# Florida 911:

# The State of Emergency

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Funded by:
**Gulf Coast Community Foundation of Venice**

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# Table of Contents

## Executive Summary

In 2007, Florida processed more than 15 million 911 calls. Virtually all were answered and processed without attracting public attention. But two calls focused national attention on how Florida's 911 system failed and how lives were lost.

In keeping with its mission of improving the quality of life in the communities it serves, Gulf Coast Community Foundation of Venice initiated a study to determine if those calls were emblematic of isolated anomalies or of systemic flaws.

It found a system that falls short in fundamental aspects of any public service: the ability to measure the success of outcomes, the dedication of sufficient resources, and the provision of an equal level of service to every citizen.

**The findings, in brief:**

1. Florida has no one board, office or person with the authority to monitor how effectively calls for emergency assistance are handled, and has no statewide data to assess error rate, response time or any other measure of the delivery of service.

2. Florida underfunds its 911 system. Florida's 911 fees are in the bottom third of all states, its fee collections are declining, and it pays less than two-thirds of the cost of 911 service, leaving the rest to cash-strapped counties. And state law prohibits spending 911 funding on dispatch services, seen as an integral part, if not the purpose, of a 911 system.

3. Florida's 911 calls are answered in 258 call centers, all with their own standards for training, protocol and equipment. Florida recommends, but does not mandate, training for 911 call takers. As a result, centers do not necessarily employ industry best practices and standards, and Floridians receive uneven levels of service.

4. Florida's 911 system still has a rural-urban divide, even though a stated goal of federal law establishing modern 911 systems is to improve service to rural areas.

5. Florida has yet to establish N11 service, which would reduce the instances of 911 centers being overwhelmed by inappropriate calls.

6. Florida's coordination of equipment used for emergency response remains incomplete and hinders seamless communication throughout the state.

7. Florida has made significant progress in incorporating new technology into the 911 system, but other infrastructure vulnerabilities have been unaddressed.

In short, the analysis revealed that Florida does not have a 911 “system,” but rather a patchwork of agencies, protocols and technologies cobbled together to respond to 911 calls. To create a “seamless end-to-end” emergency response system, Florida must overcome the fragmentation and establish a coordinated 911 emergency response system with proper oversight and sufficient funding.

# I. Purpose of the Study

The 911 emergency response system is a complex and critical government service. It is complex because successful response to each emergency 911 call requires coordinated activation of multiple human and technological elements.

It is critical because protection of personal safety and property is a fundamental expectation of government. It is a public good, and the federal government has taken steps to mandate adequate public safety at the state level. States and municipalities commit significant resources to fulfilling this mandate.

In 2008, as the U.S. Senate reviewed Florida Senator Bill Nelson's legislation to improve the 911 system, his colleague Sen. Daniel Inouye said he could "think of few government initiatives that have been as successful as 911."[1]

911 was established to create one universal number that was easy to remember and dial in a life-threatening situation. The assumption was that 911 saves lives because it saves time; a person need not seek the seven-digit number for the nearest police, medical or fire rescue facility. Inouye's statement illustrates the simple, clear expectation the program has engendered: Call 911, and help is on the way.

Yet, in at least two well-publicized instances in Florida last year, crime victims were able to call 911 and reach a 911 call-taker, but help never arrived.

In the first instance, Denise Amber Lee, a 21-year-old Sarasota County resident and mother of two young sons, was able to place a 911 call from her abductor's cell phone while she was a prisoner in his car. Another driver who saw Mrs. Lee in a car while driving suspected a crime was in progress and also called 911. Both calls were answered.

Yet only some of the units that could have been dispatched to save Mrs. Lee were actually dispatched. Many officers in units that were in the vicinity of where the crime was being committed were unaware the crime was in progress. Sarasota County officials notified law enforcement in adjacent counties of the crime in progress and relayed information regarding the suspect's vehicle. However, there was a breakdown in emergency response efforts as the suspect traveled into Charlotte County.

A call-taker at the Charlotte County office received the information, but did not send the information to officers in the field. Judging from where Mrs. Lee's remains were found, she almost certainly was transported within a few hundred feet of law enforcement officers. Had those field officers been aware of her abduction or the available description of the suspect's vehicle, they might have been able to stop the vehicle and apprehend the suspect before he killed Mrs. Lee.

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1

Senator Inouye made the remarks June 16, 2008, to support the "New and Emerging Technologies 911 Improvement Act of 2008."

In a second incident, Olidia Kerr Day called 911 to report that she was being pursued by a man she believed intended to kill her. She was trying to drive to the Plantation Police Department for help, but could not find it and asked the call taker for directions.

The call-taker neither tried to help Day find the station nor dispatched units to help her. Day found the station by herself, but was shot and killed by her pursuer before she could enter the building. The incident was partially captured on surveillance cameras operating at the police station.

If the measure of a successful 911 call is simply the ability to reach a call-taker, then 911 performed adequately in both cases. So why did these incidents end tragically? Are Florida's resources and procedures adequate for responding to calls for emergency assistance? If they are inadequate, how do we improve them? And, first and foremost, how well does the 911 system serve the 15 million people who attempt to use it each year?

The purpose of this study is to begin to answer these questions and to prompt an inclusive public discussion of issues critical to 911 emergency response in Florida. It is by no means an exhaustive examination of the system. There are limitations to engaging in such an undertaking that are discussed herein.

But answering those questions requires a consideration of all the components of emergency response that are activated at that critical moment when a person needs emergency assistance. A single call must pass through a network that may involve contact with several people, several agencies, and several types of equipment. At each point when the call is passed along, the chain can be broken. This is true of all 911 systems, but it is particularly an issue in Florida where there is no central oversight of all the relays that take place.

The nature of the fragmentation in areas that affect 911 are summarized below in seven key findings that represent challenges for 911 service provision. Each finding is accompanied by a recommendation or recommendations that may be considered to overcome each challenge.

# II. Findings and Recommendations

## Finding 1

*Florida has no one board, office or person with the authority to monitor how effectively calls for emergency assistance are handled, and has no statewide data to assess error rate, response time or any other measure of the delivery of service.*

**Recommendation 1a**
Redefine 911 as a comprehensive Emergency Response System inclusive of all aspects of government emergency service provision from the time a caller dials 911 to the time help arrives on the scene.

**Recommendation 1b**
Appoint a state-level position to oversee and coordinate all aspects of emergency response in Florida, from the time a caller attempts to place a call to the time assistance arrives at the scene. The individual or committee should have the authority to:

- collect comprehensive incident reports from call centers;
- evaluate and approve emergency response equipment that will interconnect with other equipment used in the state;
- evaluate call center protocol;
- insure that all emergency response personnel have adequate training;
- establish minimum standards for call handling and disciplinary procedures for those who make critical errors;
- evaluate county comprehensive plans to determine if local zoning plans are consistent with provision of superior response to 911 calls.

**Recommendation 1c**
Establish a statewide task force of all stakeholders in Florida's emergency response community to study these and other recommendations for improving Florida's 911 and emergency response system. The task force should include representatives from law, medical and fire emergency rescue agencies, the legislature, telecommunications industry, private and community college training programs, state departments that facilitate 911 response and radio systems, and members of the public.

## Finding 2

*Florida underfunds its 911 system. Florida's 911 fees are in the bottom third of all states, its fee collections are declining, and it pays less than two-thirds of the cost of 911 service, leaving the rest to cash-strapped counties. And state law prohibits spending 911 funding on dispatch services, seen as an integral part, if not the purpose, of a 911 system.*

**Recommendation 2a**
Increase the 911 collection from the current $0.50 maximum and attach such fees to all newer telecommunications devices as provided for in Florida statutes.

**Recommendation 2b**
Amend Florida statutes to expand the range of expenses that may be covered by the E911 Trust Fund to include all aspects of emergency response.

## Finding 3

*Florida's 911 calls are answered in 258 call centers, all with their own standards for training, protocol and equipment. Florida recommends, but does not mandate, training for 911 call takers. As a result, centers do not necessarily employ industry best practices and standards, and Floridians receive uneven levels of service.*

**Recommendation 3a**
Minimum standards for training, protocol and equipment should be mandated for all call centers such that each has:

- Appropriately trained and certified personnel to answer, process and dispatch calls;
- Protocol for handling calls based upon emergency-industry established best practices;
- Call answering, dispatch and field communications equipment that is compatible within and across all emergency service agencies in Florida.

**Recommendation 3b**
Explore call center consolidation to reduce the number of call centers, and thus reduce redundancies, reduce call transfers and increase consistency, in equipment and protocol.

## Finding 4

*Florida's 911 system still has a rural-urban divide, even though a stated goal of federal law establishing modern 911 systems is to improve service to rural areas.*

**Recommendation 4a**
Increase funding for the state's 30 rural counties through nonrecurring funding until all rural call centers provide services comparable to urban ones.

**Recommendation 4b**
Allow counties with underfunded 911 call centers to establish Municipal Services Taxing Units (MSTU) to provide a recurring source of funding for provision of E911 emergency response services.

**Recommendation 4c**
Provide grant-writing assistance for rural counties.

## Finding 5

*Florida has yet to establish N11 service, which would reduce the instances of 911 centers being overwhelmed by inappropriate calls.*

**Recommendation 5a**
Insure that N11 services are available throughout the state.

**Recommendation 5b**
Formulate statewide public information campaigns to help consumers better understand 911, focusing on appropriate reasons for calling 911 and suggesting alternative N11 numbers available for non-emergencies (311), social service referral (211), highway conditions (511) and other services.

**Recommendation 5c**
Consider increasing the severity of penalties from its current misdemeanor maximum fine of $1,000 for placing harassing or fraudulent 911 calls.

## Finding 6

*Florida's coordination of equipment used for emergency response remains incomplete and hinders seamless communication throughout the state.*

**Recommendation 6a**
Conduct a comprehensive survey of equipment available to place 911 calls, receive 911 calls, dispatch emergency response and communicate with emergency responders in the field to detect interconnectivity vulnerabilities.

**Recommendation 6b**
Establish state-level lists of approved equipment or standards for interconnectivity among ALL types of devices used to access and mobilize emergency response. These lists will give public safety purchasing authorities options that will work seamlessly with other public safety entities.

**Recommendation 6c**
Insure that all users of E911 resources, such as the Florida Interconnectivity Network, have adequate training to do so effectively.

## Finding 7

*Florida has made significant progress in incorporating new technology into the 911 system, but other infrastructure vulnerabilities remain unaddressed.*

**Recommendation 7a**
Conduct a comprehensive assessment of the state's wireline infrastructure to determine if it is practically sustainable for 911 emergency response until newer technology supplants it.

**Recommendation 7b:** Continue to encourage telecommunications industry representatives to upgrade devices to enhance them with the latest available technology for locating 911 callers, such as GPS.

Each of these recommendations is discussed in more detail later in this report. The pages that follow break down the process from the time a call is placed to the time help arrives at the scene. The overarching assumption is that only when the entire process functions to rush aid to an individual experiencing an emergency can Florida hope to have an emergency response system that saves lives.

A state with 53 million square miles of landmass, 18 million residents and 84 million visitors cannot afford to have a loosely coordinated 911 emergency response system. Florida has taken some important steps to improve the level of service, but critical gaps remain in the system. There are too many points throughout the process of Florida's emergency response at which calls can be lost or mishandled, and there is no way of knowing how often this occurs.

# III. Methodology

This study was conducted from September to December 2008. Gulf Coast Community Foundation of Venice assembled a team that included a member of the Florida Association of Public-Safety Communications Officials (APCO),[2] an administrator of a community college training center, a government consultant, law enforcement officers and citizens. The Foundation commissioned an independent firm, Tartaglione & Associates, to conduct, with input from the team, an independent and objective analysis of Florida's emergency response 911 system.

The original objective of the study was to determine to what extent Florida's 67 counties employ training standards that are consistent with national standards for emergency response services, especially in the areas of technology, training and policy.

The study was conceived as a survey design. The firm planned to collect self-reported data from each of the counties to determine how they differed in terms of emergency service attributes. However, that strategy was abandoned for two reasons. First, there is no one standard to which all agencies involved in emergency response services are held. Federal policies make recommendations for the type of service states should provide, but creating standards for how those services will be provided is largely left up to each of the states or to the municipalities within them.

Furthermore, as already overburdened public employees find little discretionary time in their schedules, response percentages for the length of survey required was anticipated to be low. Early overtures to some agencies indicated a disinclination to participate in such a study, at least in part, due to perceived adverse political ramifications.

Consequently, the firm developed a strategy to conduct a situational analysis of Florida's 911 emergency response system. Standard practice for conducting such an analysis begins with identifying the internal features of the system and judging which components of the system do what they are supposed to do (strengths) and which could be improved (weaknesses).

To determine which external conditions enable or inhibit the service's ability to fulfill its mission, the firm also analyzed political, economic, social, technological and environmental factors. These included pending legislation, dominant political ideologies held by opinion leaders, the state of the economy, public attitudes toward the service and availability of emerging technology. Environmental factors that enable a system to provide its services, in this case, the government provision of emergency response, is considered a potential opportunity. A factor that limits the same is considered a potential threat.

Data was collected over a four-month period. During this time, researchers analyzed secondary resources including public records, reports on file with the state Department of Management Services (such as 911 plans of

2

The APCO representative withdrew before the study was complete.

each county), academic journal articles, and technical and media reports. Many important national studies, most notably the 911 Industry Alliance's 2007 study *Health of the U.S. 911 System* and the 2003 *Hatfield Report*, were researched for standards that might apply to Florida's emergency services.

The firm collected information from primary sources, as well. It conducted formal and informal interviews with public safety experts and users, state and local elected officials, state, county and city staff, members of public safety professional organizations, a Homeland Security official assigned to Florida, 911 call takers, and 911 call center managers. An informal roundtable with Alachua County public safety officials included personnel, technical and facility supervisors of the county's combined communications center and city of Gainesville law enforcement officers. The firm also conducted a site visit of the Alachua County's Combined Communications Center. A list of interviews is included in Appendix A.

The researchers conducted a case study of Alachua County to consider in greater depth the factors that affect 911 emergency response. Alachua County was chosen for a number of reasons. It is one of only three call centers in Florida that has earned call center certification for the Commission for Accreditation on Law Enforcement Agencies. CALEA certifies those call centers that employ what it identifies as "best practices" across a range of activities, such as management practices, training and staff scheduling. Equally important was Alachua County officials' openness to public inspection. Researchers never were denied access to requested materials or facilities.

Unfortunately, the very qualities that make Alachua County a good choice for the study also limit how far the information collected can be generalized. The combined call center is atypical of most counties. Consequently, the researchers augmented the study with a review of 911 plans from all of Florida's counties, and spoke with officials in some of those counties as well.

The information collected and summarized herein describes the 911 emergency response system in Florida from call origination to agency response on the scene. It describes the many factors that come into play at each segment of the process in Florida.

Throughout the process of collecting and analyzing data, the researchers held no agenda, political or otherwise, for conducting this study. The principal investigators all are affiliated with academic departments and trained in scientific methodology, research design and/or Florida government. Their recommendations and findings are their own, and do not represent the views of any other organization. Task force members had no goal other than supporting and improving Florida's 911 emergency response system. The sole purpose of the study is to describe, as objectively as possible, the 911 emergency response system in the state of Florida. It is hoped that the study will be helpful to anyone seeking to understand the complexities of Florida's 911 system, especially those further motivated to assist in maintaining or improving it.

## IV. Overview: Florida’s Fragmented System

Any discussion of the effectiveness of the state's emergency response system hinges on one crucial fact: Florida's 911 system is not a true “system.”

There is no one authority in the state that monitors and coordinates all aspects of emergency response from the time a caller needs emergency assistance to the time that help arrives. And Florida law on the funding of 911 services severs the call-taking function from the *inherently* linked function of dispatching emergency personnel.

Section V of this analysis will describe the internal aspects of the system to explain how the system works. This section is focused upon the external factors that explain why the system evolved the way it did.

Clearly, Florida did not intend to create a flawed system. The officials interviewed for this study were uniformly committed to their life-saving mission. So how could their system fail when it was most needed?

To answer this question, one must consider the environment in which the system was created—the political, economic, and technological factors that constitute the rules of the game. The ability to improve any system is constrained by these external factors that shape, to a large degree, what the system will look like and how effective it will be.

Florida is considered by many technology experts to have a progressive 911 system compared with other states. That perception is because newer call answering technology has been deployed in most of the state. This technology allows an emergency call taker to reconnect a disconnected call and to identify the geographic location of a caller, even when the call is placed from a cellular device. These are significant enhancements to the call-taking aspect of 911 emergency response.

However, there is one critical distinction to make: The ability of all citizens to call one number for emergency service needed does not insure the safety of any. Only when the system functions to provide the appropriate *response* to a 911 call in a *timely and reliable fashion* does the state enhance the well-being of its citizens. Even with the full deployment of the newest technology, the entire sequence of events triggered by that call must function for the caller's safety to be preserved.

Critical errors with fatal consequences continue to expose vulnerabilities within the system. Part of the problem lies within the system itself. The 911 system began as a federal initiative, passed to the states and left largely to the counties to implement. It should be no surprise that multiple layers of governance result in an emergency response system that is far from seamless.

Each law enforcement agency at the federal, state, county and municipal level may, and usually does, have its own set of equipment, protocol and resources to respond to 911 callers.

## A. Fragmentation

The public perceives 911 as a seamless system where a call is answered by an agency that has the authority to determine what type of help is needed, and to summon fire units, patrol cars or other emergency service vehicles.

There is not a single county in Florida for which this holds true. Though some counties have attempted to create a single agency that answers calls and summons appropriate responders, all have to transfer at least some calls to another agency. Any time a call is transferred, it introduces the possibility that the call will be disconnected or misdirected.

Florida has 258 call centers, called Public Safety Answering Points, or PSAPs, cobbled together in a loosely organized fashion. (The United States has 6,000 such centers.[3] ) Within each of Florida's 67 counties, there usually are multiple agencies that answer 911 calls for that county. Just 27 counties have only one center that directly receives 911 calls from the caller. The remaining 40 have at least two—and as many as 24—call centers.[4] In them, multiple agencies may answer calls; call takers also may dispatch fire, police or medical services directly, or may transfer the call to another agency for dispatch.

Further, the supervision of the 911 call centers in each county falls under more than one agency. On paper, the supervisory authority for each call center is the Board of County Commissioners. The county provides some funding for the centers.

However, the actual operation of each center is delegated to another agency or agencies. Often, the county Sheriff's Department operates the call center. However, the 911 administrator, who coordinates call center activities, might report to another agency and an official other than the sheriff. In Alachua County, for example, the Sheriff's Office houses, manages and staffs a combined communications center for the entire county. However, the Alachua County 911 coordinator is hired and supervised by Alachua County Fire Rescue. In rural Calhoun County, the 911 administrator's critical duties are just some of many that fall to the county sheriff.

Complicating matters is the diversity of the state in its geography and population centers. Seven of Florida's counties are considered large, 30 midsized and 30 rural.[5] The challenges and resources available to support 911 services vary by size. The equipment, staffing and protocol of a large county's call center bears little resemblance to that of a small county.

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The exact number of call centers (PSAPs) answering 911 calls in the United States is difficult to pinpoint. The National Emergency Number Association, the FCC and CTIA all have cited different numbers. The latter two maintain databases of call centers, as well. The numbers each cite fall between 6,100 and 7,300.

4

Palm Beach County has 24 answering centers, plus one back up. A full listing of the number of answering agencies per county is included in Appendix E. Data from the matrix are a compilation of county 911 plans filed with the state Department of Management Services, and are available at http://dms.myflorida.com/suncom/public_safety/florida_e911/florida_e911_plan

5

As defined by F.S. 165.172 (3)

## B. State and Local Oversight

Florida's 911 emergency communications system dates to 1974 and the passage of the Florida Emergency Telephone Number Act, F.S. 365.171. It was substantially overhauled in 2007, recasting the Wireless 911 Board as the E911 Board and centralizing fee collection at the state level.

**Structure**

The E911 board is charged with coordinating and enhancing the 911 emergency response system in Florida. (The "E" stands for "enhanced"; a state's 911 equipment is considered "enhanced" if it is capable of receiving a caller's number and location information along with the voice transmission.)

The board consists of nine members. The governor directly appoints eight members: four representatives from the telecommunications industry and four 911 county coordinators. The Secretary of the Department of Management Services (DMS), who also is appointed by the governor, designates a ninth member to serve as chair. A six-person staff provides support services.[6]

**Strengths**

The current structure ensures that two key constituencies are represented: the counties, which provide emergency response services, and the telecommunications companies, which establish the technology behind the services.

The board meets monthly and has three main functions, all of them in theory essential to ensuring effective 911 service:

- It seeks to enhance the E911 system by assessing the system's function and features and evaluating new technology and possibilities for cost savings.
- It provides coordination and technical support to counties on deploying E911 systems.
- Its "primary function" is administration of the E911 Trust Fund, which will be examined in the next section.[7]

Florida Statutes further direct DMS to develop and maintain the state 911 management plan. The plan makes recommendations regarding staffing levels for call centers, standards for length of calls and soundness of infrastructure, a potential strength by establishing practices proven to be effective. By statute, each county in turn submits its own E911 plan to DMS.[8] (The matrix included in Appendix E summarizes the type of information the counties submit to DMS. It includes the number of call centers located within the county, the number of call taking positions, incoming lines, call answering equipment and how calls are relayed to other agencies.)

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6

E911 Board and Statewide Coordination Fall 2008 Presentation, http://dms.myflorida.com/media/cits_media/florida_e911_files/911_coordinators_meeting_and_presentations_fall_2008/911_coordinators_meeting_and_presentations_fall_2008

7 2008 E911 Board Annual Report, p. 5

8

Both the statewide plan and the individual county plans (some more current than others) are available on the Department of Management Services website, http://dms.myflorida.com/suncom/public_safety.

**Weaknesses**

The E911 Board has no members that represent the many organizations that monitor and research emergency response mechanisms, even though many have Florida chapters. They include the National Emergency Number Association (NENA), the Association of Public Safety Communication Officials (APCO), the National Association of State 911 Administrators (NASNA) and the National Association of Fire Chiefs. Nor is there a seat allotted to a private citizen, as there are on many state boards.

While the E911 Board and DMS both promote effective staffing, call-handling and infrastructure practices, neither has authority to mandate those standards. Nor does either require state or local agencies to submit reports regarding those recommendations.

There is no set requirement for how often the counties must submit updated plans, and more than half of those currently available online are three or more years old (though that also may be because of slow website updates). The state 911 plan also contains no language to coordinate call dispatching efforts across the state. There is no one statewide office designated by the legislature to oversee the effectiveness of 911 call centers.

Statute requires counties to designate a 911 coordinator but does not set forth the responsibilities of the position. Individual counties determine who will act as coordinator, where the coordinator will be located and what responsibilities fall to the coordinator. Some coordinators are housed within a call center, and some are in another agency.

The coordinator submits reports to the state describing the structure of the county's 911 call centers but has no authority to establish uniform protocol for answering or responding to calls, nor the authority to mandate a certain type of equipment when it is purchased to insure interconnectivity.

Legislation passed in 2007 also addressed statewide call taker certification and the Denise Amber Lee Act suggests 208 hours of training for call taker certification. But no law mandates any required level of training hours.

Such training would fit with recommendations from groups including the Association of Public Safety Communication Officials (APCO), which seeks increased professionalization of the state’s call taking function. Groups suggest mandatory certification, enhanced retirement benefits and improved pay for call takers as ways the legislature could improve the system, but counties will resist any change that amounts to unfunded mandates from the state.

**Table 1 - Selected State Agencies Involved in Emergency Response**

| Agency | Emergency Response Activity | Statute | Reports To |
|---|---|---|---|
| Division of State Fire Marshal | - Certifies Fire Fighters<br>- Collects Fire Incident Data | F.S. 633 | Chief Financial Officer |
| Department of Management Services, Public Safety Division | - Collects County 911 Plans<br>- Compiles Florida E911 Plan | F.S. 365 | Secretary, Dept. of Management Services |
| Dept. of Management Services, Telecommunications | - Addresses Statewide Interoperability for Radios | F.S. 401<br>F.S. 282 | Secretary, Dept. of Management Services |
| Department of Health | - Drafted 911 Call Taker Certification Standards<br>- Regulates Health Care Related Professions | F.S. 456 | Secretary, Dept. of Health |
| E911 Board | - Approves E911 Trust Fund Expenditures | F.S. 365 | Governor |
| Div. of Emergency Management | - Coordinates Disaster Response<br>- Certifies Law Enforcement Agencies | F.S. 252 | Governor |
| Fla. Dept. of Law Enforcement | - Establishes Standards for Criminal Justice Officer Training | F.S. 493 | Governor and Cabinet |

## C. Funding Mechanism Disallows Spending on Vital Services

**Structure**

In 1999, Florida began appending a fee to each telecommunications customer's bill to cover costs related to 911.[9] Subsequent legislation extended the fee to cellular subscribers who had monthly service.

Companies that provide a dial tone to customers within a county collect a fee each month for E911 service provision. For wireline service, counties set the per-customer fee and may collect up to 50 cents per service number per month. Sixty-three of 67 counties collect the maximum allowable 50-cent fee.[10]

For wireless, or cellular, service, Florida statute levies a uniform 50-cent fee per service number per month. Florida collects no fee from prepaid or "pay as you go" wireless users, though it completed a feasibility study on such collections. The E911 Board has postponed implementation until July 2010.

The 2007 legislative overhaul of E911 statutes resulted in all 911 fees being paid to the state. (Formerly, counties collected the wireline fee.) Collections go into the E911 Trust Fund, which reimburses counties and service providers for approved expenses.

| | |
|---|---|
| Fee Collected per Wireline (maximum under state law): | $0.50 |
| Fee Collected per Wireless Subscriber: | $0.50 |
| Fee Collected from "Pay as you go" Subscriber | $0.00 |
| Total funding collected for 911 in 2008: | $130,962,053 |
| From wireless | $77,451,429 |
| From nonwireless | $53,510,624 |
| Money approved for counties: | $176,724,437* |
| Number of counties that collect maximum 50-cent fee: | 63** of 67 |

* Includes grants and funds from draw-down of fund balance.

** Pasco will soon raise its rate to the 50-cent maximum.

9

If a single customer pays for more than 25 connections, the fee is appended only to the first 25.

10

Pasco will soon raise its rate to 50 cents, from 40 cents. The other three counties that collect less than 50 cents are Duval (44 cents), Lee (44 cents), and Volusia (41 cents).

With traditional wireline service, 97 percent of the collected fees are returned to the counties under a formula that accounts for each county's fee level. The state retains two percent to set aside in a fund for rural county grants and retains one percent to fund E911 Board expenses.

With wireless cellular service, 67 percent of the fee collections are returned to the counties for their expenses. The state sets aside 30 percent of collections to reimburse wireless companies for certified expenses they incur when upgrading equipment for E911 use. Two percent of these funds go to rural grants and 1 percent funds E911 board costs.

**Strengths**

Florida's funding system is equitable, in that counties are reimbursed in proportion to the level of wireline fees the counties are willing to impose. The uniform 50-cent user fee for cellular service is equitable by definition. The feasibility study on collecting E911 fees on prepaid cellular phones promises some supplemental revenue.

Florida statutes establishing the E911 Trust Fund reserve it solely for funding emergency call-taking functions, protecting it in theory from being depleted for other uses. And Florida law allows other funding mechanisms, such as a Municipal Service Benefit Unit.

**Weaknesses**

**1. Potential shortfalls**

Florida's E911 system is underfunded even for the purpose of supporting the call-taking function, and that is without any support for the inextricably linked dispatch system.

In 2007-2008, total wireless and wireline fee collections were almost $131 million. Total disbursements to counties were about $103 million, while their expenses were $170.2 million, or just 61 percent of costs.[11]

The E911 Board expects revenue to remain flat in future years but the gap between revenue and expenses to keep increasing.[12] With just 1.8 million prepaid cell phone users in Florida, collections from those service numbers will not close the gap unless the fees are far higher than those on other phones, raising issues of both equity and resistance from service providers.

That means call centers will have to increasingly rely upon other funding sources to cover their expenses, a difficult provision for counties seeing sharp declines in their primary revenue source, property tax.

**2. Restricted uses**

Moreover, those funds cannot be spent on anything that is not specifically enumerated in the Florida Emergency Telephone Number Act.

Essentially, the only covered expenses are those that attempt to support or improve mechanisms allowing a call center to receive 911 calls, with

11 E911 Board 2008 Annual Report, p. 17. Note that in the 911 Coordinators Spring 2009 meeting, board cites a different figure, 66 percent of costs, but appears to be using a different time frame.

12 E911 Board 2008 Annual Report, Appendix 3, Exhibit 1.

the caller's location information, from a communications device (telephone, cellular phone, etc.). That includes, for example call answering equipment, cellular tower modifications, caller identification database management and training limited to call taking.

Any expense incurred after a 911 call is transferred to the appropriate agency for response is specifically prohibited by the Act. The cost of radio equipment used to summon a fire station to dispatch a fire truck, for example, may not be paid with these funds. Funds for training not directly related to call taking, equipment for dispatch and any other expenses must come from the counties, through tax revenue or other sources.

**In summary, E911 funding covers only half the elements that come into play when an emergency call is initiated: call placing and intake. The funds may be used for most items required to receive a 911 call from a caller, but may not be used for summoning or providing the assistance requested.**

Appendix C lists the expenses that may qualify for reimbursement through E911 funds.

| Strengths | Weaknesses |
|---|---|
| • Funds collected to cover 911 service in all 67 counties<br>• Fees collected from both wireline and wireless subscribers<br>• Recent feasibility study regarding collecting fees from "pay as you go" cellular phone users may help the state supplement E911 Trust | • Funds cover only intake function; cannot be used for dispatch<br>• Funds collected depend upon number of subscribers in area (weakness for rural counties)<br>• Wireline collections declining<br>• Wireless collections flattening<br>• Maximum collection capped at $0.50<br>• Fees not yet collected from "pay as you go" cellular phone users. |
| • Potential for counties to raise funds through enacting a Municipal Service Benefit Unit | • Counties' taxing ability capped at 10 mills |
| • Funds collected may only be used for E911 expenses | • Other states raiding E911 Trusts to cover general revenue shortfalls |

### 3. Potential misallocation

Last year, via its 30-percent set-aside, the state fund collected about $23.2 million to reimburse wireless companies for their implementation costs, but disbursed only $16 million. That reimbursement was a 26 percent decline from the previous year, and the board expects further declines.[13] That suggests the board should use its authority to adjust allocation percentages and shift more money to reimbursing counties.

Wireless companies are required to submit sworn invoices to apply for reimbursement of E911 equipment upgrade expenses, but some did not, although money was available As the money accrued, board members became concerned that the legislature might re-appropriate the funds to pay for non-E911 expenses. This remains a serious threat to the system. A national 911 consultant notes that the notion of "raiding" 911 funds remains a serious threat to 911 systems.[14]

What is apparent is that the aggregation of the funds will be an attractive and sizeable pool of money that cannot escape the attention of state legislators when revenues plummet. Evidence from other states suggests that state legislators sometimes "raid" 911 trust funds to pay for other programs.[15] As it stands, those funds are covering two-thirds of costs, or less. If money from the trust fund is shifted to other needs, an even greater burden will fall upon the counties.

Because counties collect most of their revenue through property taxes, many call centers will be affected by reappropriating or capping the E911 Trust Fund's revenue source. Recently passed Amendment 1 reduced the amount of money counties collect from property owners. Falling home values in Florida also affect revenues twofold: Both tax assessments and the fees collected on the sale of homes are tied to the home's value.

**Figures 1 and 2 – Distribution of Funds from Wireless and Wireline Customers**

**Fig. 1 Wireline**

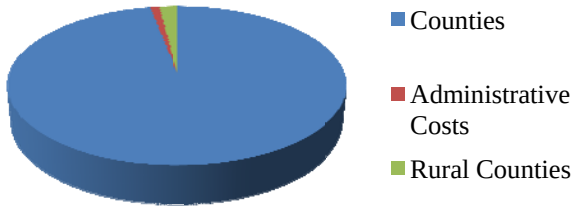
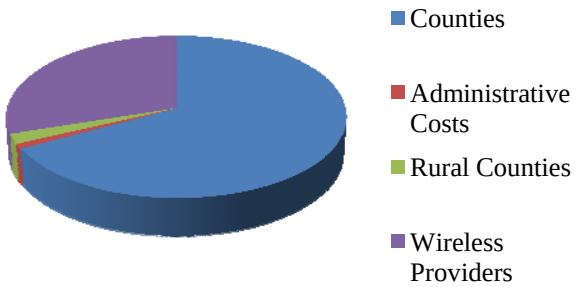



**Fig. 2 Wireless**




13 E911 Board 2008 Annual Report, p. 9.

14 Weiser, P., Hatfield, D. and Bernthal, B. (Spring 2008). The Future of 9-1-1: New Technologies and the Need for Reform, Journal of Telecommunications and High Technology Law.

15 Committee on the Future of Emergency Care in the United States Health System (2007).

# V. Analysis of the System's Components

Narrowly defined, the 911 system is simply the concept that a caller can dial a short, memorable series of numerals, 9-1-1, to access emergency services, no matter what the emergency. Many credible studies of 911 analyze only the system components actively involved in providing establishing and maintain a 911 calling number.

For the purposes of this study, the 911 system is defined more broadly. It includes each point of the process from when a person calls 911 until emergency personnel arrive at the scene. Clearly, the ability to call a number and have someone answer is a crucial component in saving lives, but the answering of the call alone rarely provides the needed assistance. Therefore, this study describes not only how the state facilitates 911 call taking, but how it facilitates response to that call.

However, it is important to note that not every stakeholder in the system views the 911 system as broadly. Some view the "911 system" as encompassing only those elements that are engaged from the moment a caller dials 911 to the time that call is answered.

As noted in the previous sections, the difference in perspectives matters in Florida, because it affects, for example, which components of the system are supported from dedicated funds. In Florida, as noted, the E911 Trust funds can only be used to support the narrowest definition of a 911 system: that which starts at the caller and ends when the call is answered.

Funding for the many components of successful public safety response apparatus that are engaged after the call is received are not considered part of the 911 emergency response system for purposes of trust fund disbursements. This should be a concern for anyone seeking to improve emergency response in Florida.

Stories of flaws in the system that have impacted the lives of individuals seeking assistance sometimes cite errors that occurred in emergency response functions outside what others consider 911. For instance, if a police officer is sent to the wrong address, the error may have occurred during the dispatching function, not the call taking function.

Figure 3 illustrates the 911 emergency response sequence from end to end, from caller to emergency responder. It lays out a map by which one might begin to understand which parts of the system are most vulnerable and most readily bolstered.

The extent to which the system is fragmented, leaving multiple points of vulnerability to error, becomes plainly evident when each component in the chain from caller to first responder at the scene is specified.

The nine segments identified in the 911 Emergency Response sequence represent nine key elements included, for the purposes of this report, in an "end-to-end" 911 system. Each of the elements must be functional, at least at a minimal level, if help is to reach the caller. If eight elements work well and just one fails, the whole sequence is interrupted, and the caller will either not receive a rapid response or not receive a response at all.

## The nine elements are:

**1. The Caller**
The system must function to allow any person, of any ability and in any location, to access the system during an emergency. If a caller cannot access the system at all, *the system fails*.

**2. The Telecommunications Device**
The system must be accessible from any telecommunications device. If a consumer can access the system, but calls 9-1-1 from a device that is not integrated into the system, *the system fails*.

**3. The Connection**
The system must contain networks of reliable wireline and wireless connections to carry the call for help. If the telecommunication device works, but its signal travels over a connection that is not capable of carrying the call, *the system fails*.

**4. The Routing**
The system must be correctly networked, so that a 911 call is sent to the closest agency with jurisdiction to assist the caller. If the connections over which the call travels works, but the call is sent to the wrong call center and is critically delayed or lost in transfer to the correct one, *the system fails*.

**5. The Public Safety Answering Point (PSAP)**
The system must include call centers that are capable of receiving all available information for every call. If a signal reaches the appropriate call center, but PSAP is not capable of receiving a signal with correct information, *the system fails*.

**6. The Call Taker**
The system must be populated with call takers who are capable of taking the appropriate action once the call is received. If PSAP receives the call, but the call taker fails to process the call appropriately, *the system fails.*

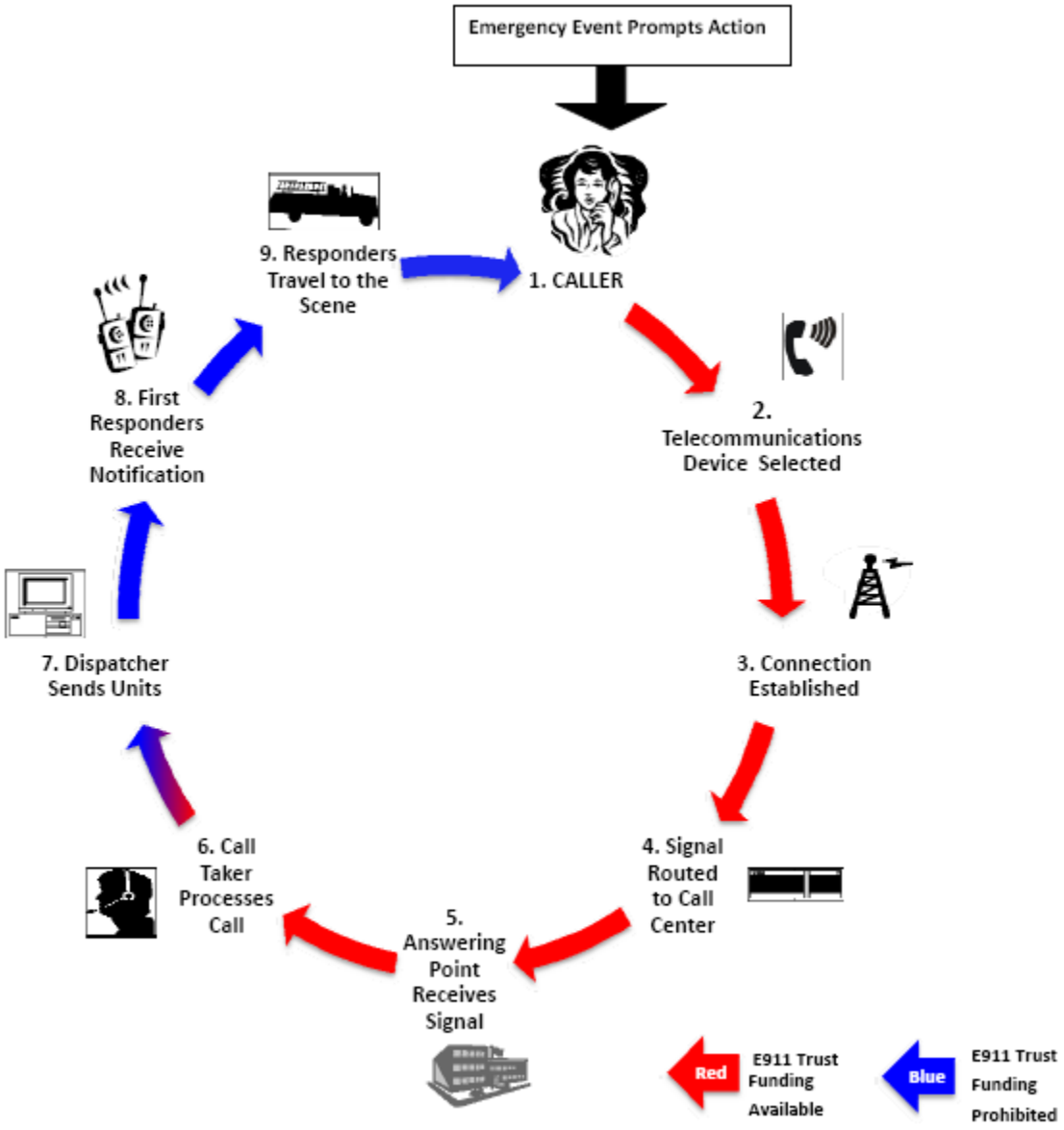
**7. The Dispatcher**
The system also must be populated with dispatchers who are capable of determining which agencies or units should be sent to assist the caller. If the call taker correctly sends the call to a dispatcher, but the dispatcher fails to send the appropriate emergency response units, *the system fails.*

**8. The Agencies and Units**
The system must be capable of notifying the first responders who will assist the caller. If the dispatcher attempts to summon a rescue agency or unit, but cannot do so because of interoperability or other logistical issues, *the system fails.*

**9. The Path to the Scene**
The system must provide avenues for rapid travel to the scene. If a unit is summoned to a scene, but cannot arrive in time to assist the caller due to impediments in its path, *the system fails.*

This section will break down the 911 emergency response sequence into its various segments. Each segment, whether it is a human, structural or technical element, brings with it a distinct set of strengths and weaknesses.

**FIGURE 3: The 911 Emergency Response Sequence Model**



## 1. THE CALLER: Location and Attributes Affect Access

The individual attributes of the caller are the most important factors that determine emergency response. A caller must have access to working service and equipment that allow him to call 911, no matter where he lives or what his abilities are. Each of the nearly 15 million calls placed in Florida were placed by individuals with a unique set of abilities and circumstances. Many can affect how the caller receives services.

The creation of a universal emergency number is a strength in providing services across the spectrum of caller abilities and provides a lifeline to connect those in rural areas. Having 911 service available in most of the state is a strength. However, there remains an urban-rural divide in the level of service available. Especially as Florida's growth shifts populations in rural areas, the inequities are a special concern.

| Strengths | Weaknesses |
|---|---|
| - Access for Urban Callers | - Access for Rural Callers |
| -Disability Equipment for Urban Callers | - Lack of Disability Equipment for Rural Callers |
| - Florida Population Concentrated | - Populations Shifting |

| | |
|---|---|
| **Number of Floridians:** | **18,804,739** |
| **Number of Tourists in Florida, 2007:** | **84,500,000** |
| **Number of Large Counties:** | **7** |
| **Number of Mid-Sized Counties:** | **30** |
| **Number of Rural Counties:** | **30** |
| **Number of 911 lines with TDD:** | **1,213** |

### A. Geography

Some of the greatest inequalities in the system nationally and in Florida may be attributed to the location of the caller. A caller should be able to access service dialing 9-1-1 from anywhere in the country, and overall, coverage in the United States is fairly impressive. However, the availability of service and the type of service varies across Florida, primarily by size of county from which the call is placed.

For classification and funding purposes, the state segments counties by population into three tiers. Seven counties are considered large, having populations greater than 750,000. Just over 50 percent of Florida's population lives in these seven counties. Another 45 percent lives in the 30 mid-sized counties of 75,000 to 750,000. The remaining 30 rural counties have less than 5 percent of the population. Calls originating in rural areas are, in many cases, treated differently from calls originating in urban ones.

The resources available to the caller who seeks assistance in Liberty County, with only 9 people per square mile, are very different from the resources that would be available to the caller from Miami-Dade County, with 1,261 people per square mile. One might reason that there would be less need for emergency law enforcement in rural Liberty County than in Miami Dade. That is indeed the case. In Liberty County there are 617 crimes committed for every 100,000 in population. In Miami-

Dade, the number is almost 10 times that, at 5,964.[16]

However, any given 911 caller in Liberty County, at any given time of day, will have only one call taker to answer that call. There are a total of four lines coming into the center, but only one position designated as the call taker for any given time. Furthermore, depending upon where one lives in Liberty County, one's 911 call might be answered by a call taker in nearby Franklin County, because that call center might be closer. Should that occur, the call center in Franklin County would have to transfer the call back to Liberty County, because it lacks the authority to dispatch units across county lines. If service to the four Liberty County call center 911 lines is interrupted due to some natural disaster, like a hurricane or tornado, there is no backup call center. If a Liberty County resident has hearing difficulties, there may be limited equipment available to assist the hearing impaired.[17]

Conversely, Miami-Dade residents have at their disposal six primary call centers, two secondary centers and three backups. More than 120 call takers are available throughout the county to answer calls coming in from 89 lines dedicated to calls from outside callers and 57 dedicated transfer lines. The state has no data on calls per line or call-taker.

Callers who live in counties with large populations have other advantages relative to those in rural areas. Poverty levels tend to be higher in rural counties, and therefore, the ability to afford a telephone is a greater challenge. However, policies that mandate the 911 access even on devices with no active service partially overcome this challenge.

If a caller has a handset in the residence that is connected to a wireline, he may call 911 at no cost. Similarly, cellular telephones with no service remain capable of connecting a 911 call. Accordingly, many nonprofits stage drives to collect and distribute no-service cell phones to improve access among those with low incomes. Still, some still live in very rural areas, where the infrastructure is inadequate due to a lack of either a wireline connection from local service provider to residence or a nearby cellular tower.

Since only five percent of Floridians live in small counties, the urban-rural divide may seem to be a less critical area of concern for Florida's 911 emergency response system. However, two issues should be considered. First, rural residents should expect the same level of service as urban residents. But rural residents are more vulnerable in emergency medical situations, simply because it takes longer to transport a critically ill patient to a facility.

The National Highway Traffic Safety Administration notes that treatment success

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16

Florida Department of Law Enforcement, 2006.

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Liberty County's 911 plan on file with the Department of Management Services indicates that it does not have TDD equipment. However, Liberty County Coordinator Stephen Ford confirmed that the county is capable of receiving calls from specialized equipment..

rates for critically ill or wounded patients depend to a great degree upon how long it takes emergency medical personnel to reach them. Treatment administered during the "golden hour," the hour immediately following a trauma is the most successful. NHTSA found that a much higher percentage of rural residents who are critically injured arrive at the hospital after the "golden hour" has passed.[18] Therefore, accessing assistance is even more critical for rural residents who have to contend with longer transportation times.

Though state funding exists to target this urban-rural divide, the discrepancies are likely to remain. Part of the reason the inequity exists lies within the 911 funding structure. The system returns to the county an amount proportionate to what it contributed. Because the rural county has fewer users, it receives a smaller E911 Trust Fund allocations, even though its basic infrastructure costs can be similar to those of a larger county.

In rural counties, E911 fee disbursement covers 29 percent of 911 system costs, compared with 60 percent in mid-sized counties and 67 percent in large counties. The E911 Board's rural grant program brought that up to a more level 62 percent of costs, but those grants went to just 25 of the 30 rural counties, meaning some were left with major shortfalls.[19]

Rural counties have a harder time filling the gap. By their nature, rural counties collect fewer tax dollars because there is no critical mass of homeowners or businesses to pay property taxes. Therefore, all county-provided emergency services—fire, police and medical—must be funded from meager resources.

Increased attention to rural counties from the state will be necessary to better standardize provision of services. Rural counties will need additional funding and support from those with technical expertise. Some funds are available to augment budgets of call centers located in rural counties; however, to access these funds, the county would have to have personnel who are aware of the grant opportunities and capable of filing the necessary justifications for obtaining the funds. The state may have to provide this expertise until the rural counties are improved.

The state also should allow rural counties to raise funds from other sources like Municipal Service Taxing Units (MSTUs) that may be designated for a specific purpose, like funding 911 expenses.

It also should be noted that population estimates alone do not represent all who might need service at a given time. Though there are 18 million residents in Florida, millions more at any given time are visiting the state. Last year

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NHTSA (2005). Those who are critically injured but treated within the first hour following the injury have a much higher likelihood of survival. NHTSA found that 30 percent of those injured in rural accidents arrived after the "golden hour" had elapsed, compared with only 8.3 percent of urban residents.

19 E911 Board 2008 Annual Report, Appendix 2.

Florida hosted more than 84.5 million tourists. Every day, thousands of tourists drive through rural areas of the state. They, too, must have access to 911. It is clearly in the state's best interests to insure that tourists are protected wherever they may be in their journey through the state.

**B. Physical Capabilities**

Some callers must overcome physical barriers to access the 911 system. If a caller has a physical disability, that attribute may affect the level of service he receives. Those with hearing impediments have been identified as especially vulnerable in emergency situations.

The state plan calls for all call centers to be equipped, for example, with devices that make access for hearing impaired individuals possible. Most centers are equipped with the Telecommunications Device for the Deaf (TDD) to assist callers who are deaf or hard of hearing, but the use of technology lags behind its availability.[20]

A caller with intellectual disabilities also may have a varying range of options when approaching the 911 system, yet the system must operate for the benefit of all.[21] Systems must be capable of receiving information for individuals of all intellectual and physical capabilities.

20
Harkins, J., Strauss, K. et al, (2008 Spring) Assistive Technology, Vol. 20, Is. 1 PP 13-25.

21
Bryen, D., Carey, A., et al. (2007 Feb) Cell phone use by adults with intellectual disabilities. Intellectual and Developmental Disabilities. Vol. 45, Is. 1, pp 1-9.

## 2. THE COMMUNICATIONS INTERFACE DEVICE: Landline, Cellular, Internet Devices Offer Differing Levels of Access

The next element of the system involved in a call for emergency assistance is the communications device. It makes a difference whether a 911 call is placed from a wireline-connected telephone, a payphone, a cellular phone or a device that allows voice to travel over the internet. Calls placed from the various devices travel over different paths that require a variety of technological activation. The company providing a dial tone and the type of path the call travels are relevant features of this segment.

Possible connections:

- Telephone over wireline
- Payphone over wireline
- Alarm device over wireline
- Cellular device (contracted service) over radio waves
- Cellular device ("pay as you go") over radio waves
- Cellular device (no service) over radio waves
- Voice Over Internet (VoIP)
- Telemetrics device (automatic crash notification) over satellite

When the 911 system first connected caller to the call taker, traditional telephones, usually located in the caller's home and physically connected by wireline to the call-receiving agency, were the predominant communications interface. Now the choices are many.

Along with traditional wireline telephones, a person in an emergency situation may also access 911 directly through a cellular telephone, a Telecommunications Device for the Deaf (TDD), an internet-connected device, or indirectly through an alarm system or device that automatically summons assistance from a car when it detects impact.

The portability of the newer devices introduced new opportunities for public safety. The potential for more rapid response existed because a caller could call directly from the scene, for example. However, the same portability creates challenges for locating callers.

**A. Traditional Telephones**

The advantages of the traditional telephone are that it is frequently available, low cost and easy to use. Another advantage of the traditional phone line is that it gives emergency responders a known and fixed location to which to respond.

One weakness of the traditional telephone is a perceived obsolescence. The number of emergency calls placed from traditional telephones via a local exchange carrier on company-provided lines varies across Florida, but is declining nationwide. That in itself is not a weakness, but it creates an assumption that wirelines need not be repaired and maintained. This possibility will be discussed in a subsequent section.

A second weakness is the analog phone's data limitations compared with cell phones. While a wireline is a reliable carrier of critical information, such as the caller's telephone number and location, traditional telephones carry only voice and tones. Newer devices give the caller the ability to send text messages if he cannot speak, and pictures or video. That could enhance the 911 call taker's ability to correctly assess the nature and severity of the emergency so that the appropriate assistance can be dispatched to the scene.

**B. Cellular Devices**

Cellular telephones are increasingly used to access 911. In as many as 15 percent of homes, cellular phones are the only devices used.[22] They also allow callers to contact 911 while away from home and without finding a payphone.

The technology also may be considered a strength for emergency response in Florida. Call takers connected to the scene of an emergency through the caller's cellular device may be able to more accurately assess what type of assistance to dispatch. Cellular devices also are capable of transmitting images to assist call takers, although call centers will have to be upgraded to receive this information.

The proliferation of cellular devices has greatly enhanced a caller's options for calling for help quickly, but, as one telecommunications expert pointed out, the availability of cellular phones also has the potential to overwhelm the system at times.[23]

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22
Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December 2007, National Center for Health Statistics, May 14, 2008, YE 2007 Data.

23
Discussion with Randy Kerr, technical communications consultant, 12/08.

| Strengths | Weaknesses |
|---|---|
| - Wireline handsets numerous and affordable | - Fewer households have them |
| -Cell phones provide access in car or outside, and can give call takers information from the scene | - Location of moving cellular phones difficult to track |
| - Free “No Service Initialized” cellular phones expand access to low income callers | - Harassing calls from “No Service Initialized” cellular phones clog lines and cannot be tracked or blocked |
| - VoIP phones expand options for accessing 911 to include internet | - VoIP phones not fully enhanced to give call-back number and location information to 911 call center |

Consider the case of a stranded motorist on an interstate. Before wireless technology was widely available, usually the driver or a passing Samaritan would have to travel to the next exit and find a coin-operated telephone to summon help. (Some states had roadside phones pre-selected to a first responder unit set at varying points on interstate highways; citizens' band radio also was an option.)

Today, the driver can call from his car, allowing help to arrive more quickly. However, it also means that any number of passing motorists, attempting to assist the stalled traveler, also may call 911 to report it. Call center coordinators report that when there is an accident on an interstate highway, calls from motorists can easily overwhelm a 911 system. In some cases, the closest call taking center has only one incoming line. That can prevent callers in greater need of assistance from getting through.

Cell phones and other wireless devices have other weaknesses. Until relatively recently, cell phones were not transmitting the caller’s number and location information to the 911 call center. The critical nature of that information will be further discussed in the next section, but it is worth noting here that the newer technology-based communications interface devices are not at the same level of compliance for reporting critical information to call takers as are traditional landline carriers.

Furthermore, the newness of the technology may slow use by those unfamiliar with that technology. Dialing 911 on a virtually extinct rotary phone or on a push button phone is a simple procedure for most. However, even for more sophisticated users, unfamiliar wireless devices are a challenge. For those most vulnerable in the population—the poor, the elderly and very young children—wireless interface devices are often an enigma. Again, this raises an issue of equality-of-access to public safety services.

**C. No-Service Initialized (NSI) Phones**

As noted earlier, the activation of cell phones with no paid service to call 911 has expanded access to those who cannot afford a communications interface device. So long as a cell phone tower is within range, the caller will have access through the cellular device. However, the ability of a call taker to identify the location from which the call is placed depends on whether the device has an associated physical location in a telephone service database. For wireline or contract cellular service users, the billing address is available in a database accessible by the 911 call center.

Because an NSI phone carries no service, there is no name or physical location of a subscriber in a database to identify the caller. That allows NSI phones to be used for placing what 911 administrators consider harassing calls, including bogus calls for help, threatening calls, hang ups, accidental calls, and children playing.

In 2006, the National Association of State 911 Administrators (NASNA) conducted a survey on NSI calls. It found that out of 8,400 calls from NSI phones to call centers in 12, counties, more than 96 percent of these were fraudulent.[24] The association is seeking a policy change that would allow centers to block some of these calls.[25] These would include callers who call and hang up without speaking, or otherwise call with the intention of disrupting call center activities.

In Florida, in 2008 alone, there were media reports of 911 calls that were placed to complain about missing chicken nuggets, poorly made hamburgers, or a clerk's refusal to sell beer.[26] When calls such as these are placed from activated cellular or wireline devices, 911 call centers can trace the call and pursue appropriate action against the caller. However, since NSI numbers are not attached to a specific data base, and may not be equipped with GPS, the caller is sometimes impossible to find.

24

NASNA (2007). Petition of Inquiry Regarding 911 call-forwarding requirements and carriers' Blocking Options for Non-Initialized Phones. Cc Docket No. 94-102, www.nasna911.org/docs/petition_non_initialized_devices.pdf.

25

Discussion with Randy Kerr.

26

See, for example, "Man Arrested for Drunken 911 Call" http://www.wkrg.com/crime/article/man_arrested_for_drunken_911_call/23424/.

**D. Internet-based Devices**

The newest interface device being incorporated into the 911 system is the Internet-based device, such as a VoIP (Voice over Internet Protocol) device. These devices carry the 911 signal over some combination of lines, which may include "hardwired" connections, like telephone lines and coaxial cable, but also include Wi-Fi "clouds" of service provided by routers positioned to allow any capable device in a specified area to connect. Many of those in the industry push for more immediate deployment of internet-capable devices, as these may help standardize communications over one platform.

Currently, these interface devices have two critical and often underreported flaws from a 911 service provision perspective. First, the devices have not been fully integrated into the 911 emergency response system in that call takers are not yet able to fully identify the call-back number or location of VoIP callers, in some areas.

Second, there is the possibility that help will be dispatched for a VoIP caller hundreds of miles away from the location of the true emergency. The call will be routed not to the call center closest to the caller, but to the call center closest to the address registered with the phone upon activating the phone. In a recent case, an Illinois call center received a 911 call from a woman who felt her life was in danger. The call was routed to Illinois because it was her home address. She was in Korea.[27]

The caller's location also may be unavailable because the caller may "hide" the device's location. VoIP users may route calls through locations that exist specifically to "mask" the caller's location, a technique used by prank callers. Funds likely will have to be allotted to help call centers purchase equipment (estimated at $5,000 per unit) to help identify the true origins of these calls.

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Jackson, William (03 March 2009) Council formed to improve access to emergency phone services. *Government Computer News*. http://gcn.com/Articles/2009/03/03/NESIC-formed.aspx?Page=3.

**E. Next Generation 911**

Recently, federal policies and public safety sector experts have been addressing problems in emergency response that emerged from the Sept. 11, 2001, terrorist attacks on New York City and Virginia.[28] Those attacks exposed critical vulnerabilities of the system when first responders from one agency were unable to communicate with those from another.

Subsequently, more attention has been focused on the issue of interconnectivity of first responder communication devices.[29] Ironically, by Florida's 911 statute, equipment upgrades for first responders are not eligible for spending via the E911 Trust Fund.

Many in the public safety sector are focusing efforts on upgrading the nation's emergency response to the "Next Generation 911" (NG911) technology. The NG911 technology does not address the first half of the 911 system, from caller to call taker, but is capable of resolving some of the issues that suppress the 911 system's response potential.

NG911 technology will use wireless Internet routers to connect every element of the system. The routers will deploy a communication "cloud" over a geographic area that will allow all enabled communications devices used by law, fire and medical first responders to access it simultaneously. Technical experts at Alcatel-Lucent and Bell Labs recently published their vision of such a system they call 911-NOW. Their diagram of how mobile wireless communications networks might be integrated into emergency response is replicated in Figure 4.

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28

National Commission on Terrorist Attacks upon the United States. The 9/11 Commission Report, 2004.

29

See, for example, Peha, Jon (March 2005). Protecting Public Safety with Better Communications System. IEEE Communications Magazine.

**FIGURE 4: The 911 Network on Wheels (911-NOW)**

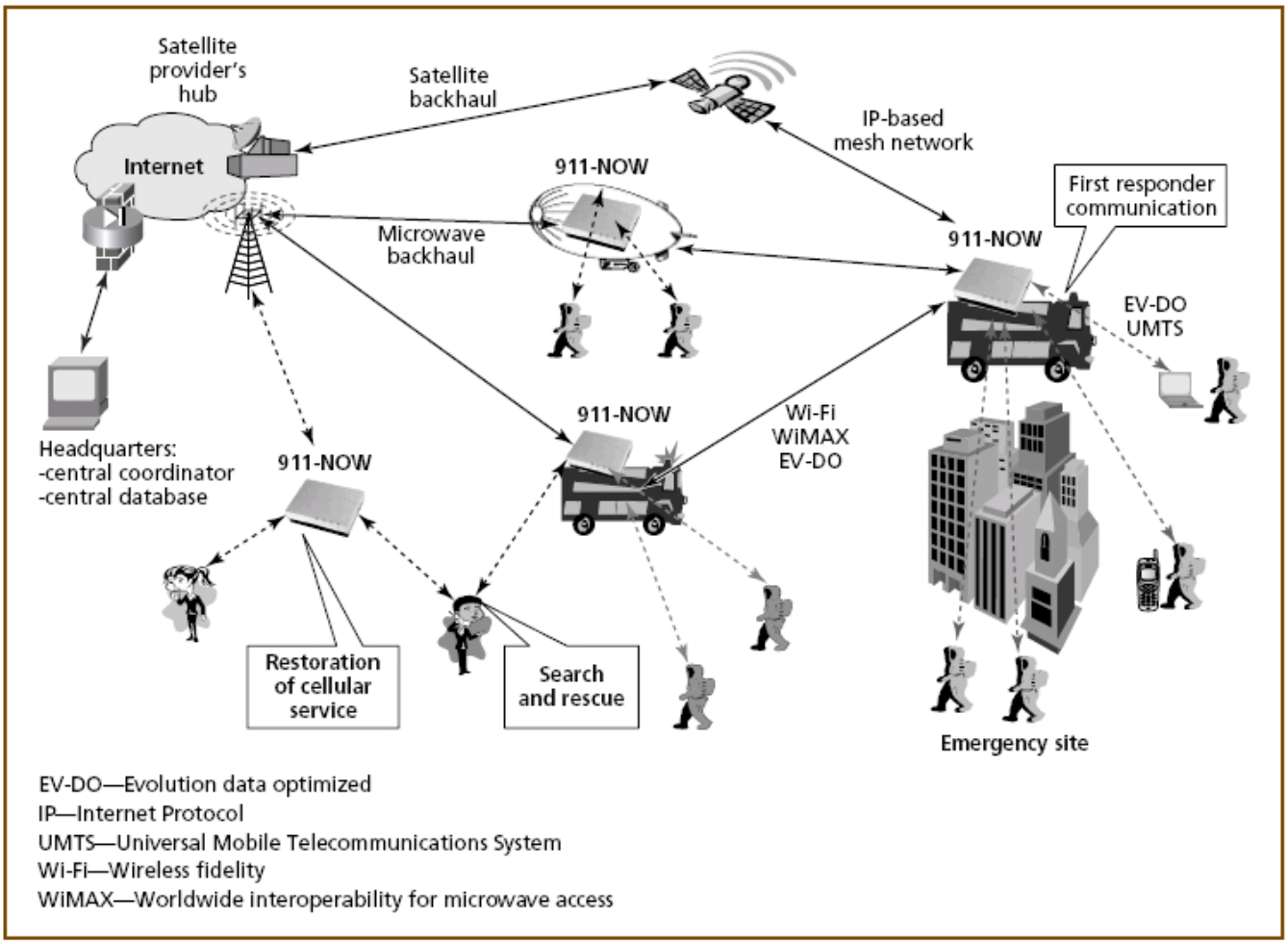


***Figure 4.***
***911-NOW: A mobile network for emergency response and disaster recovery operations based on proven air interface technologies and all-IP networking.***

*Graphic appeared Abusch-Magder, D, Bosch, P et al., 911 Now: A Network on Wheels for Emergency Response and Disaster Recovery Operations published in Bell Labs Technical Journal 11(4), 113-133 (2007).*

The use of this technology creates numerous possibilities. It may resolve interoperability problems to some extent.[30] Some have proposed a "rolling" communications center, mobile units carrying the latest technology and routers, which would be capable of deploying a wireless network to any scene.[31] Though this is envisioned as a response to mass emergencies, there also are applications for local search and rescue.

Use of NG911 technology also enhances a receiver's ability to capture any data that might be available for transmission. Centers upgraded with NG911 technology will be able to receive text and even streaming video from the scene of an emergency.

One weakness of the new technology is its expense. Pursuing deployment of NG911 may draw funding away from other critical needs yet to be addressed, such as training. Nonetheless, some balance likely must be struck. As consumers have more options for making calls and sending data, they may expect that emergency call centers are capable of receiving it.

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30
See, for example, Careless, J. (2008 Aug 1). Out with the Old, in with the New. Urgent Communications, Pg. 8.

31
Abusch-Magder, D., Bosch, P, et al. (2007) 911-NOW: A Network on Wheels for Emergency Response and Disaster Recovery Operation. Bell Labs Technical Journal 11(4), 113-133. Wiley Periodicals, Inc.

Overall, new interface devices have created a new set of variables for the 911 emergency response system nationwide. Those responsible for 911 emergency response must be aware that the newer devices impact the system for two primary reasons.

First, the newer devices may not easily connect to the existing databases that provide caller location. Modifications, like those necessitated when cellular devices began to proliferate, may be required.

Second, although adapting devices to allow for access by those with a greater range of abilities is a desirable goal, the consequence may be that call takers will require additional training, and additional time may be required in the center on calls using some technology. For instance, the state acknowledges that it takes longer for a call taker to use the TDD machine when answering a call from a hearing-impaired caller. The state plan allows for longer times to answer these devices (20 seconds, as opposed to 10 for standard calls).

There are hundreds of possibilities for what a communications interface device may look like and how it may operate. More are on the horizon, but the device itself is only one part of the equation. From the interface device, the signal must travel over some connection, a hardwired line or air waves, to the call center. This variable, with its relative strengths and weaknesses, is the topic of the next section.

The type of line over which an emergency communication travels matters. The path may be analog or digital; it may or may not be enabled or capable of carrying the best available information to the call center. At the very least, it should be possible to reliably send voice communications over a connection until purposely disconnected. More recently, it has become a mandate that the connection also carry the caller's 10-digit call-back number and the caller's location. Soon, connections also will face the challenge of carrying text from cell phones and pictures or video.

**A. Wirelines**

Calls are connected to 911 call centers through different paths depending upon the type of communications interface device utilized. As noted earlier, until recently, virtually all 911 calls were placed on wirelines, also known as nonwireless or legacy lines. When a call is placed over a wireline, it then becomes a matter of the functionality of the line, the physical switches that determine the electronic path, the devices the lines travel through and the reach of the particular type of connection.

A notable strength of the telephone line systems is that they are widely used and dependable. The majority of homes already have wirelines connecting them to the system, even if they choose not to activate service from that line. Wirelines are dependable in terms of placing and receiving calls and still are the most frequently used connection when calling 911. That is rapidly changing, however; as noted, last year, 15.8 percent of homes reported that they had only wireless service.[32]

Because wireline use is declining, another weakness of this connection is often overlooked: It is aging.[33] Eventually, the entire wired infrastructure will have to be replaced, as wirelines have a finite life. However, there appears to be little motivation to plan for this inevitability. There are more than 1,300 911 wirelines spanning Florida's 53-thousand-mile landmass. Replacing them as they age represents a significant financial undertaking that few even have discussed.

Another concern with wirelines is that some that connect businesses with many phones are grouped together on a single line. These systems are known as Private Branch Exchanges (PBX). They allow a business to save money by establishing an internal closed network for calling from office to office. The calls placed externally "share" a limited number of lines. The significance for E911 is that the external line displays the same call-back number and location no matter where the caller is in the building. Emergency responders may not be

32

National Health Interview Survey, 2007

33

See, for example, Hatfield's (2003) A Report on Technical and Operational Issues Impacting the Provision of Wireless Enhanced 911 Services Prepared for the Federal Communications Commission

able to pinpoint the PBX system caller's location.

The challenges and possibilities of the newer wireless technology have far overshadowed concern over wirelines. In fact, replacing the old wirelines with connections over newer technology is virtually the only solution offered to the aging wireline threat. Though the newer technology may enhance service and do so more cost effectively in the long run, the current state of the technology still relies heavily on land lines. Moreover, wireless technology still leaves gaps in the system for some callers.

**B. Wireless**

The proliferation of wireless networks has created the most pressing need for 911 reform nationwide. Initially, 911 calls placed from wireless devices often were unsuccessful. In some areas, 911 was not enabled on cellular devices, and the connection was not enabled to carry caller identification and location, as wireline connections could.

Wireless connections are used by cell phones, Voice over Internet Protocol devices, automatic crash notification devices like OnStar, and a host of other devices capable of networking. The 911 wireless connections are, at least for some of the journey, carried over radio frequencies and then converted to wirelines dedicated to the emergency call centers, referred to as Public Service Answering Points (PSAPs). Call takers in some PSAPs, like in Orange County, can tell if a call's origin is wireless or wireline depending upon which line it comes in on.

Successful wireless transmission relies upon the proximity of a cellular tower. Some of the rural areas, where there are fewer towers, still do not have the same level of reception as other areas. It is up to the local authorities to determine if a new tower may be erected and where it will go. This adds to the fragmented nature of the system.

Florida is ahead of many states bringing emergency call service over cellular service up to par with land lines. Organizations that monitor 911 effectiveness, like the National Emergency Number Association (NENA), consider Florida progressive because it has implemented updates to enhance 911 service for cellular connections. Most cellular providers are capable of transmitting enhanced information; all call centers are technically capable of receiving it, though not all do.[34]

34

Service carriers are required to upgrade services so that databases with caller information may be accessed through the 911 system. However, for the information to be transmitted to a PSAP, the PSAP equipment also must be upgraded to receive it, and the PSAP must formally notify the carrier that it is ready to do so. According to the latest published report, now 15 months old, the process is not complete in Florida. See http://dms.myflorida.com/suncom/public_safety/florida_e911/service_providers_information.

**C. Internet and Satellite**

Calls and information also may travel through the internet and satellites. Many in the emergency communications field believe the incorporation of these types of connections into the 911 emergency response system will solve many of the shortcoming found under current configurations. Each offers an alternative that alleviates reliance on older land lines and is capable of sending enhanced information about callers.

**D. Connection Enhancements**

To be considered fully enhanced, connections must be capable of sending to a 911 call center information about the caller along with the call. Namely, the calls should be routed through databases that pick up information about the number and location of the call originator. The availability of this information greatly enhances the public safety community's ability to send the right type of assistance to the right place (and, is, therefore, referred to as "enhanced 9-1-1" or E911).

*Automatic Number Identification (ANI)*

The ability to identify the call-back number of the caller is critical to public safety. If the caller is disconnected or the call taker hears no voice upon answering the 911 call, she can call back to reestablish the connection. The call center may find that the 911 call was placed in error and verify with the caller that no assistance is needed. If the call taker calls the number and it is not answered, it often is standard procedure to dispatch a unit to the address, if it is known. In the event the caller was able to dial, but unable to speak, assistance still may be summoned. It is a matter of PSAP protocol how hang-ups will be handled and whether a unit will be dispatched under such a scenario. That protocol is not standardized in Florida. However, the ability of the call taker to have access to that number enhances the 911 system. Though Florida has made considerable progress in number and location-finding technology, some connections can deliver that information, while others still cannot.

*Automatic Location Identification (ALI)*

Closely related to the connection's ability to deliver a call-back number is the connection's ability to carry the location of the caller. In connections enabled with Automatic Location Identification (ALI), such information appears automatically on the screen of the call taker. Wirelines are capable of carrying both the voice conversation and a "signal" that transmits additional information. The signal was used by telephone companies to determine, among other things, the duration of the call for billing purposes. The billing information, which provides a physical street address, was necessarily resident within the company databases. The signal travels through the database to pick up the caller's location to take along with the voice transmission. The signal also notifies the company when a call had been disconnected. Phone companies used this information to bill for the correct number of minutes. 911 centers can use this information to determine if a caller has hung up or simply is not responding on an open line.

Though protocol may demand that the call takers ask a caller for an address, the call taker in many cases is simply verifying an address she already sees on her screen when she answers the call. This allows the call taker to identify an address, even if she hears no response when she answers the call. The databases that hold location information for each county are called Master Street Address Guide (MSAG). These databases are maintained at the municipal level and must be updated when new developments are built or annexations occur. They are not 100 percent accurate, and the state does not compile information about the number of errors discovered by 911 call takers or others.

| | |
|---|---|
| **Percent in Florida of population covered by Enhanced 911 Service:** | **86.1%** |
| **Number of counties where all carriers send ALI/ANI:** | **46** |
| **Number of wirelines dedicated to incoming call center calls:** | **1,310** |
| **Florida's landmass (square miles):** | **53,000,000** |

The availability of wirelines to reliably carry enhanced 911 information to the call center would seem to be a strength. However, this is not the case for several reasons. First, as noted earlier, consumer use of wirelines is declining. Newer technology may expand opportunities for emergency responders to collect information, but the infrastructure is well behind the emerging technology. Wirelines have a smaller capacity for transmitting information. Second, wirelines are deteriorating. Even when the system is fully enhanced to transmit and receive wireless communications, 911 calls will continue to come in over these lines for years to come.

The federal Wireless Act of 1999 directed all states to upgrade systems for number and location caller identification enhancements. It also allowed states to impose a fee on wireline, and later cellular, customers to fund the upgrades. As previously noted, in Florida, the fee in most counties is 50 cents per line (up to 25 lines) both for wireline and wireless lines. The fee is low compared with other states.

All 67 of Florida's counties are Phase I and II compliant, which means that wireline and wireless cellular devices are capable of sending location and call-back information to call centers. All 67 counties report that their call centers are capable of receiving the information. Therefore, at least on paper, calls placed over the wireless network should have no disadvantage from a public safety standpoint relative to those placed over a wireline. This is not necessarily the case. In terms of locating wireless calls, a few problems remain.

According to the National Emergency Number Association (NENA), a national organization that tracks emergency service issues, only 86.1 percent of Florida's population has Phase I and Phase II service.[35] That is because not all carriers transmit ANI and ALI data.

35

NENA/DOT Wireless Deployment Reports (2008). http://nena.ddti.net/NationalReport.aspx.

There are other concerns about the accuracy of caller location information transmitted over wireless connections. Attempts to pinpoint the location of a cell phone user are imprecise. In some cases, determining a cell phone caller's location requires calculating the distances from the closest cell towers. That may yield a longitude and latitude, but not a street address. This would create problems in a densely populated area, such as a high-rise building. Moreover, many people use cell phones when they are in their cars. When this is the case, the caller becomes a “rolling target” for rescuers.

| Strengths | Weaknesses |
|---|---|
| - Wirelines dependable | - Wirelines aging, less often used |
| - Wirelines already in place | - Wirelines have limited capacity for new technologies<br>- PBX, grouped lines limit ability to locate calls |
| -Wireless ANI/ALI Phase I/II complete | - ANI/ALI still less than 100% activated |
| - Internet expands options for accessing 911 | - Internet and satellite have no challenges related to locating caller |
| - Satellite GPS function enabled | - Low public awareness of limitations of both internet and satellite |
| - New technology offers hope of interoperability | - Coordination of radio frequencies incomplete |

The emergence of newer technology, like automatic crash notification devices and VoIP, further complicate efforts to ensure full coverage for all 911 callers. The technology that sends number and location information of a caller to a 911 call taker is not fully integrated into the system. States, including Florida, are just beginning to design plans for enhancing these signals. In addition, satellite-driven Geographic Positioning System technology has limitations. Experts note that GPS may be unreliable in skyscrapers.

**E. Consumer awareness**

One troubling aspect of Florida's coverage gaps is that callers may be unaware that the combination of communications device and signal may put them at a disadvantage if they need emergency services.

Assuming a caller is able to place a 911 call, and has access to a communications device that transmits a signal over an enhanced connection, the question becomes where will that call go? That is the topic of the next segment of the model.

## 4. THE ROUTING – Where the Call Is Answered Depends upon How It Is Routed

Calls placed to 911 ideally are answered by a call taker located in a center closest to the emergency. It is a marvel of telecommunications technology that is transparent and taken for granted by most. How is it that a caller can dial the same number anywhere in Florida, and the call usually is answered locally and not in Milwaukee?

In Florida, there are many overlapping political boundaries. Even when the political boundaries are discrete, like between counties, calls may end up at a center under someone else's jurisdiction. There are several reasons why a call might be sent to a call center that has no ability or authority to help a caller. One is the type of technology used to send the signal over the various paths needed to reach not a just a call center, but the closest call center that may dispatch help.

| Strengths | Weaknesses |
|---|---|
| - Selective routing technology helps 911 calls go to the closest center | - Systems without selective routing must create inter-local agreements and transfer misrouted calls<br><br>- Systems without selective routing may receive 911 they have to manually transfer to another agency |

### A. Selective Routing

According to the Florida E911 Plan, selective routing technology "is considered to be the most important feature of a fully enhanced system …(that) cannot be overemphasized." Call centers equipped with selective routing only receive calls from within their own jurisdiction. This, at least in theory, means that "smart" routing will insure that the call only can be sent to the call center with authority to directly respond. With selective routing, every calling device, rather than the location, is tagged with an Emergency Service Number (ESN) that determines where the call is routed and which fire, medical and law enforcement agencies have jurisdiction.

At least 28 counties have the more technologically advanced selective routing, which means there are not required to negotiate inter-local agreements for handling misrouted calls, though some of them still do.

At least 39 of Florida's counties use older routing methods. Upgrading to selective routing would improve overall response time by reducing the number of misdirected calls that must be transferred. The call transfers from county to county or city to county are governed by inter-local agreements negotiated bythe counties and filed with the state.[36] The

36
Information about routing and inter-local agreements are taken from county plans on file with the Florida

agreements usually specify to which call center in the neighboring jurisdiction the call should be transferred, so there is a protocol for centers to follow when a call taker receives a call from another jurisdiction. Still, one or more call transfers means more opportunities for error and more time on the line before help is dispatched. Of course, any time a call is transferred, critical information (or the call itself) may be lost.

Calls also are transferred within the borders of each county. Counties configure their centers in many ways and can have varying ways of routing an emergency to dispatch. In regionally combined centers, one call center may serve as both the centralized call center and primary dispatcher for the entire region. In such cases, there is no need to transfer a call received at (for example) a sheriff's office primary call center to a secondary medical emergency call center. Help can be dispatched immediately.

| | |
|---|---|
| **Number of counties with selective routing:** | **28** |
| **Percent of counties with selective routing:** | **42%** |
| **Number of counties with inter-local agreements to transfer misrouted calls:** | **31** |
| **Number of counties with inter-local agreements w/ more than one other PSAP:** | **17** |

Combined centers, such as the one in Alachua County, simply radio directly to needed units for response. However, even in the few counties that have attempted to consolidate call taking and dispatch under one roof, there are exceptions to the rule. Even Alachua County, a county designated as a national "flagship" for its sound communications practices, must transfer some calls out of the call center.[37] At least two municipalities in that county "opted out" of the regionally combined dispatch. In fact, all of Florida's 67 counties are transferring 911 calls at least some of the time within (and, as noted earlier, sometimes across) their boundaries before dispatch.

The necessity of transferring calls from one PSAP to another within a county or across county lines represents a significant vulnerability in the 911 system. However, even when the call reaches the appropriate agency, another set of factors specific to the call center determines how and when the call will be handled.

Selective routing is a strength for 911 systems; those counties without it represent system weaknesses. The state E911 Board continues to work toward funding weaker systems through proportional distribution of E911 Trust Fund collection (discussed in other sections) and grants targeted to rural counties that often lack this technology.

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Department of Management Services http://dms.myflorida.com/suncom/public_safety/florida_911/florida_e911_plan. However, it should be noted that some of the plans are dated 2005 or earlier. Overlap problems in these instances may already have been remedied.

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37
Alachua County was designated as a national Commission on Accreditation and Law Enforcement Agencies, Inc., flagship for its "best practices."

## 5. THE PUBLIC SAFETY ANSWERING POINT – All Call Centers Are Local

The federal intent of 911 across the country is to make sure each time the three digits 911 are called, the Public Safety Answering Point (PSAP) closest to the caller answers the call. As noted earlier, some consider this the termination point of the 911 system. Insofar as a center operates to *answer* calls, a specific funding source, the E911 Trust Fund, is available to support equipment and, recently, training. Policies have largely focused only on getting the call this far. Industry experts, such as the National Emergency Number Association (NENA) and others, consider Florida a progressive state in its ability to facilitate call connection to this point.[38]

However, the individual attributes of the PSAP matter. There is tremendous variation in the resources and abilities present within each of the 258 call centers in the state. These call answering centers have been called the "weakest link in the E911 chain."[39] This is not because they are inherently incapable; it is simply because of the tremendous variability among PSAPs in terms of their technological capabilities and management, and the fact that there is no oversight to determine how effective any of them are.

| | |
|---|---|
| **Number of PSAPs:** | **258** |
| **Percent of PSAPs fully upgraded with number and location receiving:** | **86%** |
| **Number of PSAPs with national accreditation:** | **3** |
| **Number of counties with backup PSAPs:** | **7** |
| **Total number of PSAP staff:** | **5,498** |
| **Number of mishandled calls:** | **Unknown** |

The technological variables of the PSAPs are likely the most numerous of any point in emergency response process. Each PSAP represents a unique combination of equipment and personnel. It must have the infrastructure to accept calls, to process calls and to dispatch units. At this point in the model, when a caller has the ability to call 911, has a device that recognizes 911, and is relayed to the closest PSAP, another set of variables comes into play. The call now must be *received* by the PSAP. That is, simply because an electronic communication is sent, it does not mean every PSAP is capable of accepting it. It does not mean that each call will be answered.

The ability of the call to register at the appropriate PSAP, once it is correctly routed there, is largely a function of the technological and infrastructure capabilities of the PSAP. They include the number of incoming trunk lines, the number of call takers present, the number and type of incoming and transfer lines, the type of call answering and recording equipment, computers with monitors and software to register and process calls, mapping capabilities and adequate facility space.

38 Telephone Interview with Roger Hixon, Technology Issues Director, NENA, December 2008.

39 Weiser, P., Hatfield, D. Bernthal, B. (Spring 2008).

| Strengths | Weaknesses |
|---|---|
| - All PSAPs are capable of receiving enhanced signal | - Less than 100 percent of PSAPs receive enhanced service from all carriers |
| - State requires recording of incoming calls | - Not all have instant playback |
| - E911 Coordinator designated in each county | - Coordinator sometimes offsite, and coordinates only some aspects of service |
| - Some Florida county PSAPs accredited by international agencies | - Accreditation expensive, time consuming |
| - Computer-aided stations used to help process calls in some counties | - No standardization of equipment or training |
| - Availability of alternate 311 number for non emergencies | - Underutilization of alternative possibilities, like 311 |
| - Backup call centers established in some counties in case a call center is disabled | - There is a down time between the time a center is disabled and the time the backup is online. Only 7 counties have backups |
| - Staff positions equal to number of stations | - Many positions not filled |
| - Standardized calculation for staff based upon call load available | - Growth outpacing upgrades in rural counties |
| - Training standards set at state level | - Training optional at local level |
| - Potential for consolidation | - Few centers consolidated |
| - Protocols may be customized for a specific area or region | - No state oversight of call center procedures or effectiveness |

## A. Growth

Experts in the field help calculate the number of incoming lines a call center requires to handle call loads. Still, the number requires consideration. Florida continues to grow, and along with that growth comes the need for additional lines. Growth throughout Florida is not distributed evenly. Some of the smallest counties with the humblest of resources experienced explosive growth from 1990-2000. For example, on Florida's central western coast, rural Sumter County has just seven incoming lines. It is one of the counties experiencing the most rapid growth (+68.9 percent).

Growth, especially in northern rural counties, likely outpaces the state's ability to catch up technologically. Not only are the rural counties at a disadvantage technologically, they have very few representatives in the state legislature to argue for additional funding.[40] Additionally, revenues from municipal sources, such as property taxes, are meager in rural counties. Many of the components needed for a robust response system must be funded locally.

## B. ANI/ALI Issues at the PSAP level

Ensuring that PSAPs are capable of receiving incoming signals is separate from the ability of a telephone or cell phone to send it over a connection. Compliance with federal and state guidelines at this stage requires a PSAP to have the ability to at least receive wireless transmission with call-back number and location information, if available. All of Florida's counties have indicated their PSAPs are capable of receiving this information. However, as previously noted, that does not mean that each of the PSAPs actually is receiving it, or that each is receiving it from every carrier in their service area.

A PSAP first must notify each telecommunications company operating in its jurisdiction that it is capable of receiving its enhanced signal. The company then has a limited amount of time to find a way to start sending it, if it has not already done so.

For instance, Gulf County has notified the state that it is Phase I and Phase II capable, meaning it is capable of receiving call-back number and location information from both wireline and wireless callers. All of the cellular providers that operate in Gulf County are capable of sending both cell number and coordinates of a caller to the county PSAP. However, in mid-2008, there was as least one carrier that the county has not yet officially notified. Since that carrier has not been notified that Gulf County PSAPs are capable of receiving enhanced information from it, it is not required to send it. Therefore, it is reasonable to assume that callers using that carrier in Gulf County will be harder to find than those using another carrier until this is resolved.

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40 Hill, K., MacManus, S. and Mareno, D., eds., (2004). Florida's Politics. John Scott Daily Florida Institute of Government: Tallahassee, FL.

That is not to say Gulf County was remiss in some way. The carrier may have only recently started providing service in the area. The point is that new carriers will continue to move into the state, and as they do, each of the counties in which they operate must request ANI and ALI service. During this time, there will be some gap in service for the caller using that new provider.

**C. E911 Coordinator**

Every county has one person designated as the E911 coordinator. This is a strength for Florida. It ensures that one person in each county is responsible for monitoring needs and approving allowed equipment purchases. Through the coordinators, there at least is the possibility that call taking systems have some level of standardization. Unfortunately, the individual counties determine how the E911 coordinator fits into the county's emergency services structure. In some cases, the coordinator is stationed within a primary PSAP, but sometimes is affiliated with another agency that is not even a call center.

**D. Consolidation of services**

A few call centers have consolidated regionally to more efficiently coordinate provision of services in a geographic area. The E911 Board notes that consolidation reduces overhead costs, and experts say it eliminates gray areas of jurisdictional overlap. However, there are logistical and practical limitations to how large an area may be consolidated for a single call center. Local knowledge of terrain is helpful in guiding first responders to the scene of an emergency.[41]

**E. Staffing**

Staffing the center also is a challenge. By definition, call takers operate in an environment that involves emergencies. Frequently, call takers must answer calls that deal with life and death situations. They must remain calm and administer the best assistance they are trained to handle. Nevertheless, salaries for this position are low and the hours are long.

At the PSAP level, managers are required to staff at levels that provide adequate service. The state E911 plan specifies that calls should be answered in 10 seconds 90 percent of the time (20 seconds for TDD lines). Keeping staff levels high enough to meet this standard has been identified as a problem. Combined with increasing call loads, 911 callers may be waiting longer for an answer.[42] Because so many PSAPs have difficulty recruiting staff, employees often are required to serve mandatory overtime. Some call center managers noted that this has led to problems in overall morale and retention.

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41
An observation made by state Sen. Stephen Oelrich, who was formerly a sheriff in Alachua County when it created a consolidated county-wide call center.

42
Alachua County bureau chief Linda Jones noted that in mid- to large-sized counties, staffing can be a problem. She said she has had as many as a quarter of the call-taker positions vacant and is continually looking for ways, such as Internet postings, to recruit call takers.

**F. Call loads**

Florida's rapid growth meant that call loads for 911 centers also continually increased. That growth has flattened, and the state's total call load declined nearly 5 percent, from 15.2 million calls in 2007 to 14.5 million in 2008, but it is reasonable to expect that growth to rebound. There also are no statewide figures examining county-by-county call loads; some jurisdictions probably are still seeing increases. As mentioned earlier, new technology also has resulted in a greater number of 911 calls and that is expected to continue.

**G. N11 Options**

Just as 911 was established to handle emergency calls, the FCC has approved other universal three-digit numbers to connect callers with services. The availability of these numbers could reduce the number of non-emergency calls 911 call takers must process.

For instance, the FCC has designated 311 as an additional non-emergency information number. Again, it is up to each county whether and how to use this number. News stories emerge daily about 911 calls reporting incorrect fast food orders or legitimate, but non-emergency, inquiries like power outage reports. State coordinators estimate that nearly 50 percent of the calls to Florida 911 centers are non-emergency.

Orange County has a fully functional 311 system, while Alachua County utilizes these lines only some of the time, such as during hurricane recovery. Other counties are not able to segregate the calls at all. Though there clearly are advantages to opening the lines for true emergencies, even this solution has its weaknesses.

First, there is a question of who should staff the 311 lines. Since the calls coming in on 311 should not be emergency calls, it would make sense that the call takers would not require extensive training. However, sometimes those with true emergencies might call 311 instead of 911. The call taker must be prepared to identify an emergency coming in on the 311 line and summon appropriate emergency assistance. The level of training recommended for a call taker in this position would represent another gray area that may increase the fragmented nature of the system overall. Second, there is the issue of funding. Presumably, the 311 calls would not be covered by funding secured for the 911 system, even though the alternative improves the 911 system by reducing its burden.

**H. Center training and certification**

A number of organizations provide recommended protocols to help center managers cope with the myriad challenges of equipment, staffing, and the many administrative functions, like logging call problems and managing budgets.

National organizations like the Commission on Accreditation for Law Enforcement Agencies (CALEA) provide management and organizational guidelines to enhance call center performance. The accreditation process is rigorous and expensive. Only three

communications centers in the state—Alachua County, Citrus County and Sarasota County—hold the CALEA accreditation for their call centers. Keeping the certification not only represents an application expense, it represents a cost in additional staff hours required to compile and report the required information on standardized forms.

**I. Call answering equipment**

There is no coordination of the type of equipment purchased in each call center. Coordinators only determine whether the equipment meets standards that allow the purchase to be reimbursed from E911 Trust funds. Therefore, there are endless possibilities for system configurations. Further, since funding only covers call answering equipment, but not dispatching equipment, the configuration of the center depends upon its ability to cobble together resources to dispatch assistance to the caller.

## 6. CALL TAKING – Abilities of the Call Taker Affect System Success

The next set of variables in the system acknowledges the role played by the specific telecommunicator who answers any given call.

There is an important distinction in Florida made between the call taker and the call dispatcher, though some use the terms "call taker" and "dispatcher" interchangeably. However, the two functions within the system are completely different from a funding perspective. The call taker is the first person a distressed caller speaks with. The call taker decides whether the call is, in fact, an emergency. If the call truly is an emergency, the call taker determines what type of assistance the caller needs.

The professional who decides how many units to send and from which agency those units will be deployed is performing a dispatch, not call taking, function. The dispatcher communicates with the rescue agencies, or directly with the rescue personnel, to direct them to the scene. In some call centers the call taker may also act as the dispatcher. At others, the dispatcher may be at another work station, or even another office.

| Strengths | Weaknesses |
|---|---|
| - Training standard established at 208 hours | - Training not mandatory for counties |
| - State standards set for maximum response time | - No state audit of response time |
| - Call recording equipment captures call handling information | - Call handling information kept only at county level; no external oversight |

**A. Disparate funding opportunities**

Making the distinction is important for several reasons. First, the funding mechanisms that supplement call taker costs are not the same as those that supplement dispatcher costs. Florida's E911 Trust Fund guidelines specify that only those activities related to call taking, and not dispatching, may be reimbursed from the fund.

A call taker may have a very limited range of responsibilities or one that encompasses many. That is determined by the individual call center. If a call taker also acts as a dispatcher, salary and training expenses may only be recovered from E911 funds for the percentage of the time the employee is specifically engaged in answering 911 calls.

This is a characteristic of Florida's emergency system that accounts for some of the system's fragmentation. Therefore, one of the recommendations of this study is that coordination and support of 911 services should extend fully from the call placer to the first responder(s) on the scene.

**B. Training**

It is important to note that, at this time, each of those 1,300 call-taking positions may be staffed by a person with many years' experience and training or none at all. This is one of the most contentious issues in Florida's 911 emergency response system.

Florida is near the top of all states in terms of the number of hours of training a call taker should have before answering E911 calls. Dispatch Magazine maintains of list of training requirements across the states. That list is included in Appendix B.

| | |
|---|---|
| **Number of states that mandate call-taker training:** | **27** |
| **Number of hours recommended call-taker training:** | **208** |
| **Number of call-taking positions in Florida:** | **1,307** |
| **Number of hours required call-taker training in Florida:** | **0** |
| **Number of call takers who have more than 0 hours training:** | **Unknown** |

Only five states specify more call taker training than Florida (Nevada has the most, with 480); however, 27 states make the training hours mandatory. Florida does not.[43] It may recommend more hours than other states, but that does not mean Florida's call takers are better trained than those in other states. In fact, it does not mean that call takers are trained at all. There is nothing to prevent a person with no experience and no training from answering 911 calls and making decisions the first day on the job.

Prior to 2007, Florida had neither a mandate nor a recommendation for training and certification of 911 emergency response call takers. In 2007, the state passed legislation acknowledging that call takers should have standardized training. However, legislators stopped short of directing the counties to train call takers. The Denise Amber Lee Act recommends, but *does not mandate*, 208 hours of training for call taker certification.

There are existing programs offered by private entities and public institutions, like community colleges, that have developed curricula to properly train call takers. Funds available through the E911 Trust Fund may be used to pay for call taker training. The state does not monitor which counties train staff.

It would seem in the state's best interest to use E911 Trust funds and other sources to train call takers. However, some fear training will raise expenses because trained call takers will require higher salaries. Further, some are concerned that meeting training requirements may require vesting call takers in retirement programs that first responders in high-risk categories receive.[44] However, others note that providing training and certification helps agencies attract and retain better employees.[45] Over the long run, this may result in cost savings and better service provision.

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43
Dispatch Magazine, www.911dispatch.com/training/training+survey.html.

44
By the end of the 2009 legislative session, the Sheriff's Association had reversed earlier opposition and moved to support mandatory training. The Florida Police Chiefs Association remained opposed.

45
Interview with City of Gainesville Fire Chief Bill Northcutt.

Once a call taker has determined that an emergency exists, someone must make the determination regarding which specific unit or units should be sent to the scene. That decision is made by the dispatcher.

Again, as already noted, one of the most important points about dispatch is that its activities are not covered by the state E911 Trust Fund. In fact, statutes specifically prohibit E911 Trust Fund revenues from paying for dispatch activities. Every portion of emergency response from this point forward is left for the counties to fund on their own.

This is one of the most critical aspects left unaddressed when experts discuss developing an effective and seamless 911 system. If a call taker also acts as a call dispatcher (more common in rural counties), only the percentage of time taking calls and training to take calls can be paid with E911 Trust funds.

| Strengths | Weaknesses |
|---|---|
| - New technology will improve communication | - Old technology used in many agencies |
| - Counties submit dispatch plans to state | - No central dispatch authority in any county<br>- Funding for devices not covered by E911 Trust Fund |

In no other point in the process are there greater possibilities for fragmentation in the state's ability to facilitate communications among first responders. Dispatch is left to the counties. The only dispatch function even partially funded and coordinated by the state is radio communication among dispatchers and responding agencies.

Protocol for dispatching assistance to the scene is not coordinated at the state level. The call taker's options for summoning personnel to respond to the scene is determined by the call center configuration, protocol for dispatch and the equipment over which she will dispatch help. The dispatch apparatus varies across the 258 PSAPs throughout the state.

**A. Call taking and dispatch functions**

Some call centers dispatch only for the agencies in which they are housed. For instance, if a call center is housed in a sheriff's office, the call taker or co-located dispatcher may communicate directly with deputies in the field to activate them. However, if the call is for fire rescue, he may transfer the call to the city or county fire department, whose dispatcher would determine which stations and units should respond. As previously noted, very few call centers directly dispatch all fire, medical and law enforcement services. All transfer at least some of the calls to another agency for dispatch.

Clearly, any time a call is transferred, time is lost, and the call may be lost as well. It adds one more point in the process at which something might go awry. Many different systems are used to transfer calls from call taking to call dispatch.

Some calls are transferred over a telephone line. Of those transferred over a telephone line, some systems are wired such that the call taker can press just one button to transfer the call. Others are more complex.

Calls not transferred over land line may be transferred by radio. Computer-aided dispatch helps coordinate the network when all agencies can access the system and monitor it for calls that might come their way. Computers with mapping capabilities also help dispatchers determine which units are closest to an emergency.

Time of response from dispatch reception to "wheels on the road" and arrival at the scene is subject to state standards. The ability to meet those standards may be attributed to the responding agency or personnel. Fire trucks may not leave the station immediately, for example, because the equipment used to summon them is slow. Alachua County staff said that if more than one unit is needed, they still only have the ability to summon one at a time. The dispatcher must send a tone over the dispatch radio to the station, wait, announce the emergency, wait, send another tone to another station, and so forth. The dispatcher must finish notifying all stations before dispatching for other emergencies.

**B. Consolidation**

As noted, some counties have attempted to save money and improve coordination by combining call taking and dispatch functions into a single center. If one central agency can receive all the 911 calls for a county or region, and also have the authority to decide which and how many units must be sent to the scene, efficiency should improve.

The call center in Alachua County is one example of a consolidated call center. Rather than maintaining a call center within each municipality within the county, the call taking, processing and most dispatching functions were merged into one center. The center is located within and operated by the Alachua County Sheriff's Office, and each municipality served by the center contributes funds to maintain it.

Some law-enforcement officials have suggested that call center functions could be combined for even larger geographical regions. For instance, two or more counties could merge functions and share resources. The money saved from eliminating any duplicated services may be used to upgrade equipment, facilities or training.

Under this scenario, service to those within the region would be improved provided that the region is not too large. How large of a region should be considered is a subjective decision. Consolidating too great an area could cause problems; for example, a dispatcher in Jacksonville might not know the roadways in rural Alachua County well enough to always dispatch the appropriate units.[46]

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46
Interview with state Sen. Stephen Oelrich.

Once a dispatcher determines which agency or agencies to activate, he must be able to communicate that need to the agency. As on the "consumer access" side, this is a matter of both the ability to send the call and the agency's ability to receive it. The agency and its first responders also must be able to maintain contact with each other and with dispatch for updated information. The ability of systems to "talk" to one another at this segment is critical.

| Strengths | Weaknesses |
|---|---|
| - Florida Interoperability Network (FIN) helps coordinate response | - Interoperability of responder radios |
| - 800 MHz re-banding will reduce interference from non-emergency frequency users | - Re-banding incomplete |
| - Some radio expenses funded through traffic citation assessments | - No funding available from E911 trust fund |

There is an irony to note, in that recent policy and funding changes made to bolster 911 systems occurred when it became apparent that first responders may not be able to communicate with one another. As noted earlier, the issue of first responder radio interoperability moved up on the public agenda after the 9/11 terrorist attacks. However, that equipment used by Florida's first responders is not covered by E911 Trust funds.

**A. Radio interoperability**

The radios used by first responders in Florida, those who physically arrive first at an emergency situation, are not part of the E911 system as defined by statute. The state compiles a Radio Communications plan to coordinate communications devices used by law enforcement agencies, as required by F.S. 282.111. The statute directs the Department of Management Services to "develop and maintain a statewide system of regional law enforcement communications." The plan notes that the system does not cover devices used by consumers to call 911, because that system comes under the E911 statutes.

In 2004, the state contracted with M/A- Com to work toward providing 800 MHz radios to every sworn and non-sworn public safety official who required network connection.[47] The Statewide Law Enforcement Radio System (SLERS) and M/A-Com continue to work together to complete this process. However, again, there is no formal mechanism to monitor how well M/A-Com's radios are working, which represents a vulnerability. In New York, the same company won the contract to provide interoperable radios, but there was a requirement to test the system's effectiveness. The system often failed. It is unclear whether Florida's equipment has had a similar test.

47 www.oppaga.state.fl.us/reports/comm/r04-64s.html

Currently, radios in the state are known to use diverse technologies and operate on different frequencies. Currently in use are UHS, UVS, 800 MHz, and “Platform 25,” to name a few.

**B. 800 MHz issue**

Another area that affects how effectively help is dispatched is the band over which dispatchers communicate with other agencies and responders, and over which individual responders communicate with their base and each other. The idea is that specific frequencies should be dedicated to emergency communications so that other calls are not interfering with these transmissions.

To resolve the problem of interoperability, radios are being converted to operate in a specific realm of the 800 MHz bandwidth. Bandwidth has been reserved for this use. Unfortunately, because of the proliferation of cellular companies, some non-safety communications are encroaching on these waves, causing interference for responders. The state has established a plan to “re-band” the 800 MHz frequency to reserve it for emergency use. However, even if the re-band issue is fully addressed and agencies all convert to 800 MHz radios, that technology is rapidly becoming outdated.

## 9. VEHICULAR TRAVEL – Keeping a Clear Path

The last leg of the trip in the process from emergency caller to emergency response is the physical travel from the remote location to the scene. Obviously, many factors outside the system architecture affect the amount of time it takes a unit to arrive on the scene once it receives a dispatched call.

However, the factors are worth noting because the decisions of local government entities may have an unintended effect of reducing or increasing response time. In addition to the federal and state policies that might affect conditions, such as placement and condition of roads, government facilities and building codes, Florida's 67 counties and 412 municipalities each may create policy that affects response time. [48]

| Strengths | Weaknesses |
|---|---|
| - Local planning that improves traffic flow | - Local planning that ignores traffic flow |

Trends in urban planning affect traffic patterns at the local level. For example, the recent incorporation of "new urbanism" perspectives into city planning are designed to create more compact, and thereby, from a public services standpoint, more efficient communities. Along with these practices are often plans to "calm traffic" and create pedestrian-friendly venues.

However, there is at least anecdotal evidence that city officials dismiss the concerns of public safety officials when considering such devices as traffic circles.[49] City planners designing streets without input from emergency response organizations may unintentionally increase how long it takes for first responders to arrive on the scene.

The realities of vehicular travel also must be considered from a training perspective. Callers or dispatchers new to a community may be unfamiliar with topographical features and traffic patterns that might slow emergency vehicles. Even with a standardized statewide training curriculum, PSAPs would need to have available resources to train call takers and dispatchers in situations specific to that center or area.

48
Florida League of Cities, www.flacities.com.

49
Interview with Gainesville Fire Chief Bill Northcutt, October 2008.

# VI. Summary and Discussion of Findings

The analysis revealed that Florida does not have a 911 "system," but a patchwork of agencies, protocols and technologies loosely cobbled together to respond to 911 calls. To create a "seamless end-to-end" emergency response system, Florida must overcome the fragmentation and establish a coordinated 911 emergency response system.

The nature of the fragmentation in areas that affect 911 are summarized below in seven key findings that represent challenges for 911 service provision. Each finding is accompanied by a recommendation or recommendations and a discussion of the issue.

## Finding 1:

*Florida has no one board, office or person with the authority to monitor how effectively calls for emergency assistance are handled, and has no statewide data to assess error rate, response time or any other measure of the delivery of service.*

**Recommendation 1a**
Redefine 911 as a comprehensive Emergency Response System inclusive of all aspects of government emergency service provision from the time a caller dials 9-1-1 to the time help arrives on the scene.

**Recommendation 1b**
Assign a state-level position or committee to oversee and coordinate all aspects of emergency response in Florida, from the time a caller attempts to place a call to the time assistance arrives at the scene. Individual or committee should have the authority to:

- collect comprehensive incident reports from call centers;
- evaluate and approve emergency response equipment that will interconnect with other equipment used in the state;
- evaluate call center protocol;
- insure that all emergency response personnel have adequate training;
- establish minimum standards for call handling and disciplinary procedures for those who make critical errors;
- evaluate county comprehensive plans to determine if local zoning plans are consistent with provision of superior response to 911 calls.

**Recommendation 1c**
Establish a statewide blue ribbon task force of all stakeholders in Florida's emergency response community, including representatives from law, medical and fire emergency rescue agencies, the legislature, telecommunications industry, private and community college training programs, state departments that facilitate 911 response and the public, to study the feasibility of these and other recommendations for improving Florida's 911 and emergency response system.

**Discussion**

One of the biggest challenges Florida faces in creating a 911 emergency response system that is "seamless" and "end-to-end" is a semantic one. Stakeholders interviewed by the consulting firm often held differing views of what is, and what is not, part of the 911 system. There appears to be a false assumption that everyone holds the same idea of where the system terminates. Is it when the call is answered, as F.S. 365 suggests by funding only for activities related to calling 911? Or is it when emergency personnel resolve the emergency?

A public discussion among stakeholders must start with a clear definition of what Floridians believe and what the 911 system should entail. It would be helpful to determine what public expectations are with regard to the 911 system.

At the very least, there must be a high-level official assigned to unify and monitor the various segments of the 911 emergency response system to address in a coordinated fashion all those elements that are activated from the time a caller needs assistance to the time it arrives. This includes consideration and coordination of, at the very least, equipment, protocol and personnel needs. States with strong oversight are ahead of those without it in terms of deploying the latest technology for 911 emergency response.[50] Though Florida has a codified E911 Board, it is small, lacks diversity and has few powers besides overseeing disbursements.

Two cautionary notes are appropriate here. First, it is unlikely that central coordination will find wide public acceptance if that central authority has the ability to issue what amounts to unfunded mandates. Already groups have mobilized to defeat suggested improvements in the system, like mandatory training for call takers (discussed in Finding 2), because of concern that local budgets cannot be stretched to accommodate it.[51] A broadened scope of activities that may be funded through state E911 Trust Funds must accompany any establishment of such a position.

Second, call centers must not fear disciplinary action upon surrendering incident reports. It is unlikely that those who supervise call centers will support such centralized reporting unless there are assurances that data will be used to improve the system (as it is with airport traffic controllers), and not to punish centers when mistakes occur. Resolving individual incidents should remain at the local level, though there should be some consistency in procedures and consequences when dealing with errors.

50
See Weiser, P., Hatfield, D. and Bernthal, B. (Spring 2008) and Monitor Group Accelerating Deployment of Nationwide E911 Summary Finding of the NENA SWAT E911 Stakeholder's Initiative (2003)), available at http://www.911monitor.com/Summary.pdf.

51
See, for example, the Florida Police Chiefs Association's legislative priorities for 2009 (http://www.fpca.com/2009legislativepriorities.htm). Among them is a specific position against mandatory training requirements.

## Finding 2

*Florida underfunds its 911 system. Florida's 911 fees are in the bottom third of all states, its fee collections are declining and it pays less than two-thirds of the cost of 911 service, leaving the rest to cash-strapped counties. And state law prohibits spending 911 funding on dispatch services, seen as an integral part, if not the purpose, of a 911 system.*

**Recommendation 2a**

Increase 911 collection from the current $0.50 maximum and attach such fees to all newer telecommunications devices as provided for in Florida Statutes.

**Recommendation 2b**

Amend Florida statutes to expand the range of expenses that may be covered by the E911 Trust Fund to include all aspects of emergency response.

**Discussion**

As it now stands, Florida 911 coordinators estimate that 61 to 66 percent of 911-related fees are covered by the E911 Trust Fund. Counties must find resources to cover the rest. That estimate considers solely the expenses that are considered 911-related under Florida statute—those expenses incurred by calling 911. Counties accrue many expenses responding to 911 calls that are not considered part of the 911 system, for funding purposes, and therefore are not reimbursed. Therefore, if the definition of 911 and its funding source is expanded, as herein suggested, a clearer picture of financial needs will emerge. Because a greater range of expenses may be reimbursed, there must be an increase in funding. Florida's economy makes it unlikely that the state or counties can find additional revenue from traditional sources.

## Finding 3

*Florida's 911 calls are answered in 258 call centers, all with their own standards for training, protocol and equipment. Florida recommends, but does not mandate, training for 911 call takers. As a result, centers do not necessarily employ industry best practices and standards, and Floridians receive uneven levels of service.*

**Recommendation 3a**

Minimum standards for training, protocol and equipment should be mandated for all call centers such that each has

- appropriately trained and certified personnel to answer, process and dispatch calls;
- protocol for handling calls based upon emergency-industry established best practices;
- call answering, dispatch and field communications equipment that is compatible within and across all emergency service agencies in Florida.

**Discussion**

In 2008, legislation passed that created training standards for personnel involved in processing 911 calls. Groups such as the Association of Public-Safety Communications Officials (APCO) and the Denise Amber Lee Foundation seek to make training mandatory. The APCO website correctly notes that firefighters, police officers and even hairdressers must be state

certified, yet the person who answers a 911 call need not. A move toward mandatory certification also may help call center managers retain currently employed call takers and attract new applicants.[52]

## Finding 4

*Florida's 911 system still has a rural-urban divide, even though a stated goal of federal law establishing modern 911 systems is to improve service to rural areas.*

**Recommendation 4a**
Increase funding for the state's 30 rural counties through non-recurring funding until all rural call centers provide services comparable to urban ones.

**Recommendation 4b**
Allow counties with underfunded 911 call centers to establish Municipal Services Taxing Units (MSTU) to provide a recurring source of finding for provision of E911 emergency response services.

**Recommendation 4c**
Provide grant-writing assistance for rural counties.

**Discussion**
Call centers operating in rural counties will need assistance to insure that emergency callers in those areas receive the same level of service that callers in larger counties receive. Though call volumes are lower in the rural counties, the resources to handle calls are often outdated relative to equipment used in urban ones.

This report does not include a technical analysis of all the equipment used by the counties for call taking, and therefore cannot conclude that equipment used by rural counties is inferior to that used in urban counties. However, even a review of the equipment listed on county reports filed with the state found a wide range of equipment in use, and that rural and urban counties use clearly different technology.

Part of the reason rural counties are at a disadvantage in E911 funding is due to the structure of the allocations. Money collected from customers to support 911 is returned to each county based upon the number of customers in that county. Clearly, if very few people contract for service in an area, even if the area is geographically large, the fees charged will not represent a great deal of revenue for the county.

This is a problem because rural counties in Florida are growing more rapidly than the national average for growth. This means there likely will be a lag between the time population increases and the time, if any, that resources levels are adequate.

In the last two years, Florida has earmarked funding to help rural counties upgrade. Federal

52
Interview with Bill Northcutt, City of Gainesville Fire Chief, October 2008.

grants are available as well.[53] However, the county must have personnel with the time and expertise to apply for grants. Even with the grant-writing function supported, the level of funding available for grants in coming years is anticipated to be lower than in previous ones.[54]

## Finding 5

*Florida has yet to establish N11 service, which would reduce the instances of 911 centers being overwhelmed by inappropriate calls.*

**Recommendation 5a**
Insure that N11 services are available throughout the state.

**Recommendation 5b**
Formulate statewide public information campaigns to help consumers better understand 911, which may include:

- Appropriate reasons for calling 911
- Alternative N11 numbers available for non-emergencies (311), social service referral (211), highway conditions (511), and other services

**Recommendation 5c**
Increase the severity of penalties from its current misdemeanor maximum fine of $1,000 for placing harassing or fraudulent 911 calls.

**Discussion**
Keeping 911 lines open for true emergencies is clearly a priority. A person in a life-threatening situation should reach a live person promptly upon calling 911. Reducing the number of non-emergency and harassing calls on 911 lines clearly is in the best interest of emergency response. N11 numbers have the potential to alleviate traffic on 911 calling lines, as it is estimated that 50 percent or more of the calls answered in call centers are not emergencies. Some counties, like Orange, have a fully operational 311 system. Others, like Alachua, utilize 311 during high traffic times, such as the aftermath of a hurricane. Funding should be available to support these systems, even though they are not technically a part of the 911 system. They will improve the 911 system by reducing call volume.

However, the availability of numbers like 311 or 211 cannot reduce the call volume if the public is unaware they exist. Expansion of N11 numbers should be accompanied by public information campaigns to help support them.

Harassing calls are another matter. They represent a significant cost for taxpayers when teams are sent on false alarms; they may contribute to the stressful environment of the call taker; and, most importantly, they tie up lines that would otherwise be open for true emergencies. Deterrence along with public education may reduce the number of these calls. Higher fines, or even restitution collected from those found guilty, may deter others.

53
For instance, Public Law 110-246 (The Food & Energy Security Act of 2007) makes federal loans available to rural counties through the Secretary of Agriculture.

54
Telephone interview with Patricia Greene, E911 Board manager.

Technological solutions also should be considered; the National Association of State 911 Administrators (NASNA) has asked that regulators look into such options as call blocking to prevent repeat harass calls from NSI phones.[55]

## Finding 6

*Florida's coordination of equipment used for emergency response remains incomplete and hinders seamless communication throughout the state.*

**Recommendation 6a**
Conduct comprehensive study of equipment available to place 911 calls, receive 911 calls, dispatch emergency response and communicate with emergency responders in the field to detect interconnectivity vulnerabilities.

**Recommendation 6b**
Establish state-level lists of approved equipment or standards for interconnectivity among all types of devices used to access and mobilize emergency response. These lists will be consulted by E911 purchasing authorizes.

**Recommendation 6c**
Ensure that all users of E911 resources, such as the Florida Interconnectivity Network, have adequate training to do so effectively.

**Discussion**
Many different types of specialized equipment is needed to activate a seamless, end-to-end 911 system. Since there is no centralization to insure that all equipment purchased can communicate with other equipment purchased, a seamless system cannot be built or maintained. Some equipment used by PSAPs is listed on individual county reports submitted to the state for inclusion in the overall State E911 Plan. However, only the equipment used to *answer* calls is noted. Equipment used for dispatch, unless it is integrated into call-taking equipment, is not listed on the plan. However, when one considers only the call taking equipment, there is a great deal of variation across the counties.

The type of equipment used for dispatch and among first responders in the field is not reported for inclusion in the State E911 Plan. There is a plan for coordinating the remainder of the equipment used for emergency response, but that information is contained in another report, created and issued by another office. The state's plan for dispatch and first responder radio equipment is developed by another department, the Department of Management Services Telecommunications Division.[56]

55
NASNA makes a compelling, well-researched argument in its Petition for a Notice of Inquiry Regarding 911 Call-Forwarding Requirements and Carriers' Blocking Options for Non-Initialized Phones, CC Docket Number 94-102. Available online at http://www.nasna911.org/docs/Petition-Non-Initialized-Devices.pdf.

56
That plan is available online at http://www.dms.myflorida.com/suncom/public_safety/radio_communications/radio_communication_plans.

It is unlikely that PSAPs will willingly surrender authority to select their own equipment and vendors. This report does not recommend one vendor over another nor advocate for removing purchasing authority from the counties or PSAPs. Rather, the centralized authority recommended in Finding 1 would retain records of all equipment, not just call-taking equipment, used by PSAPs and provide information about interconnectivity and compatibility for the equipment a PSAP might consider. This would give county-level coordinators and PSAP managers information about what other call centers are purchasing and help them evaluate various products under consideration.

## Finding 7

*Florida has made significant progress in incorporating new technology into the 911 system, but other infrastructure vulnerabilities remain unaddressed.*

**Recommendation 7a**

Conduct a comprehensive assessment of the state's wireline infrastructure to determine if it is practically sustainable for 911 emergency response until newer technology supplants it.

**Recommendation 7b**

Continue to encourage telecommunications industry representatives to upgrade devices to enhance them with the latest available technology for locating 911 callers, such as GPS.

**Discussion**

Wirelines, also referred to as "legacy" lines, are deteriorating throughout the country. There was no reference available to determine whether Florida's wired network is capable of carrying 911 signals until technological alternatives become viable. It makes sense that Florida, which has seen much of its growth in the latter part of the last century, may be in better shape than others because the lines were laid more recently than other states. However, this assumption has no empirical support that this research team was able to access.

Further, even if Florida's wired connections are in reasonable shape throughout the state, new technology still must replace them eventually. Even wireline connections in the best of shape have limited capacity as connectors. Newer telecommunications devices are capable of transmitting text, pictures and video. Old lines can't carry this information to the PSAPs.

Nevertheless, those in the telecommunications industry should continue to enable upgrades for 911 use. Installation of GPS devices into wireless devices, for instance, will greatly enhance capable PSAPs in obtaining more accurate location information about wireless 911 callers. Upgrades in technology, like that which would help resolve challenges of using GPS to locate a single caller in a skyscraper, can only enhance the state's ability to save lives.

# VII. Conclusion

Researchers and team members originally approached this as a study of the 911 system to understand why failures happen and what might be done to prevent them in the future. It became evident that this task was impossible because there is no 911 "system" in Florida.

There is enhanced 911 service in the state that allows most callers to use the numbers 9-1-1, and in most cases, reach a call taker who can identify the caller's location and call-back number. That is the extent of E911 in Florida.

There is no overall system that incorporates all the elements of rapid emergency response. There is no one person or board that ensures callers have access, that telecommunications devices and the connections they use will work when they call 911, and that the person who answers the call has the ability and desire to assist the caller. There is no one person or board that is responsible for ensuring that communications equipment purchased is compatible with other communications equipment used in the state, from consumer to responder. .There is no one person or board that monitors how well Florida responded to its 14.5 million 911 callers last year.

It is evident that many isolated elements of the 911 emergency response work. But, as noted in the discussion, if one element works and another fails during the emergency response sequence, the chain of communication is broken and the system fails that caller.

Because the system lacks any overarching central oversight, there are multiple points where gaps in the system may result in failure. Continued funding of new technology, training and procedures through the entire sequence of call-to-response is a necessity to reduce the opportunities for both technological and human error. Centralization under one board or person would increase the coordination and accountability of the system. Consolidation of call taking and dispatch functions would reduce transfers, and thus chances for errors, and reduce costs by eliminating duplicated services.

A state with 53 million square miles of land mass, 18 million residents and 84 million visitors cannot afford to have a loosely coordinated 911 emergency response system. As one 911 expert noted, "When 911 calls fall apart, bad things happen."[57] Lives are lost.

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57
Remarks by consultant Mike Williams, quoted in Jonsson, Patrick (2008 Sept. 11). "Delays, mistakes plague 911 system," *Christian Science Monitor, p. 3.*

## APPENDIX A: Interview List

The research team conducted numerous formal and informal interviews with individuals who deal with various aspects of 911, from those who design the policy and technology to those who use or are affected by it. Interviews were conducted in person, over the telephone, via e-mail and during a round-table discussion. The insights of those herein listed enhanced the researchers' understanding of the various components activated during emergency response. Their appearance on this list in no way implies support for this report or any of its recommendations.

State Senator Steve Oelrich (former Sheriff of Alachua County)
Emergency Services Consultant Randy Kerr
E911 Board Manager Patricia Green
E911 System Coordinator Wink Infinger
Florida Association of Public-Safety Communications Officials President Susan Pettingill
Denise Amber Lee Foundation President Mark Lee (also father-in-law of Denise Amber Lee)
National Emergency Number Association Technical Director Roger Hixon
High Springs City Attorney Tom DePeter
Liberty County 911 Coordinator Stephen Ford

**From Alachua County:**
County Commissioner Lee Pinkoson
Homeland Security Agent Frank Stegl
Gainesville Fire Rescue Fire Chief Bill Northcutt
Combined Communications Center Division Manager Linda Jones
911 Coordinator Susan Nelson
Bureau Chief, Communications Operations Bureau, Pat Ford Thomas
Financial Bureau Chief Patty Justice
Communications Commander, Communications Operations Bureau, Sylvia Armstong
Communications Commander, Communications Operations Bureau, Ryan Lee
Executive Officer, Technical Services Division (Alachua County), Sammie Cooper
Gainesville Police Department Lt. Wayne Ash
Former Combined Communications Center call taker who wished to remain anonymous

## APPENDIX B: 911 Call Taker Training Requirements

| State | Hours | State | Hours |
|---|---|---|---|
| Nevada | 480 | Montana | 40 |
| District of Columbia | 360 | New York | 40 |
| Louisiana | 320 | Ohio | 40 |
| Virginia | 280 | Texas | 40 |
| **Florida** | **208** | West Virginia | 40 |
| Kentucky | 160 | Massachusetts | 32 |
| California | 120 | Utah | 24 |
| New Mexico | 120 | Missouri | 16/40 |
| Pennsylvania | 104 | Alabama | 0 |
| New Jersey | 90 | Alaska | 0 |
| Arizona | 80 | Arkansas | 0 |
| Connecticut | 80 | Colorado | 0 |
| Oregon | 80 | Idaho | 0 |
| South Carolina | 80 | Illinois | 0 |
| South Dakota | 80 | Indiana | 0 |
| Tennessee | 80 | Kansas | 0 |
| Washington | 80 | Michigan | 0 |
| Georgia | 64 | Nebraska | 0 |
| Wyoming | 58 | New Hampshire | 0 |
| Maine | 56 | North Carolina | 0 |
| Iowa | 40 | Oklahoma | 0 |
| Maryland | 40 | Vermont | 0 |
| Minnesota | 40 | Wisconsin | 0 |
| Mississippi | 40 | | |

Source: National Emergency Number Association

## APPENDIX C: E911 Trust Fund Requirements, F.S. 365.172

Expenses that may be submitted by counties to E911 Board for reimbursement, as specified in Florida Statutes:

- Call Answering Equipment
- Call Transferring Equipment
- ANI Controllers
- ALI Controllers
- ANI Displays
- ALI Displays
- Station Instruments
- E911 Telecommunications Systems
- Visual Call Information and Storage Devices
- Recording Equipment
- Devices for Hearing Impaired
- PSAP Backup Power Systems
- Consoles
- Automatic Call Distributors and Interfaces
  - Integrated Computer-Aided Dispatch Systems for that portion of the systems used for E911 call taking
- Network Clocks
  - Salary and Associated Expenses for E911 Call Takers for that portion of their time spent taking and transferring E911 calls
  - Salary and Associated expenses for a county to employ a full-time equivalent E911 Coordinator Position
- Full time Equivalent Mapping or Geographical Data Position
  - Staff Assistant Position for the portion of their time spent administering E911 system
- Training Costs for Call Takers, Supervisors and Managers
- Next Generation E911 database services
- Next Generation E911 Equipment
- Next Generation E911 Routing System

Expenses expressly denied reimbursement:

- Capital and operating costs after the call is transferred to the responding agency
- Building construction, maintenance or lease

## APPENDIX D: A History of 911 and Federal Policy

Though legislation formally designating 911 as the national emergency response number was not passed until 1999, the federal government has been involved in promoting a universal number for more than 40 years.

A law enforcement commission in the Johnson Administration recommended a national emergency number in1967.[58] AT&T designated 911 as its national emergency number in January 1968, but the Alabama Telephone Co. launched 911 first, in February. Twelve years later, in Orange County, Fla., AT&T tested the first modern Enhanced 911 system, with automatic number identification and location identification.

During that time, the federal government provided financial support to local efforts to improve emergency response via 911. However, changes at the federal level from categorical grants to block grant funding in the 1980s reduced financial support and coordination of emergency response systems.

Since then, the push to develop more organized systems of EMS delivery has diminished, and EMS systems have been left to develop haphazardly across the United States. There is now enormous variability in the design of EMS systems among states and local areas.[59]

Finally, in 1999, when it became clear that developing technology would transform emergency response, the federal government took the lead and passed the Wireless Communications and Public Safety Act.

The Act notes that an “end-to-end” system of "seamless, ubiquitous, and reliable networks ” would “save thousands of lives and billions of dollars in health care costs.” Explicit in the language is a call for statewide coordination of efforts and equipment among emergency service providers, establishment of a stable and adequate funding mechanism, inclusion of rural residents, and rapid deployment of emerging technologies.[60]

The Enhance 911 Act of 2004 directed states to upgrade technology such that 911 calls made from cellular phones carried the same information as those placed from wirelines. In 2008, Congress passed the New and Emerging Technologies 911 Improvement Act to include new internet-based devices.

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58
See, for example, History of 911, www.911dispatch.com/911/history.

59
Committee on the Future of Emergency Care in the United States Health System (2007). Emergency Medical Services at a Crossroads. Washington D.C.: National Academies Press.

60
Senate Bill 800 became Public Law 106-81 in October, 1999. The bill also amended the Communications Act of 1934 to designate 911 as the universal emergency

APPENDIX E: Florida E911 Features by County

| | Preliminary 2008 Est. | Plan Year | Number of Primary PSAPs | Number of Secondary PSAPs | Number of Backup Centers | Total Number of answering positions | Total Number of Secondary positions | Total Number of incoming trunk lines | Total Number of Secondary lines | Total number of Secondary lines | Total Number of Staff | # TDD | Secondary #TDD | # Instant Playback Recorders | Selective routing? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ALACHUA | 252,388 | 2008 | 1 | 0 | 1 | 18 | 0 | 16 | 0 | 0 | 106 | 18 | 0 | 18 | Y |
| BAKER | 25,890 | 2005 | 1 | 0 | 0 | 3 | 0 | 4 | 0 | 0 | 7 | 1 | 0 | 2 | |
| BAY | 169,307 | 2007 | 2 | 2 | 0 | 9 | 6 | 8 | 4 | 2 | * | 9 | 6 | 15 | Y |
| BRADFORD | 29,059 | 2005 | 1 | 1 | 0 | 2 | 2 | 7 | 1 | 1 | 13 | 1 | 0 | 2 | |
| BREVARD | 556,213 | 2005 | 10 | 1 | 0 | 53 | 7 | 81 | 11 | * | 201 | 63 | 8 | 60 | |
| BROWARD | 1,758,063 | 2006 | 9 | 4 | 1 | 88 | 21 | 58 | 22 | * | 612 | 88 | 21 | 120 | |
| CALHOUN | 14,310 | * | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 5 | 1 | 0 | 1 | |
| CHARLOTTE | 165,781 | 2008 | 2 | 0 | 1 | 19 | 0 | 20 | 0 | 0 | 44 | 13 | 0 | 13 | |
| CITRUS | 142,043 | 2005 | 1 | 0 | 0 | 9 | 0 | 15 | 0 | 0 | 43 | 9 | 0 | 15 | Y |
| CLAY | 185,156 | * | 3 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 25 | * | 0 | 10 | Y |
| COLLIER | 332,854 | 2005 | 2 | 0 | 0 | 23 | 0 | 18 | 0 | 0 | 84 | 23 | 0 | 23 | Y |
| COLUMBIA | 66,121 | 2005 | 1 | 0 | 0 | 4 | 0 | 11 | 0 | 0 | 12 | 4 | 0 | 4 | |
| DE SOTO | 34,487 | 2005 | 1 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 16 | * | 0 | * | Y |
| DIXIE | 15,963 | 2005 | 1 | 0 | 0 | * | 0 | 4 | 0 | 0 | * | 1 | 0 | * | |
| DUVAL | 904,971 | 2001 | 4 | 1 | 0 | 25 | 12 | 40 | 8 | 6 | 196 | 25 | 12 | 37 | Y |
| ESCAMBIA | 313,480 | 2005 | 2 | 1 | 0 | 15 | 9 | 20 | 6 | 14 | 102 | 15 | 1 | 24 | Y |
| FLAGLER | 95,512 | 2005 | 1 | 1 | 0 | 4 | 3 | 6 | 5 | * | 21 | 4 | 3 | 7 | Y |
| FRANKLIN | 12,331 | 2005 | 2 | 0 | 0 | 2 | 0 | 12 | 0 | 0 | 10 | 2 | 0 | 4 | |
| GADSDEN | 50,611 | * | 2 | 0 | 0 | 3 | 0 | 6 | 0 | 0 | 13 | 2 | 0 | 3 | |
| GILCHRIST | 17,256 | * | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 5 | 1 | 0 | 2 | |
| GLADES | 11,323 | 2005 | 1 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 6 | 1 | 0 | 1 | |
| GULF | 16,923 | * | 1 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 5 | 1 | 0 | 1 | |
| HAMILTON | 14,779 | 2005 | 1 | 0 | 0 | 2 | 0 | 8 | 0 | 0 | 8 | 1 | 0 | 2 | |
| HARDEE | 27,909 | 2008 | 1 | 0 | 1 | 4 | 0 | 4 | 0 | 0 | 12 | * | 0 | 3 | Y |
| HENDRY | 41,216 | 2002 | 2 | 2 | 0 | 5 | 2 | 5 | 2 | 8 | 25 | 2 | 2 | 3 | |
| HERNANDO | 164,908 | 2008 | 1 | 1 | 0 | 10 | 3 | 8 | 4 | 4 | 58 | 10 | 2 | 18 | |
| HIGHLANDS | 100,207 | * | 3 | 1 | 0 | 7 | 1 | 17 | 4 | * | 34 | 4 | * | 7 | |
| HILLSBOROUGH | 1,200,440 | 2002 | 7 | 3 | 0 | 36 | 8 | 42 | 14 | 14 | 336 | * | * | 60 | Y |
| HOLMES | 19,757 | 2005 | 1 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 5 | 1 | 0 | 1 | |
| INDIAN RIVER | 141,667 | 2007 | 1 | 2 | 0 | 7 | 6 | 7 | 10 | * | 49 | 3 | 5 | 17 | Y |
| JACKSON | 52,639 | 2005 | 1 | 1 | 0 | 3 | 2 | 8 | 2 | * | 19 | 3 | 1 | 5 | |
| JEFFERSON | 14,553 | 2005 | 1 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 8 | 2 | 0 | 2 | |
| LAFAYETTE | 8,287 | 2005 | 1 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 8 | 2 | 0 | 1 | |

| | Preliminary 2008 Est. | Plan Year | Number of Primary PSAPs | Number of Secondary PSAPs | Number of Backup Centers | Total Number of answering positions | Total Number of Secondary positions | Total Number of incoming trunk lines | Total Number of Secondary lines | Total number of Secondary lines | Total Number of Staff | # TDD | Secondary #TDD | # Instant Playback Recorders | Selective routing |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAKE | 287,881 | 2008 | 8 | 1 | 0 | 24 | 6 | 27 | 6 | 6 | 154 | 24 | 6 | 30 | |
| LEE | 623,725 | 2005 | 4 | 1 | 0 | 38 | 10 | 20 | 5 | * | 178 | 34 | 10 | 44 | Y |
| LEON | 274,892 | 2005 | 2 | 5 | 0 | 15 | 14 | 12 | 13 | 13 | 123 | * | * | 29 | Y |
| LEVY | 40,817 | 2005 | 1 | 0 | 0 | 3 | 0 | 8 | 0 | 0 | 15 | 3 | 0 | 3 | |
| LIBERTY | 8,158 | * | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 5 | * | 0 | 1 | |
| MADISON | 20,152 | * | 1 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 7 | 2 | 0 | 2 | |
| MANATEE | 317,699 | 2008 | 2 | 0 | 0 | 18 | 0 | 25 | 0 | 0 | 48 | 24 | 0 | 23 | |
| MARION | 329,418 | 2005 | 2 | 2 | 0 | 21 | 6 | 23 | 5 | * | 127 | * | * | * | |
| MARTIN | 143,868 | * | 2 | 3 | 0 | 13 | 5 | 13 | 3 | 0 | 51 | 2 | 3 | 18 | |
| MIAMI-DADE | 2,476,903 | 2001 | 6 | 2 | 3 | 91 | * | 89 | * | * | * | 92 | * | 92 | |
| MONROE | 76,081 | * | 3 | 0 | 0 | 7 | 0 | 20 | 0 | 0 | 25 | 3 | 0 | 6 | |
| NASSAU | 71,915 | 2005 | 1 | 0 | 0 | 6 | 0 | 8 | 0 | 0 | 33 | 6 | 0 | 6 | Y |
| OKALOOSA | 197,564 | 2008 | 2 | 8 | 0 | 11 | 10 | 10 | 10 | 112 | 199 | 11 | 10 | 16 | Y |
| OKEECHOBEE | 40,003 | * | 1 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 5 | 1 | 0 | 1 | |
| ORANGE | 1,114,979 | 2006 | 9 | 2 | 0 | 96 | 0 | 82 | * | * | 430 | 95 | * | 88 | Y |
| OSCEOLA | 273,709 | * | 3 | 0 | 0 | 14 | 0 | 18 | 0 | 0 | 55 | * | 0 | 14 | Y |
| PALM BEACH | 1,294,100 | 2000 | 23 | 1 | 1 | 90 | 13 | 84 | 9 | * | 414 | 248 | 6 | 96 | Y |
| PASCO | 438,668 | 2005 | 5 | 1 | 0 | 18 | 12 | 18 | 8 | 12 | 104 | 18 | 12 | 30 | Y |
| PINELLAS | 938,461 | 2005 | 1 | 11 | 0 | 16 | 19 | 16 | 12 | 12 | 96 | 16 | 19 | 35 | Y |
| POLK | 585,733 | 2002 | 12 | 3 | 0 | 43 | 7 | 42 | 7 | 7 | 241 | 12 | 0 | 36 | |
| PUTNAM | 74,989 | 2005 | 1 | 0 | 0 | 9 | 0 | 8 | 0 | 0 | 31 | * | 0 | 9 | Y |
| ST. JOHNS | 181,117 | * | 2 | 0 | 0 | 9 | 0 | 7 | 0 | 0 | 29 | 3 | 0 | 9 | Y |
| ST. LUCIE | 276,585 | 2002 | 1 | 0 | 0 | 20 | 0 | 14 | 0 | 0 | 63 | 20 | 0 | 20 | Y |
| SANTA ROSA | 144,136 | 2005 | 2 | 2 | 0 | 7 | 9 | * | * | * | 61 | 7 | 1 | 14 | Y |
| SARASOTA | 393,608 | 2005 | 1 | 2 | 1 | 11 | 5 | * | * | * | 130 | 11 | 4 | 31 | |
| SEMINOLE | 426,497 | 2002 | 6 | 1 | 0 | 40 | 10 | 16 | 10 | * | 153 | 39 | 10 | 48 | |
| SUMTER | 93,024 | 2001 | 2 | 1 | 0 | 6 | 2 | 7 | 3 | 0 | 25 | 5 | 2 | 7 | |
| SUWANNEE | 40,927 | 2005 | 1 | 0 | 0 | 1 | 0 | 8 | 0 | 0 | 5 | 1 | 0 | 1 | |
| TAYLOR | 23,199 | 2005 | 1 | 0 | 0 | 2 | 0 | 6 | 0 | 0 | 9 | 2 | 0 | 1 | |
| UNION | 15,974 | 2007 | 1 | 0 | 0 | 3 | 0 | 6 | 0 | 0 | 8 | 2 | 0 | 3 | |
| VOLUSIA | 510,279 | 2008 | 3 | 2 | 0 | 44 | 15 | 36 | 13 | | 170 | 44 | 15 | 59 | Y |
| WAKULLA | 30,711 | 2005 | 1 | 0 | 0 | 4 | 0 | 3 | 0 | 0 | 10 | 4 | 0 | 4 | |
| WALTON | 57,784 | 2007 | 1 | 4 | 0 | 7 | 8 | 6 | 0 | 8 | 40 | 7 | 6 | 6 | Y |
| WASHINGTON | 24,779 | 2005 | 1 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 6 | 2 | 0 | 2 | Y |

*Compiled from U.S. Census data and County E911 Reports submitted to the Florida Department of Management Services (www.dms.myflorida.com)*