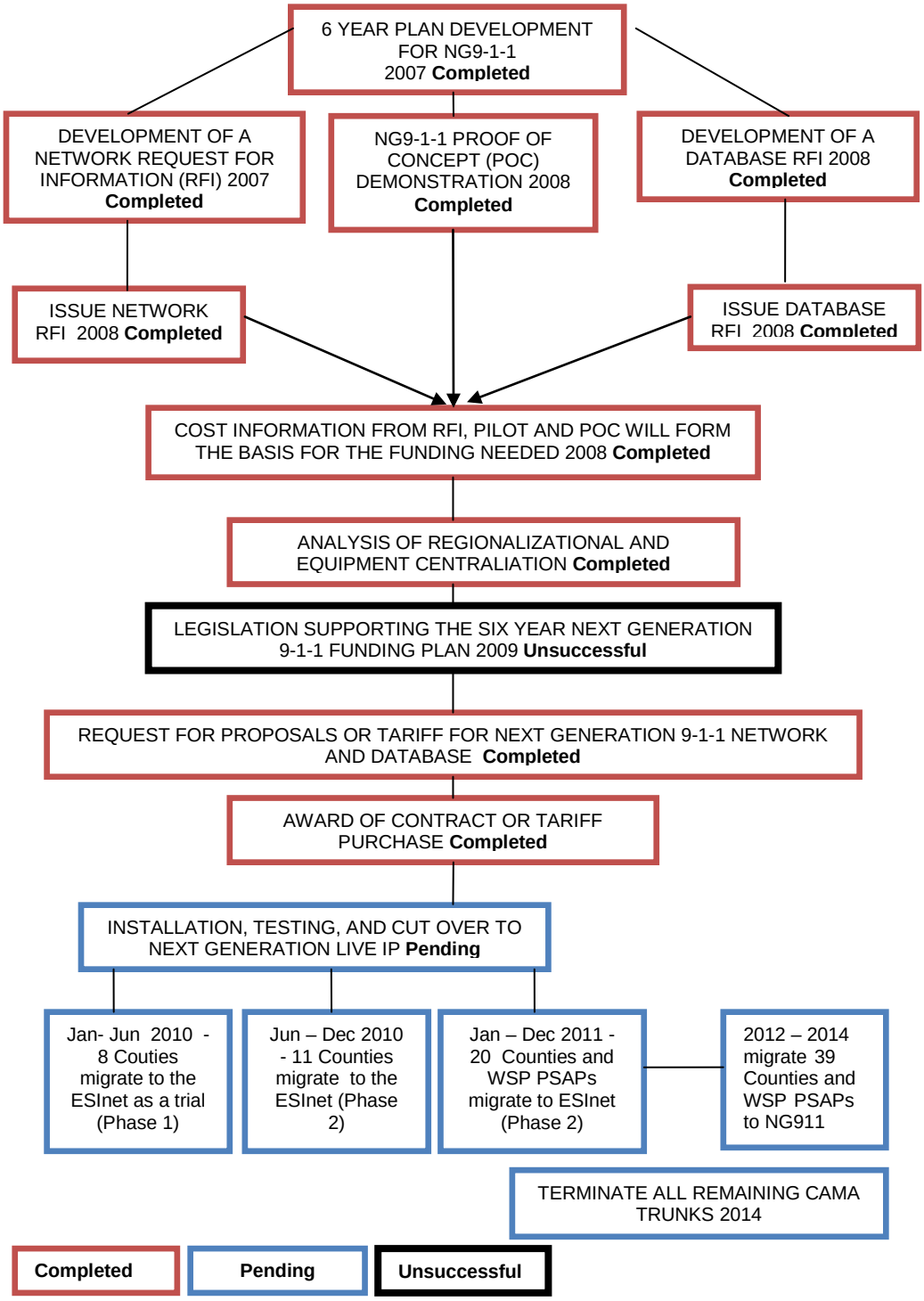
In the landline E9-1-1 environment, 9-1-1 authorities were concerned with one 9-1-1 database: the 9-1-1 database management system, which consists of ALI records that normally are managed and maintained by the local E9-1-1 service provider. When wireless was introduced, 9-1-1 authorities had to contend with two additional databases, maintained by Third Party Providers. The evolution of VoIP technology has resulted in the need to create or maintain even more datasets.

In the NG9-1-1 environment, there will be at least two additional databases with which PSAPs and 9-1-1 authorities will have to contend. The first is the Emergency Routing Database (ERDB). The ERDB contains routing information associated with each Emergency Service Zone (ESZ), and supports the boundary definitions for ESZs, along with the mapping of civic addresses or geo-spatial coordinate location information to a particular ESZ.

The validation database (VDB) contains information that describes the current valid civic address defined by the MSAG. Validation against this database ensures that the address is a "real" address. Validation does not ensure that the address is necessarily the caller's location. While not a database, an important aspect is the VoIP Positioning Center (VPC). The VPC is the element that provides routing information to support the routing of VoIP 9-1-1 calls, and assists in delivering location information to the PSAP. In addition, the VPC supports access to the routing data in the ERDB.

Currently, some VPCs have their own ERDB/VDB. The subcommittee is recommending that this component remain separate from the network. The subcommittee also understands that the State E9-1-1 Program Office may, at some point, determine that it needs to include this component in the future, once standards are completed and adopted.

FIGURE 7 The NG 9-1-1 Plan Process Diagram



The Costs of Modernization for the Statewide E911 System

The subcommittee has worked with the State Program office to determine the costs of modernizing our statewide E911 system. Those costs include putting in place a new NG911 network or ESInet, a new IP based database and the cost of keeping the existing legacy 911 network operating until the new network is capable of supporting 911 with the same or better speed, reliability and redundancy. The State has contracted with Qwest/Intrado to provide that network and database for our state. Therefore the costs represented are based on existing contract pricing.

To take advantage of the ESInet capabilities will require upgrading or replacing the current telephone systems and associated PSAP equipment. The best costs we have to rely on for this area have been supplied within the 2008 Kimball Consultant Study document. The subcommittee agrees with the cost findings from the Kimball Study.

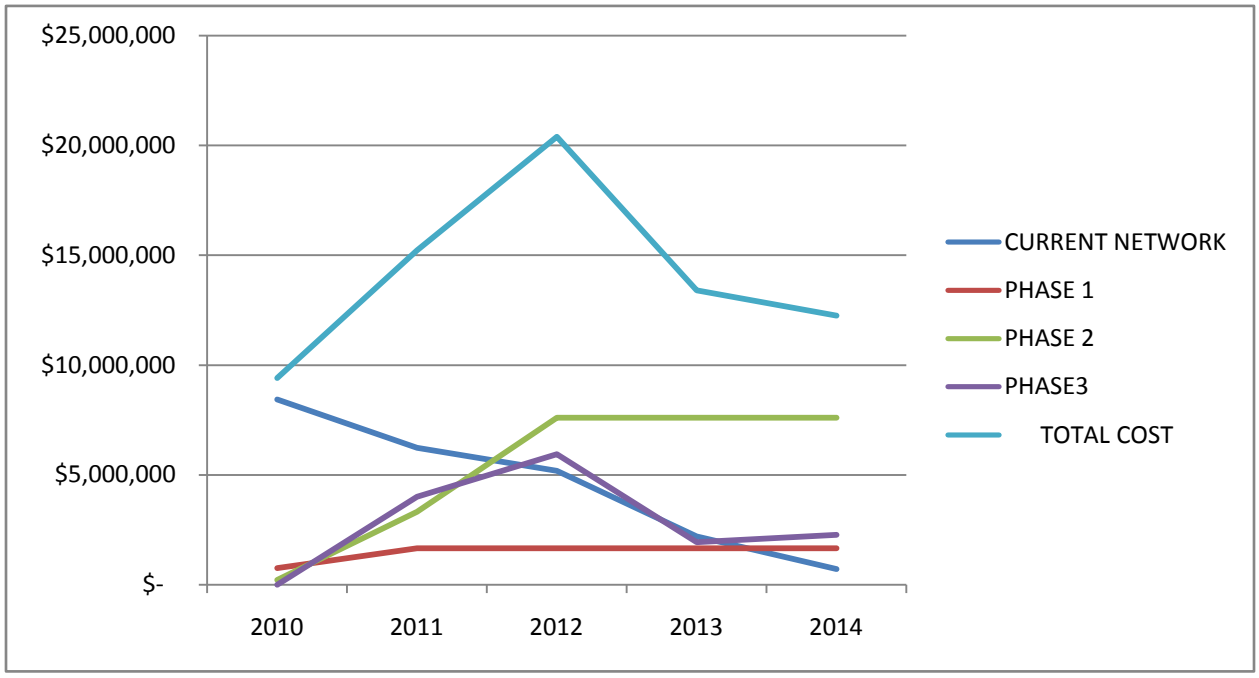
Equipment Consolidation may provide an opportunity for producing greater efficiencies through sharing of both equipment and technical assistance for maintenance of that equipment. Provided some or all of the proposed equipment consolidation comes to fruition, long term cost savings may be realized for the overall E911 system.

The following “Costs To Transition To NG911” , Figure 8 spreadsheet and graph offers a summary version of the 4 year transitional costs. The detail that formed the basis for this summary version are contained in Appendix 1.

FIGURE 8

	2010	2011	2012	2013	2014
CURRENT NETWORK CHARGES	$ 8,436,634	$ 6,240,808	$ 5,183,878	$ 2,205,493	$ 716,280
PHASE 1 INSTALLATION	$ 82,840	$ -	$ -	$ -	$ -
PHASE 1 RECURRING	$ 673,116	$ 1,665,000	$ 1,665,000	$ 1,665,000	$ 1,665,000
PHASE 2 INSTALLATION	$ 188,674	$ 566,023	$ -	$ -	$ -
PHASE 2 RECURRING	$ 30,944	$ 2,754,016	$ 7,608,600	$ 7,608,600	$ 7,608,600
PHASE 3 NETWORK NON-RECURRING					$ 600,000
PHASE 3 NETWORK RECURRING					$ 464,610
PHASE 3 EQUIPMENT	$ -	$ 4,000,000	$ 5,940,000	$ 1,930,000	$ -
PHASE 3 EQUIP MAINT					$ 1,200,000
TOTAL CURRENT COSTS	$ 8,436,634	$ 6,240,808	$ 5,183,878	$ 2,205,493	$ 716,280
TOTAL NG911 COSTS	$ 975,574	$ 8,985,039	$ 15,213,600	$ 11,203,600	$ 11,538,210
TOTAL ALL COSTS	$ 9,412,208	$ 15,225,847	$ 20,397,478	$ 13,409,093	$ 12,254,490

	2010	2011	2012	2013	2014
CURRENT NETWORK	$ 8,436,634	$ 6,240,808	$ 5,183,878	$ 2,205,493	$ 716,280
PHASE 1	$ 755,956	$ 1,665,000	$ 1,665,000	$ 1,665,000	$ 1,665,000
PHASE 2	$ 219,618	$ 3,320,039	$ 7,608,600	$ 7,608,600	$ 7,608,600
PHASE3	$ -	$ 4,000,000	$ 5,940,000	$ 1,930,000	$ 2,264,610
TOTAL COST	$ 9,412,208	$ 15,225,847	$ 20,397,478	$ 13,409,093	$ 12,254,490



Funding the Future Needs of 9-1-1

There is no standard funding mechanism for 9-1-1 service in the nation. The most common source of funding landline 9-1-1 service is a surcharge on landline telephone service, in the form either of a per-line surcharge, or as a percentage of billing.

The Enhanced 9-1-1 Act of 2004 imposed penalties on local 9-1-1 agencies if their respective State 9-1-1 funds are diverted. Some states place statutory restrictions on the use of 9-1-1 revenue, while other states place such responsibility with a State oversight board. Still other states place no restrictions at all on the use of 9-1-1 revenue.

In Washington State, funding for emergency services communications reflects a shared approach between state and local governments with state support to help insure rural communities have access to quality 9-1-1 services. Historically Washington's 9-1-1 professionals, the telecommunications industry, community service organizations, and state and local government leaders have worked together to develop funding solutions that work for all parties and that have enjoyed broad public support. Future funding approaches must leverage and build on that history.

To provide the most adequate long-term funding source for 9-1-1 into the future, funding mechanisms should meet the following criteria:

- The funding method should encompass the principle of access, so that anyone capable of accessing the legacy and IP networks should share in the costs of 9-1-1 service.
- The funding method should be technology, vendor, and competitively neutral, so it does not give competitive advantages to one telecommunications, broadband, or data provider at the expense of other providers.
- The funds collected should be used only for their intended purposes and should not be re-allocated at the state or local level for non-9-1-1 purposes.
- The funding method should provide for the total cost of providing 9-1-1 service.
- The funding method should be easy to understand and administer.
- The funding method should be fair and equitable to all individuals and devices capable of accessing the current and future 9-1-1 network.
- The funding method should be stable, and therefore not require frequent legislative adjustments.

The Current Funding Structure for 9-1-1 Service in Washington

As presented in the Next Generation 9-1-1 Funding Study conducted by Kimball and Associates, December 2008

The State of Washington E9-1-1 system is funded by an excise tax assessed equally on both landline and wireless communications services. Carriers collect the tax monthly from their subscribers. The state rate is a maximum of 20 cents per month for each switched landline and radio access (wireless) line. The carriers remit the state tax to the state Department of Revenue (DOR), which places it in the state E911 account. The county rate is a maximum of 50 cents for each switched landline and radio access line[5]. The carriers remit the county tax to the county treasurer.

The assessment rate[6] has not been changed since it went into effect in 1992, with the exception of the inclusion of wireless as part of the RCW in 2002. Over the past 17 years inflation and technology advancements have significantly eroded the buying power of the E9-1-1 tax. Technological progress has also begun to undermine the system's ability to provide E9-1-1 service to callers using new technologies.

When the 9-1-1 excise tax was adopted in 1992 it covered nearly half of the cost of delivering 9-1-1 services. Today, the combined state and local E9-1-1 taxes total $63,093,400, or 36 percent, of the total cost of providing E9-1-1 service throughout the state. $112,592,300, or 64 percent, of the total cost of providing 9-1-1 services is made up at the local level through the use of county general funds, user fees, and sales tax revenues.

[5] The state requires counties to collect the maximum authorized 9-1-1 tax before they can qualify for state funding. All counties are collecting at the maximum rate.
[6] This rate is set in Chapter 82.14B of the Revised Code of Washington (RCW).

Furthermore, users of new technologies may not be required by statute to pay the 911 tax, even though they are able to access the 911 system. This means that wireline and wireless carriers, their users, and local government are left to subsidize 9-1-1 system access for providers and users of new technologies.

One predominant new service is Voice over Internet Protocol (VoIP); the two main providers of VoIP service in Washington are Vonage and Comcast. Comcast, as a telephone company operating in Washington State, does collect and pay the required taxes; Vonage, which operates as an internet VoIP service, does not. As consumers abandon their landline phone services in favor of VoIP, there is a corresponding loss of revenue. The fact that the current body of law does not require VoIP providers to contribute to the support of the state's 911 system results in a loss of revenue currently estimated at approximately $778,000 per year.

Prepaid wireless telephone service is subject to the 911 tax; however, some providers dispute this obligation and do not collect and remit the tax. National estimates put prepaid wireless at 12% of total wireless consumers. According to the Federal Communications Commission's (FCC's) report on wireline competition for 2007, there are approximately 5,291,000 wireless subscribers in the state of Washington of which approximately 635,000 are prepaid customers. This results in a potential revenue loss of up to $5.3M per year.

The impact of inflation has decreased the value of state and local 911 revenues by 34 percent according to the Washington State Economic and Revenue Forecast Council's estimates for the period from 1995 through 2006. From 1992 – 2008 the value of state and local 911 revenues decreased a total of 38%. Although all counties have been collecting at the maximum rate; the rate has not been changed since it went into effect in 1992.

A New Funding Paradigm

The limitations of the existing revenue model drive the need for a new funding model, as does the NG9-1-1 technology. According to the E9-1-1 Institute,

> *"…the way we do business in the 9-1-1 community nationwide is changing rapidly. Currently, in the vast majority of our 9-1-1 centers, we attempt to respond to today's requests for service using yesterday's technology. The new technology associated with Next Generation 9-1-1 cannot be implemented piecemeal and on an "as a local government can afford it" basis. We must have a plan and funding in place to implement Next Generation 9-1-1…Our neighbors in the next county…must have the same technology and ability to process 9-1-1 calls and data on the same level if we are to be successful…."*[7]

The public's expectation is that E9-1-1 service is all encompassing, seamless, transparent, and universal for all technologies and devices that are capable of accessing 9-1-1 service. To meet that expectation, the State E9-1-1 Program Office needs to upgrade its 9-1-1 network and

[7] E9-1-1 Institute, January 17, 2007.

migrate to a statewide NG9-1-1 Network so PSAPs and response agencies can respond to a 9-1-1 communication anytime, anywhere, and from any device.[8]

The system or model envisioned by this Subcommittee and other 9-1-1 professionals across this nation is one where networks, databases, and applications are shared among all emergency responders and response agencies. It implicitly assumes that the State E9-1-1 Program Office will take a more active role in the implementation and continued operation and maintenance of a statewide NG9-1-1 Network, and that the State E9-1-1 Program Office will aid in the coordination of resource sharing across counties and agencies. As a result, any funding method implemented needs to account for these assumptions and provide a sufficient rate and base to fund the state's long-term needs.

The model also assumes that emergency response will remain a local response. That is, while telecommunications is becoming increasingly borderless, E9-1-1 service and emergency response will always be a local response. It does not matter what the funding source is, as long as the full costs of providing service are adequately funded in the long-run. If something goes wrong with a 9-1-1 call or response, local authorities will still be held accountable to the public. Any funding paradigm implemented in Washington needs to account for this fact.

This implicitly assumes that broadband access providers will become an entity responsible for determining the location of 9-1-1 calls. In this scenario, funding moves from the calling network to the access network. Regardless of application, the surcharge in this model would capture all devices and points that are or will be capable of accessing E9-1-1 services. As new carriers enter the IP telephony market, surcharges on calling services becomes more and more limiting and obsolete. By applying the E9-1-1 excise tax on access points, this problem is eliminated. A final reason for this revenue model is that more and more IP telephony services are being provided by international companies over which state and local governments have no control. The access market, however, is always local. In fact, the only limitation to this funding model is that it is new and relatively unfamiliar. NENA expects this model to be cost-neutral to consumers.

Subcommittee Recommendations

To meet the expectations of Washington State residents, it is necessary to replace 1960's technologies and networks with an NG9-1-1 network. To do so, we must address the limitations in the current E9-1-1 revenue model. There is a clear and pressing need to fund the total state and county E9-1-1 capital and operational costs associated with a NG9-1-1 system, but the current revenue model is unable to support those costs. A revenue model that addresses state and county current and future needs, and ensures that Washington State continues to meet the E911 requirements of its residents and visitors regardless of the devices used to access 9-1-1 services is recommended.

1. State and local 9-1-1 excise taxes should be applied to all current and future devices and services that are capable of accessing 9-1-1. Chapter 82.14B RCW should be amended to modernize and broaden the language to which the excise tax applies, including VoIP service.

[8] The National Emergency Number Association, *Funding 9-1-1 Into the Next Generation: An Overview of NG9-1-1 Funding Model Options for Consideration*, March 2007, p. 1.

2. Collection of the 9-1-1 excise tax from prepaid wireless users should be enforced. (Note: Washington State Supreme Court case pending.)
3. The 9-1-1 excise tax rate should be increased to account for inflation and to fund the upgrade to Next Generation 9-1-1 technology.
4. State and Local 9-1-1 professionals, industry representatives, and legislative leaders should work to develop long term funding solutions addressing new technologies that access 9-1-1 and preventing inflation driven funding degradation.
5. All 911 funds collected should be used only for their intended purposes and should not be re-allocated at the state or local level for non-9-1-1 purposes, consistent with Public Law 110-283, July 23, 2008, 122 STAT 2621, 110th Congress TitIe I.

EQUIPMENT CENTRALIZATION, AN OPPORTUNITY FOR GREATER EFFICIENCIES

This concept demonstrates State and Local efforts to work toward more efficiency in our statewide E 9-1-1 system

The subcommittee recognizes and respects the constitutional right of home rule in Washington State. Given that, the decision on regionalization of 9-1-1 centers into multi-county operations is indeed a local decision. The committee recommends that the State E911 Program continue to support regionalization efforts both economically and operationally.

The subcommittee also recognizes that it is the responsibility of the State E911 Program to efficiently and economically provide E911 services statewide. A concept that may achieve these goals while recognizing local control is the centralization of common equipment that can be shared among multiple 911 centers. As such, the subcommittee recommends that the state E911 Program pursue the centralization of equipment with the following conditions:

- It is more economical than the current configuration
- Technology can ensure the secure, reliable and efficient delivery of emergency 9-1-1 calls
- Local customization, as needed, can still be provided
- E9-1-1 service to the public is not degraded

The following (Figure 9) demonstrates the current distribution of vendor specific 9-1-1 telephone equipment by county, statewide. This will serve as a starting point for considering equipment centralization.

FIGURE 9


E-911 Call Answering Equipment by County
San Juan
Whatcom
Skagit
Island
Clallam
Jefferson
Grays Harbor
Mason
Kitsap
Snohomish
King
Pierce
Thurston
Lewis
Pacific
Wahkiakum
Cowlitz
Clark
Skamania
Klickitat
Yakima
Kittitas
Chelan
Okanogan
Douglas
Grant
Benton
Ferry
Stevens
Pend Oreille
Lincoln
Spokane
Adams
Whitman
Franklin
Walla Walla
Columbia
Garfield
Asotin
Equipment KEY:
Plant/CML
Zetron
Positron

APPENDIX 1

FISCAL YEAR 2010 (JULY 1, 2009 - JUNE 30, 2010) **FY 2010**

	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE		TOTALS
CURRENT NETWORK CHARGES	$ 712,400	$ 712,400	$ 712,400	$ 712,400	$ 712,400	$ 712,400	$ 712,400	$ 712,400	$ 708,086	$ 695,144	$ 677,888	$ 656,318		**$ 8,436,634**
PHASE 1 INSTALLATION			$ -	$ 2,180	$ 4,360	$ 10,900	$ 21,800	$ 32,700	$ 10,900					**$ 82,840**
PHASE 1 RECURRING			$ 200	$ 400	$ 13,080	$ 28,776	$ 42,510	$ 69,760	$ 102,460	$ 138,430	$ 138,750	$ 138,750		**$ 673,116**
PHASE 2 INSTALLATION										$ 62,891	$ 62,891	$ 62,891		**$ 188,674**
PHASE 2 RECURRING												$ 30,944		**$ 30,944**
PHASE 3 EQUIPMENT PURCHASE/ INSTALLATION														**$ -**
PHASE 3 EQUIPMENT MAINTENANCE/ UPGRADES														
TOTAL CURRENT COSTS	**$ 712,400**	**$ 712,400**	**$ 712,400**	**$ 712,400**	**$ 712,400**	**$ 712,400**	**$ 712,400**	**$ 712,400**	**$ 708,086**	**$ 695,144**	**$ 677,888**	**$ 656,318**		**$ 8,436,634**
TOTAL NG911 COSTS	**$ -**	**$ -**	**$ 200**	**$ 2,580**	**$ 17,440**	**$ 39,676**	**$ 64,310**	**$ 102,460**	**$ 113,360**	**$ 201,321**	**$ 201,641**	**$ 232,585**		**$ 975,574**
TOTAL ALL COSTS	**$ 712,400**	**$ 712,400**	**$ 712,600**	**$ 714,980**	**$ 729,840**	**$ 752,076**	**$ 776,710**	**$ 814,860**	**$ 821,446**	**$ 896,465**	**$ 879,529**	**$ 888,903**		**$ 9,412,208**

FISCAL YEAR 2011 (JULY 1, 2010 - JUNE 30, 2011) **FY 2011**

	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE		TOTALS
CURRENT NETWORK CHARGES	$ 634,748	$ 613,178	$ 591,608	$ 570,038	$ 548,468	$ 526,898	$ 505,328	$ 483,758	$ 462,188	$ 440,618	$ 431,990	$ 431,990		**$ 6,240,808**
PHASE 1 INSTALLATION														**$ -**
PHASE 1 RECURRING	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750		**$ 1,665,000**
PHASE 2 INSTALLATION	$ 62,891	$ 62,891	$ 62,891	$ 62,891	$ 62,891	$ 62,891	$ 62,891	$ 62,891	$ 62,891					**$ 566,023**
PHASE 2 RECURRING	$ 61,888	$ 92,832	$ 123,776	$ 154,720	$ 185,664	$ 216,608	$ 247,552	$ 278,496	$ 309,440	$ 340,384	$ 371,328	$ 371,328		**$ 2,754,016**
PHASE 3 EQUIPMENT PURCHASE/ INSTALLATION							$ 675,000	$ 675,000	$ 675,000	$ 675,000	$ 675,000	$ 625,000		**$ 4,000,000**
PHASE 3 EQUIPMENT MAINTENANCE/ UPGRADES														
TOTAL CURRENT COSTS	$ 634,748	$ 613,178	$ 591,608	$ 570,038	$ 548,468	$ 526,898	$ 505,328	$ 483,758	$ 462,188	$ 440,618	$ 431,990	$ 431,990		**$ 6,240,808**
TOTAL NG911 COSTS	$ 263,529	$ 294,473	$ 325,417	$ 356,361	$ 387,305	$ 418,249	$ 1,124,193	$ 1,155,137	$ 1,186,081	$ 1,154,134	$ 1,185,078	$ 1,135,078		**$ 8,985,039**
TOTAL ALL COSTS	$ 898,277	$ 907,651	$ 917,025	$ 926,399	$ 935,773	$ 945,147	$ 1,629,521	$ 1,638,895	$ 1,648,269	$ 1,594,752	$ 1,617,068	$ 1,567,068		**$ 15,225,847**

FISCAL YEAR 2012 (JULY 1, 2011 - JUNE 30, 2012) **FY 2012**

	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE		TOTALS
CURRENT NETWORK CHARGES	$ 431,990	$ 431,990	$ 431,990	$ 431,990	$ 431,990	$ 431,990	$ 431,990	$ 431,990	$ 431,990	$ 431,990	$ 431,990	$ 431,990		**$ 5,183,878**
PHASE 1 INSTALLATION														**$ -**

PHASE 1 RECURRING	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750		**$ 1,665,000**
PHASE 2 INSTALLATION														**$ -**
PHASE 2 RECURRING	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050		**$ 7,608,600**
PHASE 3 EQUIPMENT PURCHASE/ INSTALLATION	$ 495,000	$ 495,000	$ 495,000	$ 495,000	$ 495,000	$ 495,000	$ 495,000	$ 495,000	$ 495,000	$ 495,000	$ 495,000	$ 495,000		**$ 5,940,000**
PHASE 3 EQUIPMENT MAINTENANCE/ UPGRADES														
TOTAL CURRENT COSTS	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**	**$ 431,990**		**$ 5,183,878**
TOTAL NG911 COSTS	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**		**$ 15,213,600**
TOTAL ALL COSTS	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**	**$ 1,699,790**		**$ 20,397,478**

FISCAL YEAR 2013 (JULY 1, 2012 - JUNE 30, 2013) **FY 2013**

	JULY	**AUGUST**	**SEPTEMBER**	**OCTOBER**	**NOVEMBER**	**DECEMBER**	**JANUARY**	**FEBRUARY**	**MARCH**	**APRIL**	**MAY**	**JUNE**		**TOTALS**
CURRENT NETWORK CHARGES	$ 431,990	$ 378,805	$ 325,620	$ 272,435	$ 219,250	$ 166,065	$ 112,880	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690		**$ 2,205,493**
PHASE 1 INSTALLATION														**$ -**
PHASE 1 RECURRING	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750		**$ 1,665,000**
PHASE 2 INSTALLATION														**$ -**
PHASE 2 RECURRING	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050		**$ 7,608,600**

PHASE 3 NETWORK NON-RECURRING														
PHASE 3 NETWORK RECURRING														
PHASE 3 EQUIPMENT PURCHASE/ INSTALLATION	$ 495,000	$ 495,000	$ 495,000	$ 445,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -		**$ 1,930,000**
PHASE 3 EQUIPMENT MAINTENANCE/ UPGRADES														
TOTAL CURRENT COSTS	**$ 431,990**	**$ 378,805**	**$ 325,620**	**$ 272,435**	**$ 219,250**	**$ 166,065**	**$ 112,880**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**		**$ 2,205,493**
TOTAL NG911 COSTS	**$ 1,267,800**	**$ 1,267,800**	**$ 1,267,800**	**$ 1,217,800**	**$ 772,800**	**$ 772,800**	**$ 772,800**	**$ 772,800**	**$ 772,800**	**$ 772,800**	**$ 772,800**	**$ 772,800**		**$ 11,203,600**
TOTAL ALL COSTS	**$ 1,699,790**	**$ 1,646,605**	**$ 1,593,420**	**$ 1,490,235**	**$ 992,050**	**$ 938,865**	**$ 885,680**	**$ 832,490**	**$ 832,490**	**$ 832,490**	**$ 832,490**	**$ 832,490**		**$ 13,409,093**

FISCAL YEAR 2014 (JULY 1, 2013 - JUNE 30, 2014) **FY 2014**

	JULY	**AUGUST**	**SEPTEMBER**	**OCTOBER**	**NOVEMBER**	**DECEMBER**	**JANUARY**	**FEBRUARY**	**MARCH**	**APRIL**	**MAY**	**JUNE**		**TOTALS**
CURRENT NETWORK CHARGES	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690	$ 59,690		**$ 716,280**
PHASE 1 INSTALLATION														**$ -**
PHASE 1 RECURRING	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750	$ 138,750		**$ 1,665,000**
PHASE 2 INSTALLATION														**$ -**
PHASE 2 RECURRING	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050	$ 634,050		**$ 7,608,600**

PHASE 3 NETWORK NON-RECURRING	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000								**$ 600,000**
PHASE 3 NETWORK RECURRING		$ 9,110	$ 18,220	$ 27,330	$ 36,440	$ 45,550	$ 54,660	$ 54,660	$ 54,660	$ 54,660	$ 54,660	$ 54,660		**$ 464,610**
PHASE 3 EQUIPMENT PURCHASE/ INSTALLATION														**$ -**
PHASE 3 EQUIPMENT MAINTENANCE/ UPGRADES	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000		**$ 1,200,000**
TOTAL CURRENT COSTS	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**	**$ 59,690**		**$ 716,280**
TOTAL NG911 COSTS	**$ 972,800**	**$ 981,910**	**$ 991,020**	**$ 1,000,130**	**$ 1,009,240**	**$ 1,018,350**	**$ 927,460**	**$ 927,460**	**$ 927,460**	**$ 927,460**	**$ 927,460**	**$ 927,460**		**$ 11,538,210**
TOTAL ALL COSTS	**$ 1,032,490**	**$ 1,041,600**	**$ 1,050,710**	**$ 1,059,820**	**$ 1,068,930**	**$ 1,078,040**	**$ 987,150**	**$ 987,150**	**$ 987,150**	**$ 987,150**	**$ 987,150**	**$ 987,150**		**$ 12,254,490**

Current costs are the monthly average for LEC Interface, Frame Relay, Selective Router, Switching Office Enabling and Database charges currently paid by the State E911 Office.

Phase 1 and 2 costs are based on the Qwest-Intrado Proposal for installation of the ESINet and database.

Equipment purchase costs are based on the L. Robert Kimball Next Generation 9-1-1 Funding Study Submitted to the Washington State Military Department dated December 2008

Equipment maintenance/upgrade costs for FY2014 are based on a 10% allowance for equipment maintenance as per current county contract reimbursement eligibility policy. No upgrades anticipated in FY2014 since all equipment would be less than 2 years old.

Legacy network impacts: ESInet (NG911) project:

Can remove during phase 1 and 2 (after 1- 2 month soak period on ESInet):	percentages based on 65 PSAPs **Monthly Cost**	
1. frame relay ALI circuits	$ 77,177	
2. make busy circuits	$ 10,729	
3. EM trunks (from tandems to PSAPs)	$ 46,650	1/2 of selective router costs
4. Existing intertandem trunks (only after phase 2, all PSAPs on ESInet)	$ 10,868	

5. Existing database charges/billing usoc	$ 372,262

New for ESInet (phase 1 and 2) (in current ESInet budget/contract):

1. Intertandem trunks on T1s between legacy tandems and RCLs/gateways (replaces EM trunks)
2. New NG routing and database charges (new usoc, replaces existing database charges)
3. MPLS network (with local access to PSAPs & Intrado host sites with private ports, etc)

Network changes (phase 3)

1. Rehome ES trunks to RCLs/gateways - transport to gateways install cost $600,000 total/6 months	$ 100,000
2. Remove intertandem trunks and T1s between legacy tandems and RCLs (after end offices rehome to RCLs)	$ 59,690
3. End office to RCL recurring costs	$ 54,660

No CPE changes required for ESInet project.

APPENDIX 2

FREQUENTLY ASKED QUESTIONS

The following questions were deemed essential to ensure the success of the Statewide E9-1-1 system:

1. How do we replicate the security of the existing E9-1-1 system?
   - This was answered within the State contract for the ESInet and database with Qwest and Intrado signed 9/11/09.
2. How will we make the transition from our current system to NG9-1-1?
   - This was answered through the use of a phased migration approach. First to migrate to the ESInet and database with a group of 8 trial counties (Phase 1), followed by the balance of the 31 counties and WSP PSAPs (Phase 2), and then migrating all 39 counties and WSP PSAPs to full digital end to end IP PSAPs (Phase 3)
3. .When will the NG9-1-1, I-3 Standard be completed/adopted?
   - The Draft I-3 Standard is currently out for comment, and is expected to be adopted for data exchange during 2010. Washington State is currently beginning its migration of PSAPs to the ESInet and IP Database (Phases 1 & 2) that can be accomplished without the I-3 Standard. By doing so, it will position the system for the final migration to Phase 3 once that Standard is adopted.
4. What comes first—NG9-1-1 call-taking equipment or the NG9-1-1 network?
   - This has been answered through the phased migration path. First, the ESInet will be put in place, using gateway devices to process analog voice to digital for transport to the PSAPs, and another gateway to reconvert the digital voice back to analog for delivery at the PSAP using the IP database. This can be done without 911 telephone equipment upgrades or replacements. Consolidation of equipment will be able to proceed during this same timeframe. Once all PSAPs reach this level of migration, and after the National I-3 Standard is adopted, a final migration to phase 3 can begin with 911 telephone system upgrades and or replacement taking place as part ot the phase 3 process.
5. What regulatory changes are required to facilitate conversion to NG9-1-1?
   - None, but the National I-3 Standard must be adopted providing a consistent application that will ensure data exchange consistency across the nation.

6. What are the costs associated with the build-out of the NG9-1-1 network?

- The costs for Phase 1 & 2 have been identified within the Washington State/Qwest-Intrado contract. The costs for upgrading or replacing 9-1-1 telephone systems to accept digital end to end voice and data as part of the Phase 3 migration must continue to rely on the Kimball Study as our best information. The Equipment Consolidation Section of this report will identify the opportunity for reductions in costs identified in that report. However, the amount of cost reductions will come from a combination of the recommended solutions, and local decisions based on the Home Rule foundation of government in our State.

7. How long will it take to modernize our Statewide E911 system including migrating the PSAPs to NG9-1-1?
   - Assuming funding is available to allow phase 3 to proceed, the entire process should be able to be completed within a 4 year timeframe.
8. How will counties and the State E9-1-1 Program Office pay for the implementation, operation, and maintenance of the modernized E911 system that includes the NG9-1-1 network and PSAP?
   - The State 911 Program will provide the fund the Network and Database as statewide services just as they do today, and funding exists to do so. The costs and funding source for the final migration to phase (3) will in large part be dependent on additional funding that will require legislative changes. It is important to recognize that the extent of equipment centralization that takes place prior to Phase 3 will dramatically impact the overall costs.
9. How will counties and the State E9-1-1 Program Office pay for the continued operation of the current legacy network and equipment while NG9-1-1 is being implemented?
   - This will be part of the migration path, and the legacy systems will be eliminated when the modernization is capable of supporting analog voice as part of the NG solution.
10. What permanent, full-funding revenue model will be adopted to fund the costs associated with NG9-1-1?
    - The subcommittee has addressed this in the Funding Section of this plan. NENA and APCO efforts continue to assist the Legislature in understanding the need for a reasonable change in funding levels to ensure the ongoing success of the statewide 911 system. What has been proposed, is to extend the State 911 excise tax from its current $.20 per month to $.25 per month, and the Local 911 excise tax from the current $.50 per month to $.70 per month, and extend that tax to include VoIP subscribers.
11. Should the local and state E9-1-1 excise taxes be extended to VoIP service providers?
    - The funding mechanism is recommended to include VoIP subscribers.
12. Should the 9-1-1 excise tax be extended to all networked devices that are capable of accessing 9-1-1?
    - The subcommittee recommends that the 911 excise tax be extended to include any device or service that can access 911.