E-911 Emergency Communications Funding in Tennessee

TACIR Staff Report
Pursuant to HB 0204

June 2010

Tennessee Advisory Commission on Intergovernmental Relations
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The Tennessee Advisory Commission on Intergovernmental Relations

226 Capitol Boulevard Building ● Suite 508 ● Nashville, Tennessee 37243
Phone: 615.741.3012 ● Fax: 615.532.2443
E-mail: tacir@tn.gov ● Website: www.tn.gov/tacir

E-911 Emergency Communications Funding in Tennessee

A TACIR Report in Response to the Tennessee General Assembly House State and Local Government Committee

Prepared by:

Katy A. Blasingame, MA
Research Associate
Lead Researcher & Principal Author

❖

Stanley Chervin, PhD
Contributing Author

❖

Cliff Lippard, MPA
Project Management & Contributing Author

❖

Elissa Philip, Intern
Contributing Author

❖

Teresa Gibson
Web Development & Publications Manager

Other Contributing Staff:

Harry A. Green, PhD
Executive Director

❖

Rose Naccarato, PhD
Senior Research Associate

❖

Libby Thurman, MA
Senior Research Associate

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Purpose

The Tennessee General Assembly directed the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) to conduct a comprehensive study of Tennessee's 911 emergency communications funding system and report back to the House State and Local Government Committee in 2010. The study was requested in response to the changes proposed in SB0208/HB0204:

- An increase in the monthly cell phone service charge from $1 to $1.50
- A reallocation of the distribution of this service charge from the Tennessee Emergency Communications Board (TECB) to local Emergency Communications Districts (ECDs) from 25% to 65%
- The distribution of an additional 5% of the revenue generated to the fifty lowest populated ECDs

This report provides staff findings and recommendations on SB0208/HB0204 and E-911 funding in Tennessee.

Executive Summary

TACIR has prepared this study in response to a referral of SB0208/HB0204 by the House State and Local Government Committee of the 106th General Assembly. That bill, shown in Appendix A, was introduced in 2009 in response to fiscal concerns voiced by some emergency communications districts (ECDs). Although Tennessee is in the vanguard of 911 service provision and was nationally recognized as the top 911 state program in 2005, the continually changing consumer market is challenging Tennessee's current E-911 funding method. This study provides background information on emergency communications in Tennessee to include general findings. It then reviews technology trends impacting funding before making several findings and recommendations for E-911 funding. Finally, it provides related findings and recommendations regarding E-911 structure.

This comprehensive study utilized data from several sources to draw conclusions and make recommendations:

1. Interviews with lawmakers, local government and ECD officials, and other various stakeholders
2. A literature review of scholarly, technical, and regulatory material

E-911 vs. 911

Consistent with TACIR's 2006 report, *Emergency Challenge: A Study of E-911 Technology and Funding Structure in Tennessee*, this report generally uses the term E-911 to refer to all emergency number services in Tennessee, both wireline and wireless.

The three-digit telephone number "911" is designated as the "Universal Emergency Number" for emergency assistance throughout the United States. E-911 is short for enhanced 911, which is a selectively routed 911 call that uses a database to display the caller's location on the call-taker's screen.

E-911 operability–necessary to provide full 911 coverage for cell phone users–was a requirement of the federally mandated Phase-II emergency number implementation.

When discussing funding comparisons with other states, some of which have not fully adopted enhanced 911, the term 911 is used instead. The term 911 is also used when referring generally to call centers, answering points, and individual emergency calls.

3. Collection and analysis of funding, usage, and other pertinent data
4. A review of additional material from TECB meetings and TACIR members
5. The collection of stakeholder comments

General Findings

- The Tennessee Emergency Communications Board (TECB) has worked with the state's ECDs to make Tennessee a national leader in E-911 coverage for both wireline and wireless phones.
- Unlike many Public Safety Answering Points (PSAPs) across the nation, all PSAPs affiliated with Tennessee's one hundred ECDs are wireless E-911 Phase II functioning. This means that each possesses the equipment and technology required to receive a callback number and the approximate latitude and longitude of wireless 911 callers. This assists emergency providers in locating callers. In 2005, Tennessee became the third state in the nation to reach this milestone.
- Tennessee's ECDs are in compliance with all applicable E-911 directives issued by the Federal Communications Commission (FCC).

Technology Trends

With the growing popularity of wireless technology devices that provide users with a variety of communication methods, the wireline customer base has been stagnating or declining in many states for several years. The reasons are clear in most cases: increased substitution of wireless service for wireline service and most recently the availability of alternate voice communications technologies, such as Voice over Internet Protocol (VoIP), that compete directly with traditional wireline service. AT&T reports that landline use has dropped 42% from 2000 to 2008. More than one in five households have discontinued wireline service and rely solely on wireless communications for primary telephone service, and by the end of 2011, approximately 30 million households will be using a VoIP service as either a primary or secondary telephone line.

Findings

- The number of Tennessee wireline subscribers has decreased every year since 2001. In contrast, the number of wireless subscribers has grown each year since 1999.
- From 2005 onward, wireless subscribers have outnumbered wireline subscribers in Tennessee.
- The percent of total wirelines provided to residential customers in Tennessee declined from 67% in 2005 to 61% in 2008.
- With advances in technology, the emergency communication networks built four decades ago are becoming less efficient, less technologically advanced and, as a result, less able to provide the public with 911 services on newer technologies and devices.
- Seen as the future standard for emergency communications, Next Generation 911 (NG-911) is the next phase in 911 service. NG-911 is an Internet Protocol (IP)-based format that provides a standard system by which PSAPs and other emergency service providers will be able to communicate.
- Goals of Tennessee's NG-911 project include improving public safety for citizens and visitors, equalizing E-911 service across the state, preparing PSAPs for future 911 technologies, and transitioning E-911 related network costs from ECDs to the TECB.
- The TECB expects to begin deployment of NG-911 by early 2011.

Recommendations

- TACIR staff makes no recommendation regarding changes to the current implementation plan for NG-911.

Funding

A principal question this study considers is whether Tennessee should adopt an alternative funding method for E-911. Existing E-911 funding mechanisms in Tennessee are similar to those in place in most states. And as in most states, they continue to produce a growing level of total revenue statewide. Despite a shrinking wireline base, the growth in wireless revenue more than offsets the loss of wireline revenue. This method faces challenges, however. The estimated total wireline and

wireless revenue for 2008-2009 approached $95 million. TACIR staff is unable to evaluate the impact of alternative funding methods, including those laid out in SB0208/HB0204, on individual ECDs because currently there is no consistent statewide reporting of taxable landline counts by customer type, residential versus business, for each ECD.

Wireline carriers report line counts to the ECDs, but there is no requirement for the ECDs to report the information to the TECB or any other state agency. The TECB does not have the authority to gather this information statewide, and the Tennessee Regulatory Authority (TRA) does not maintain line count information in the format needed to track fees.

Findings

- There is no consistent statewide reporting of taxable landline counts by type, residential versus business, for each ECD.
- Landline surcharges in Tennessee are some of the highest in the United States, while the state's wireless charge is also relatively high.
- There are wide variations in wireline collections among counties with similar demographics.
- The 911 Emergency Communications Fund is protected under a new federal law, the New and Emerging Technology 911 Improvement Act, which prohibits states from diverting funds designated for 911.
- Tennessee's longstanding policy of full cost recovery may be a reason for Tennessee's achievement as the third state in the U.S. to be fully wireless E-911 Phase II compliant. As distributions to wireless carriers decreased, the TECB substantially expanded its current funding for ECD operations through new funding programs, grants, and reimbursements.
- The law requires the TECB to distribute 25% of the revenue generated by the monthly service charge on users and subscribers of non-wireline telecommunications service to the ECDs, but the TECB distributes substantially more funding to the ECDs than the law requires. The total percentage of the TECB's available non-wireline revenue distributed to ECDs was 77% in 2009. The TECB expects this number to increase by approximately 10% in 2010 based on the reduced distribution of cost recovery funds and

projected NG-911 equipment reimbursements. Over 50% of the TECB's budget is dedicated to recurring ECD funding programs.

- The TECB's $14 million operational support fund, put into place partly in response to a recommendation in TACIR's 2006 report on E-911, had a clear effect on ECD solvency as the number of financially distressed districts subsequently declined to two, the lowest since 1998. Also, the number of ECDs that had a negative change in net assets dropped from 22 to zero after the funding program was initiated in 2007.
- The TECB projects non-recurring build-out costs of approximately $44 million over the next five years and recurring operational costs of around $16.5 million annually for the NG-911 project, described in the Technology section. The TECB contends that NG-911 will result in substantial savings for the ECDs, as the TECB will ultimately absorb all trunking and selective routing costs. Currently, the ECDs pay most of those costs. The TECB estimates that the ECDs will collectively save around $5 million annually on trunking and selective routing costs as a result of NG-911 implementation. Once NG-911 is deployed, the TECB asserts that additional funds will be available for the ECDs.
- Tennessee ECDs are permitted, but not required, to use E-911 service fees to pay for dispatching services. It is well accepted by ECD officials throughout the state that E-911 fees should and do cover the full cost of E-911 service, including the purchase of the equipment that allowed Tennessee to become the third state in the nation to be fully Phase II capable. While E-911 revenue is currently sufficient to cover the costs of E-911 service, it will not cover all dispatching costs.
- While the exact number of prepaid wireless users in Tennessee is not known, prepaid wireless revenue represents 7% of Tennessee's total wireless revenue. In 2009, three states passed legislation imposing 911 fees on prepaid wireless customers at the point of sale: Louisiana, Maine, and Texas. In 2010, Tennessee passed similar legislation.

Recommendations

- TACIR staff recommends that providers be required to file a standard line count return with each ECD and that the ECDs be required to file monthly or quarterly statistics with the TECB based on those returns.

- TACIR staff recommends that the TECB analyze the significant differences in the amount of per capita landline revenue raised by ECDs with similar populations to determine the reasons for such wide differences.
- TACIR staff recommends that the General Assembly postpone any changes to the state's E-911 funding system until landline by customer type data is available.
- TACIR staff recommends that a sub-committee of TACIR be appointed to evaluate potential funding structures.
- TACIR staff does not recommend an increase in the state wireless fee.
- TACIR staff also does not recommend any change in the allocation of the E-911 fee until sufficient data is available to conduct a full revenue analysis.
- TACIR staff makes no recommendation regarding changes to dispatching funding or requirements.

Structure

Tennessee's emergency communications system is comprised of Emergency Communication Districts (ECDs), which are generally consolidated on the county level. Tennessee has one hundred ECDs in its ninety-five counties: eighty-five districts cover a one-county area and one district covers a two-county area. Six districts cover a city area and eight districts cover the county outside the city districts (two cities with districts are located in multiple counties).

Findings

- Tennessee has a policy of encouraging consolidation within and among ECDs, evidenced by the statutory guidelines favoring consolidation and the monetary incentives provided by the TECB.
- Despite the lack of TECB incentives for Public Safety Answering Points (PSAP) consolidation, the number of primary PSAPs has declined from 139 to 127 since 2006.
- Nationwide, the current trend in 911 systems is toward consolidation of PSAPs.

- The benefits of consolidation include the opportunity to cut costs through economies of scale as well as the promise of better service.
- The main arguments against consolidation generally involve dispatcher unfamiliarity and the elimination of job positions.
- Other states have used incentives to encourage PSAP consolidation, with varying levels of success. Most of the trends indicate that mandated consolidation is unsuccessful, while funding and mandated feasibility studies have limited effectiveness after a certain point.

Recommendations

- TACIR staff recommends that the TECB continue to encourage ECD consolidation through the reimbursement of associated costs.
- TACIR staff recommends that the TECB require the completion of a thorough cost-benefit analysis demonstrating the potential benefits of a specific consolidation by any ECDs seeking reimbursement of consolidation costs.
- TACIR staff notes that continual advances in E-911 technology will require review and evaluation of potential productivity improvements and cost savings from consolidation of existing PSAPs and the use of virtual PSAPs.

Introduction

TACIR has prepared this study in response to the referral of SB0208/HB0204 by the House State and Local Government Committee of the 106th General Assembly. That bill, shown in Appendix A, was introduced in 2009 in response to fiscal concerns voiced by some emergency communications districts (ECDs). Although Tennessee is in the vanguard of 911 service provision and was nationally recognized as the top 911 state program in 2005, the continually changing consumer market is challenging Tennessee's current E-911 funding method.

SB0208/HB0204 would increase the existing subscriber wireless fee from $1 per month to $1.50 per month. Additionally it would require that 65% of the wireless revenue collected by the Tennessee Emergency Communications Board (TECB) be distributed back to local ECDs on the basis of population, and that an additional 5% be distributed back to certain low population ECDs. Currently, 25% of wireless revenue is distributed directly to ECDs, while additional funds are distributed through grants, training supplements, and other methods. The TECB reports that approximately 77% of its 2009 expenditures were distributed directly to the ECDs and that amount should increase by approximately 10% in 2010. The net impact of the bill is to increase statewide total E-911 fee collections from approximately $95 million to $120 million, with the direct local share of the total rising from approximately 60% to 81% (see Appendix B for fiscal note).

SB0208/HB0204 would increase the existing subscriber wireless fee from $1 per month to $1.50 per month. Additionally it would require that 65% of the wireless revenue collected by the Tennessee Emergency Communications Board (TECB) be distributed back to local ECDs on the basis of population, and that an additional 5% be distributed back to certain low population ECDs.

This study provides staff findings and recommendations on SB0208/HB0204 and emergency communications (E-911) funding in Tennessee. While Tennessee's two-pronged funding method has worked thus far to produce a growing level of E-911 revenue statewide, TACIR cannot determine if this is the case at the local level. In preparing recommendations, TACIR staff sought to maintain a healthy balance among efficiency, public safety, equity, personal rights, accountability, and local autonomy.

Methodology

This study consists of five major research components:

1. Interviews
    - TECB staff members
    - ECD officials
    - Lawmakers

- Local government officials
- Subject matter experts and other interested parties

2. Literature review
    - Funding issues
    - Technical issues
    - Structural issues
    - Other states' experiences
    - Industry standards
    - Federal and state regulations
3. Data collection
    - Audit results for the TECB and local ECDs
    - Wireless customer trends vs. wireline customer trends
    - National Emergency Number Association (NENA) and Federal Communications Commission (FCC) data on state collection and distribution of 911 and E-911 fees and charges
    - TECB's annual reports
4. Review of additional material, including
    - Information gathered during TECB board meetings and policy committee meetings
    - Feedback from TACIR membership
5. Stakeholder comments

Input from Stakeholders

In order to meet the short deadline for reporting back to the General Assembly on SB0208/HB0204 during the 106th session while still allowing for input from stakeholders, TACIR staff solicited written input from ECDs' boards of directors, county and city officials, public safety officials, wireless and wireline carriers, and related professional associations. Staff asked these stakeholders for comments concerning SB0208/HB0204 specifically and Tennessee's 911 emergency communications funding in general.

The written comments were published on the TACIR website (www.tn.gov/tacir) starting December 1, 2009. The deadline for comments was January 31, 2010, and the comments will remain posted on the TACIR website for one year, after which time they will be archived.

Copies can be obtained through written request. See Appendix C for a list of stakeholders who submitted written comments.

TACIR received twenty-two responses from stakeholders, including nine from ECD officials; six from county officials; two from city officials; three from public safety officials; and two from carriers. Summary comments are provided:

- All responding county officials and some ECD officials expressed support for SB0208/HB0204 based on the concept that the rate increase would cover dispatch costs, which they consider to be part of the 911 service.
- Those who were not supportive expressed fear that the bill would cause a decrease to local government contributions and would jeopardize NG-911 funding. These respondents also provided positive general comments regarding the TECB's leadership.
- Knox/Knoxville and Chattanooga/Hamilton officials did not endorse the specific provisions of SB0208/HB0204, but rather the "intent" of the legislation. They called for a single rate across all technologies.
- Sprint and CITA-The Wireless Association were opposed to the bill because it would result in a cost increase for their customers.

Background

The three-digit telephone number designated as the "Universal Emergency Number" for emergency assistance throughout the United States is "911."[1] The roots of 911 date back to 1957, when the National Association of Fire Chiefs recommended the use of a single number for reporting fires. President Kennedy focused federal interest in a single emergency number after returning from Europe and observing the success of the emergency 999 system in place there in many countries. Following recommendations for a single emergency number nationwide by the President's Commission on Law Enforcement and Administration of Justice and other agencies in 1967, the Federal Communications Commission (FCC) met with the American Telephone and Telegraph Company (AT&T) to determine how to quickly establish a universal emergency number. In 1968, AT&T chose 911 as the emergency code to be used throughout the United States. The first 911 call, a test of the system, was made by Senator Rankin Fite in 1968 in Haleyville, Alabama.

[1]This description of the history of 911 relies heavily on content from NENA 2009.

Early 911 call processing was basic and neither Automatic Number Identification (ANI) nor Automatic Location Identification (ALI) functions were available. Local communities and service providers continued to improve emergency response technology and systems throughout the 1970s, and in 1980, Orlando, Florida became the first location to use an "Enhanced 911" system, commonly referred to as E-911. With E-911, the caller's number, street address, longitude and latitude are automatically displayed on the call taker's screen.

In the mid-1990s, with the proliferation of wireless technologies, E-911 faced new challenges—receiving 911 calls from cell phones and identifying the location of the caller. The FCC issued an order in 1996 requiring wireless carriers to enable the same level of access to 911 as that available to wireline subscribers, and divided compliance into two stages known as Phase I and Phase II. Under Phase I, wireless carriers are required to provide 911 call centers, known as Public Safety Answering Points (PSAPs), the callback number and the location of the cell site/antenna sector receiving the 911 call. Under Phase II, in addition to the callback number, the wireless carriers are required to provide the caller's approximate latitude and longitude. In 2005, with the growth of Voice over Internet Protocol (VoIP), the FCC issued an order requiring VoIP providers to offer E-911 service to all subscribers. VoIP allows voice communication over broadband internet connections.

With advancements in technology, the emergency communication networks built four decades ago are becoming less efficient, less technologically advanced and, as a result, less able to provide the public with 911 services on newer technologies and devices. The next phase in 911 emergency communications is the "Next Generation 911" (NG-911) system, an Internet Protocol (IP)-based format that will be able to process various forms of data, such as text, images, and video, and ensure that the general public has access to 911 from new and emerging devices that have multiple ways of communicating. The federal government has endorsed NG-911, and it is likely that the elements of the NG-911 system will eventually be federally required.

The Development of E-911 in Tennessee

Realizing the importance and need for E-911 service throughout Tennessee, the Tennessee General Assembly authorized and provided independent funding for Emergency Communications Districts (ECDs) with passage of Public Chapter 867 of 1984. As statutorily created municipalities, ECDs are run by a locally-appointed board of directors and administer or facilitate local 911 call taking and/or dispatching services across the state. TCA § 7-86-108 allows ECD boards of directors

to levy an emergency telephone service charge on "landlines" to fund 911 service.

In its 1995 report *Funding, Creation & Management of E-911 Districts*, TACIR recommended that the ECD statute be amended to create an Emergency Communications District Management Review Board to provide state oversight of ECDs. TACIR concluded that the creation of such a review board would increase ECDs' operational, managerial, and financial accountability. TACIR also recommended that the 911 fees extend to wireless users, who were enjoying the benefits of 911 service funded by their wireline counterparts.

In a 1995 report, TACIR recommended that the ECD statute be amended to create an Emergency Communications District Management Review Board to provide state oversight of ECDs. TACIR concluded that the creation of such a review board would increase ECDs' operational, managerial, and financial accountability.

The General Assembly heeded these recommendations, and, with passage of Public Chapter 1108 of 1998, established the Tennessee Emergency Communications Board (TECB) to assist ECDs' boards of directors in the area of management, operations, and accountability, and to establish emergency communications for all citizens of the state. A primary focus of the board was to implement and pay for wireless E-911 service in the state, according to the orders of the FCC, through emergency service charges on wireless phones.

The TECB's enabling legislation authorizes it to

- exercise financial and operational oversight of the state's 100 ECDs,
- establish technical, operational, and dispatcher training standards,
- provide substantial technical assistance to ECDs upon request,
- administer grants and reimbursement programs which distribute funds to ECDs,
- adjust the emergency telephone service charge on landlines in ECDs upon request, and
- implement wireless E-911 service across the state according to the orders of the FCC.

The TECB has implemented several methods to assist and oversee the operation of the ECDs. In 1999, ECDs began using a uniform financial accounting system developed by the Comptroller of the Treasury. The ECDs are audited annually and reports are filed with the Comptroller's Office and, upon their approval, with the TECB. The board receives annual copies of ECD budgets. In 2003, the TECB issued Revenue Standards concerning the acceptable uses of revenue for ECDs. The standards include required uses of E-911 service fee revenues, permissible uses of

911 revenues after the required uses are met, and prohibited uses of 911 revenue. These standards were amended in 2006.

The TECB has worked with the state's ECDs to make Tennessee a national leader in E-911 coverage for both wireline and wireless phones. To improve 911 service, the board implements technical and operational standards, provides substantial technical assistance, and offers funding programs for specific equipment, training, and operations. In 2005, the TECB issued dispatcher training regulations that established minimum requirements for the training of and course of study for each emergency call taker or public safety dispatcher who receives an initial or transferred 911 call from the public in Tennessee. The board has also adopted policies requiring ECDs to satisfy certain operational and technical criteria in their PSAPs such as an uninterruptible power supply (UPS), an emergency generator and fuel source, a PSAP Operations Contingency Plan, and a Geographic Information System (GIS) mapping system capable of auto-populating E-911 location data. In 2009, the TECB's Director of 911 Technical Services made 85 PSAP visits to assist with technical problems and test GIS operability. Finally, the TECB offers funding for approved equipment essential to the operation of a PSAP, including GIS Mapping Systems, controllers, essential equipment, and master clocks.

The TECB has worked with the state's ECDs to make Tennessee a national leader in E-911 coverage for both wireline and wireless phones.

In March 2005, the TECB received national recognition by the Congressional E-911 Institute as the top state program in the nation and as the leader in E-911 deployment and advocacy. Although the FCC order requiring all wireless carriers to provide E-911 service was issued in 1996, many PSAPs across the nation are still not wireless E-911 Phase II ready.[2] In Tennessee, all PSAPs affiliated with the 100 ECDs are E-911 Phase II operable, meaning that each possesses the equipment and technology required to receive a callback number and the approximate latitude and longitude of wireless 911 callers. In 2005, Tennessee became the third state in the nation to reach this milestone. These PSAPs are also equipped to receive 911 calls and location information from VoIP devices. Tennessee's ECDs are in compliance with all applicable E-911 directives issued by the FCC.

In March 2005, the TECB received national recognition by the Congressional E-911 Institute as the top state program in the nation and as the leader in E-911 deployment and advocacy. In Tennessee, all PSAPs affiliated with the 100 ECDs are E-911 Phase II operable.

The TECB is currently engaged in a project to modernize the state's aging 911 infrastructure. The project, referred to as Next Generation 911 (NG-911), will transform the state's 911 system from analog to digital. The project involves construction and management of an Internet Protocol (IP)-based platform that will improve 911 call delivery, enhance interoperability, and increase ease of communication among

[2] NENA 2010a.

ECDs, allowing immediate transfer of 911 calls, maps, photos, caller information, and other data statewide.

Previous TACIR 911 Reports

TACIR takes great pride in the success of Tennessee's 911 system over the years. Many of the innovations in E-911 service in Tennessee were the result of recommendations made by TACIR in its first study of 911 funding, published in January 1995. The most influential recommendations from that report were for the creation of a statewide emergency communications board and the expansion of 911 fees to wireless cell phones.

TACIR's second report, published in February 2006, *Emergency Challenge: A Study of E-911 Technology and Funding Structure in Tennessee*, issued multiple recommendations regarding Tennessee's emergency communications system. Key recommendations relevant to this report are listed here followed by the outcome of each in italics.

The TECB enacted several recommendations resulting from TACIR's 2006 report on E-911 in Tennessee.

- Amend the Emergency Communications statutes to include all devices, VoIP as well as other potential technologies, with access to 911 to pay 911 surcharge fees.

  In 2006, Tennessee law was amended to expand the service charge on users and subscribers of wireless phones to also include users and subscribers of all non-wireline technology capable of connecting a person dialing or entering the digits 911 to a public safety answering point (PSAP).

- The TECB should commission a comprehensive cost-benefit study of the development of a statewide E-911 network to take advantage of new technologies.

  The TECB commissioned a feasibility study of a statewide E-911 network by its technical consultants, R.L. Kimball and Associates, and voted unanimously to proceed with its NG-911 Infrastructure Modernization Project in September 2006.

- The TECB, with input from an advisory committee from ECDs, local governments, and other 911 technical experts, should provide direction and data on what 911 fees are expected to cover, recommend any necessary changes in funding method, and recommend any other legislative changes required.

  The TECB established an advisory committee and adopted its recommendation to add $14 million in operational funding to ECD revenues in 2007. The division of this additional funding

utilizes a methodology designed to counter-balance the 25% population-based distribution, with additional funding for rural ECDs.

- Require providers to report line counts and service fees statewide by ECD to a central state agency and include penalties for not reporting.

  No action was taken on this recommendation. As a result, TACIR is unable to evaluate the impact of alternative funding methods, including SB0208/HB0204, on individual ECDs because currently there is no consistent, statewide reporting of taxable landline counts by customer type, residential versus business, for each ECD.

The most influential recommendations in TACIR's 2006 report were to expand E-911 fees to VoIP service and emerging technologies and to create an advisory committee to study ECD funding. The $14 million operational fund, which has substantially expanded funding for ECD operations, was a direct result of the process TACIR recommended. According to the TECB annual report for 2007-2008, the program has had a noticeable effect on ECD solvency, as the number of financially distressed districts subsequently declined to two, the lowest since 1998. Also, the number of ECDs with a negative change in net assets dropped from 22 to zero after the funding program was initiated in 2007.

The most influential recommendations in TACIR's 2006 report were to expand E-911 fees to VoIP service and emerging technologies and to create an advisory committee to study ECD funding. The $14 million operational fund, which has substantially expanded funding for ECD operations, was a direct result of the process TACIR recommended.

Technology Trends

With the growing popularity of wireless technology devices that provide users with a wide variety of communication methods, the wireline customer base has been stagnating or declining in many states for several years. The reasons are clear in most cases: increased substitution of wireless service for wireline service and, most recently, the availability of alternate voice communications technologies such as VoIP that compete directly with traditional wireline service. AT&T reports that landline use dropped 42% from 2000 to 2008.[3] More than one in five households have discontinued wireline service and rely solely on wireless communications for primary telephone service,[4] and by the end of 2011, approximately 30 million households will be using a VoIP service as either a primary or secondary telephone line.[5]

[3] Brush 2010.
[4] Centers for Disease Control and Prevention 2009.
[5] Cellular-News 2008.

Wireline and Wireless Trends

Based on Federal Communications Commission (FCC) data, end-user switched access lines, or wirelines, declined 14.3% in Tennessee between 1999 and 2008, from 3,452,207 to 2,958,413.[6] During the same period, the number of wireless subscribers increased 278.7%, from 1,529,054 to 5,790,638. This dramatic shift in Tennessee telephony service choices mirrors the experience of the country as a whole (see Tables 1 & 2 for both Tennessee and nationwide data).

Table 1. End-User Switched Access Lines as of June 30, 2008

Year	Tennessee	Growth	Nationwide	Growth
1999	3,452,207		189,397,096	
2000	3,525,455	2.12%	191,206,106	0.96%
2001	3,624,435	2.81%	192,027,002	0.43%
2002	3,479,604	-4.00%	188,974,934	-1.59%
2003	3,392,327	-2.51%	185,259,883	-1.97%
2004	3,294,083	-2.90%	180,027,133	-2.82%
2005	3,265,663	-0.86%	177,733,044	-1.27%
2006	3,251,606	-0.43%	172,189,156	-3.12%
2007	3,101,391	-4.62%	163,369,363	-5.12%
2008	2,958,413	-4.61%	154,654,847	-5.33%

Source: FCC, Local Telephone Competition: Status as of June 30, 2008

Table 2. Mobile Wireless Telephone Subscribers, 2008

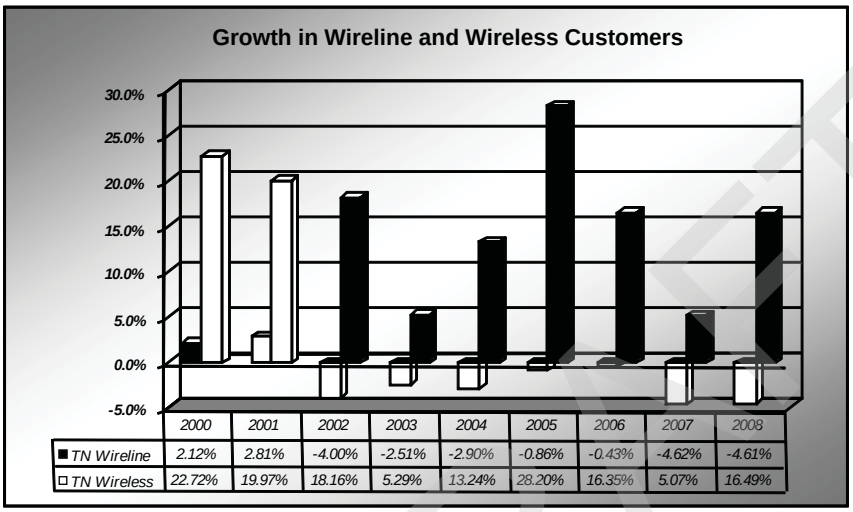
Year	Tennessee	Growth	Nationwide	Growth
1999	1,529,054		79,696,083	
2000	1,876,444	22.72%	90,643,058	13.74%
2001	2,251,208	19.97%	114,028,928	25.80%
2002	2,660,068	18.16%	130,751,459	14.67%
2003	2,800,735	5.29%	147,623,734	12.90%
2004	3,171,487	13.24%	167,313,001	13.34%
2005	4,065,964	28.20%	192,053,067	14.79%
2006	4,730,704	16.35%	217,418,404	13.21%
2007	4,970,756	5.07%	238,315,850	9.61%
2008	5,790,638	16.49%	255,301,307	7.13%

Source: FCC, Local Telephone Competition: Status as of June 30, 2008

[6] FCC 2009c, Tables 7 and 14.

Figure 1 reflects the dramatic shift in wireline versus wireless customers in Tennessee over the period 2000-2008. **The number of Tennessee wireline subscribers has decreased every year since 2001. In contrast, the number of wireless subscribers has grown every year since 1999. Since 2005, wireless subscribers have outnumbered wireline subscribers.**

Figure 1. Annual Growth in Wireline and Wireless Customers, 2000-2008



	2000	2001	2002	2003	2004	2005	2006	2007	2008
TN Wireline	2.12%	2.81%	-4.00%	-2.51%	-2.90%	-0.86%	-0.43%	-4.62%	-4.61%
TN Wireless	22.72%	19.97%	18.16%	5.29%	13.24%	28.20%	16.35%	5.07%	16.49%

Source: FCC, Local Telephone Competition: Status as of June 30, 2008

Residential Trends

TACIR's 2006 report on E-911 noted declines in residential wireline counts in Emergency Communications Districts (ECDs) that responded to the 2005 TACIR survey.[7] Data supplied by the Tennessee Regulatory Authority (TRA) for 2004 for each county (not each ECD) showed a decline in the number of residential lines in 83 counties, as well as a 3.3% decline for the state as a whole. Recent data from the FCC shows continued declines in end-user switched access lines each year since 1999 (for total US).[8] Data by customer type for the country as a whole for the last four years is shown in Table 3.

[7] Survey was conducted in early 2005. Less than one-third of the ECDs reported both residential and business line counts (data for 2004).
[8] FCC 2009c, Table 2, data for all states.

Table 3. End-User Access Lines by Customer Type in June of Each Year, US 2005-2008

Year	Total		%	%
	Residential	Business	Residential	Business
2005	111,653,806	66,079,238	62.8%	37.2%
2006	104,927,754	67,261,402	60.9%	39.1%
2007	97,750,450	65,618,913	59.8%	40.2%
2008	89,852,729	64,802,118	58.1%	41.9%

Source: FCC, Local Telephone Competition: Status as of June 30, 2008

The percent of total lines (FCC data) provided to residential customers in Tennessee declined from 67% in June 2005, to 61% in June 2008.[9] The decline in residential wirelines is a result of a combination of events: a growing trend of substitution of wireless service for traditional wireline service,[10] reductions in the need for dedicated fax lines by both businesses and households, and less need for additional residential lines for dial-up Internet service as cable Internet access became more widely available.

Business Line Trends

Results from TACIR's 2005 survey of ECDs showed 12 districts (of the 21 that reported detailed data) experienced a decline in business lines over the four-year period analyzed (2001-2004). Data supplied by the TRA (for 2003 and 2004) showed similar results for each county in the state. Data for 50 counties reflected a decline in business lines, but the state as a whole experienced an increase of 0.5%. Recent data from the FCC for the country as a whole shows only slight declines in business switched access lines since 2005.

If the quality of landline service itself declines, substitution by business of cell phones for corded landlines will accelerate, further complicating the existing system of funding E-911 service.

Business usage remains stable for reasons relating to the generally better sound quality and dependability of landline service over wireless service, and the ease of distribution of wireline business calls in large business environments. In the long run, however, the old copper landline infrastructure will become more and more expensive to maintain as the number of landline subscribers continues to decline. If the quality of

[9] FCC 2009c, Table 12.

[10] An estimated 20% of Tennessee households use wireless service only. See State Health Access Data Assistance Center (March 2009), p. 4.

landline service itself declines, substitution by business of cell phones for corded landlines will accelerate, further complicating the existing system of funding E-911 service.

Prepaid Wireless Trends

Another growing trend in communications is the use of prepaid wireless phones and cards. It is currently estimated that prepaid wireless accounts for 17% of the wireless market with 40 million subscribers in 2008.[11] Several of the major carriers are beginning to offer prepaid wireless service because other markets are relatively saturated. Prepaid wireless is a popular communications option for those with poor credit, young consumers, those with a lower socioeconomic status, and seniors. This report discusses prepaid wireless in more depth in the funding section.

Alternative Voice Communications Technologies

Voice over Internet Protocol (VoIP)

When TACIR last studied 911 systems in 2006, VoIP, or Internet Voice, represented a new voice communications technology. Carried over Internet connections, VoIP is a rapidly growing alternative to traditional phone service. Its popularity is fueled primarily by low prices, new features, and the consumer's ability to choose a phone number from nearly anywhere in the country. Most industry experts anticipate VoIP's growth will outpace the growth seen by the wireless industry in the last decade.[12]

VoIP is an attractive option, but it is also important that consumers understand the potential limitations the technology has with respect to accessing 911.[13] VoIP providers offer varying levels of E-911 service, and this system is still dependent upon a user to enter their current location if the phone is moved. If not, 911 calls are routed back to the last location entered. Also, most VoIP providers' service will be interrupted in a power outage or Internet malfunction.

Most VoIP providers' service will be interrupted in a power outage or Internet malfunction.

[11] TIA 2009, 27.
[12] NENA 2010b.
[13] FCC 2009b.

USB Phones

New technologies have recently entered the market and they are not required by the FCC to provide E-911 service. An example of such technology is magicJack, a USB adaptor that allows normal telephones to be plugged in directly to a computer and powered by the Internet. By doing this, magicJack utilizes VoIP but, unlike Vonage and Comcast, the phone relies on the computer as its source of power and only works as long as the computer is on.

Regarding 911 service, magicJack has many of the same limitations as traditional VoIP providers. MagicJack is not bound by the FCC Enhanced 911 legislation, but, according to the company website, it does provide E-911 service where possible. Automatic location identification is not available so users must register their location in order to have E-911 service, if available.[14] Users can update their locations, given that the computer and phone can be moved, but there is a one to two day lag in the information update. A light on the device indicates whether one's location is perceptible or not. Additionally, any power outage or Internet malfunction will disrupt 911 services.

Telematics

The term "telematics" refers to communications between two systems. Recently, the term has come to denote communication services that vehicles can receive and send. In case of emergency, vehicles send a distress signal, known as Automatic Crash Notification (ACN). The ACN is triggered by a crash or deployment of an airbag. Drivers can also activate the distress signal manually in case of medical emergency. The telematic call center receives distress signals from the vehicle and, in turn, contacts 911. "On Star" in General Motors vehicles is an example of a telematic system.

Currently, most telematic call centers verbally relay the need for emergency response to the appropriate Public Safety Answering Point (PSAP) when contacted by a client and after confirming an actual emergency. Most 911 call centers do not currently have a way to receive this information electronically or through 911 dedicated trunks. Telematic systems in vehicles can provide information on orientation and location through Global Positioning Satellites (GPS) and some systems provide information on crash severity such as airbag deployment, velocity of vehicle at time of deployment, fire, number of occupants,

[14] Bray 2009.

use of seat belts, or even pictures. In addition, telematic call centers may have demographic and medical information, as available, on vehicle occupants and a vehicle description to assist emergency responders.

Current 911 System Deficiencies

To enhance public safety, policy makers embraced the concept of a single, memorable, emergency calling code in the late 1960s. The system developed in the last 40 years has been remarkably successful and has saved many lives. Due to success of the system, citizens now feel that access to 911 is a critical public service which is ubiquitous and reliable. Citizens adopting today's wireless devices expect that they can use them to reach 911 just as they can from an ordinary landline telephone. A 2007 survey of 2,580 people found that almost 40% of the individuals under 35 years old believe that they "can use a text message from a cell phone to summon 911."[15]

With advancements in technology, the emergency communication networks built four decades ago are becoming less efficient, less technologically advanced and, as a result, less able to provide the public with 911 services on newer technologies and devices.

Unfortunately, this belief is not congruent with the capabilities of the technology and the E-911 system. With advancements in technology, the emergency communication networks built four decades ago are becoming less efficient, less technologically advanced and, as a result, less able to provide the public with 911 services on newer technologies and devices. The National Emergency Number Association's (NENA) 2001 *Report Card to the Nation: the Effectiveness, Accessibility, and Future of America's 911 Service* states that current 911 networks are outdated analog services that are slow in delivering calls and limited in their application. The 911 system was built to route calls to the jurisdictionally designated PSAP responsible for emergency services dispatch, based on a fixed geographical location. These systems were not designed to handle the mobility and data components of wireless calls or local number portability, much less the newer technologies of IP telephony or telematic systems such as ACN.

The growing consumer market penetration of both wireless and VoIP telephony, and the increasing use of advanced technologies they represent, has underscored the limitations of the decades-old technology, including the inability to process video, text messages, images, and other data that are increasingly common in personal communications. The pace of change in technology will not slow. To ensure that the general public has access to 911 from new and emerging devices that have multiple ways of communicating, the 911 infrastructure must be upgraded to accommodate new technologies. If left unchanged, the current 911 system will face a multitude of pressures as society and

[15] Hamilton 2008.

technology continue to advance. As seen during the 2007 Virginia Tech shooting, many students expected that they could text message 911. This tragedy reinforced the weakness of our current 911 system, as students' text messages to 911 were never received.[16]

Next Generation 911

The next phase in 911 emergency communications is termed "Next Generation 911" (NG-911). This IP-based format provides a standard system by which PSAPs and other emergency service providers will be able to communicate. NG-911 is seen as the future standard for emergency communications. NENA identified the need for such a system in 2000 in its Future Path Plan and has been working to test the capabilities of the system. The federal government has also endorsed NG-911, and it is likely that the elements of the NG-911 system will eventually be federally required.

NG-911 is seen as the future standard for emergency communications.

NG-911 boasts several important benefits for the emergency communications system. One of the principal benefits is that the NG-911 system will be able to process various forms of data in addition to traditional phone calls. This will allow PSAPs to receive emergency communications through data exchanges, such as text messages or pictures, in order to accommodate these newly widespread forms of communication. This will also increase convenience for people who are hearing or speech impaired. Additionally, NG-911 will be compatible with new telecommunication devices, such as VoIP and telematics.

Another benefit of NG-911 is the increased level of interoperability between PSAPs and emergency services, both statewide and nationwide. Since PSAPs will utilize a common communication system, separate PSAPs will be able to coordinate emergency teams based on proximity to the incident and availability, in order to decrease response time. As more states adopt NG-911, interoperability between states can also be achieved. A nationwide switch would allow states to communicate with one another seamlessly. A citizen in Alabama could report a call that they received from a friend in California, and the Alabama PSAP could transfer the request to a California PSAP. This would also aid in natural disaster response. If a hurricane threatens a town, for instance, neighboring communities and states can aid in the evacuation process.

[16] Hatfield, Bernthal, and Weiser 2008.

Tennessee's Next Generation 911 Project

The TECB voted unanimously to proceed with its NG-911 Infrastructure Modernization Project in September 2006 after it commissioned and considered a feasibility study by its technical consultants, R.L. Kimball & Associates. According to TCA § 306(a)(8), the transition to NG-911 is within the realm of TECB authority, as one of its duties is to administer the deployment of 911 service for emerging communications technologies, including, but not limited to, IP-enabled service and other non-wireline services. This evolutionary project will assure that Tennessee maintains its position at the forefront of 911 deployment and provides its citizens access to the best technology available to coordinate emergency responses.

The TECB voted unanimously to proceed with its NG-911 Infrastructure Modernization Project in September 2006.

In early 2007, multiple meetings were held in an effort to identify the stakeholders and opportunities for the NG-911 network. The following goals and objectives of Tennessee's NG-911 Infrastructure Modernization Project were identified:[17]

- Improve public safety for citizens of and visitors to Tennessee
- Equalize service across the state, increasing functionality and capabilities for all PSAPs
- Improve call transfer functionality across jurisdictions, including Local Access and Transport Area (LATA) boundaries
- Improve communications between PSAPs
- Facilitate transfer of GIS data across jurisdictional boundaries
- Prepare PSAPs for future 911 technologies (VoIP, telematics, ACN, etc.)
- Provide a cost effective means of PSAP backup and fail over (call rerouting)
- Improve reliability and redundancy in the 911 delivery network
- Facilitate a cooperative project initiative involving all stakeholders and other potential partners in Tennessee
- Transition E-911 related network costs from ECDs to the TECB

In early 2007, multiple meetings were held in an effort to identify the stakeholders and opportunities for the NG-911 network.

The TECB staff met with the Office of Information Resources (OIR) in order to plan for NG-911. The Department of Finance and Administration issued a request for proposal (RFP) in 2007 for an outsourced statewide

[17] TECB 2007.

IP/Multiprotocol Label Switching (MPLS) network (Net TN) and awarded the contract to AT&T in May 2008. Net TN is a partnership between the State of Tennessee Department of Finance and Administration, OIR, the Tennessee Board of Regents, the University of Tennessee, the State Department of Education, the State's eHealth Initiative, and local governments. The basic design of this IP network allows for the co-existence of each participant's communications in virtual private networks with secure, controlled access. The TECB opted to integrate with the already existing Net TN platform after carefully reviewing the technical aspects of the platform to assure it was sufficiently robust and redundant to support 911. The Tennessee Bureau of Investigation, the National Crime Information Center, the Department of Safety, the Tennessee Emergency Management Agency, and E-Health currently use the Net TN platform. The OIR Net TN Program Office administers this Net TN contract.

At its February 18, 2010 meeting, the TECB voted to make $25 million available to ECDs to purchase the local equipment necessary to connect to the NG-911 platform. The TECB expects to begin deployment of NG-911 by early 2011.

In January 2010, the TECB staff completed negotiations with the OIR Net TN Program Office and AT&T regarding the specifications for the IP platform that will be used for the NG-911 project. If all goes as planned, the agreement will be approved as an amendment to the Department of Finance and Administration's contract for Net TN, and the additional items required for the NG-911 project will be made available to the TECB. Upon approval, the Net TN amendment will allow the TECB to make payments for needed items under this contract. The amendment includes costs identified for TECB services, including a sufficient obligation of funds to meet the costs estimated by AT&T for negotiated services through fiscal year 2015. The TECB reports that sufficient funds have been requested in the TECB and state budgets through fiscal year 2011 to continue with planned activity.

At its February 18, 2010 meeting, the TECB voted to make $25 million available to ECDs to purchase the local equipment necessary to connect to the NG-911 platform. Allotments are based on two components: (1) a $120,000 base amount and (2) an additional amount adjusted by the proportion of ECD population to state population. In addition, the almost $1.5 million federal grant Tennessee received in September 2009 will be used for router installation at PSAPs.

The TECB expects to begin deployment of NG-911 by early 2011. Deployment will be based on the readiness of Net TN and the successful bidder of an additional TECB RFP for management of the project. As of this writing, that RFP is being prepared for submission to the Office of Contract Review.

Funding

A principal question considered in this study is whether Tennessee should adopt an alternative funding method for E-911. Existing E-911 funding mechanisms in Tennessee are similar to those in place in most states. And, as in most states, they continue to produce a growing level of total revenue statewide. Despite a shrinking wireline base, the growth in wireless revenue more than offsets the loss of wireline revenue. This method faces challenges, however. According to the Tennessee Regulatory Authority (TRA), the estimated total wireline and wireless revenue for 2008-2009 approached $95 million. TACIR staff is unable to evaluate the impact of alternative funding methods, including SB0208/HB0204, on individual Emergency Communications Districts (ECDs) because currently there is no consistent statewide reporting of taxable landline counts by type, residential versus business, for each ECD.

There is no consistent statewide reporting of taxable landline counts by customer type, residential versus business, for each ECD.

Wireline carriers report counts to the ECDs, but there is no requirement for the ECDs to report that information to the TECB or any other state agency. The TECB does not have the authority to gather this information statewide, and the TRA does not maintain line count information in the format needed to track fees. A single state agency could collect line counts, both residential and business, by ECD to better track the "fee or tax" base for the existing or any modified local funding mechanism.

TACIR recommends providers be required to file a standard line count return with each ECD and the ECDs be required to file monthly or quarterly statistics with the TECB based on those returns.

TACIR staff has also found that there are wide variations in wireline collections among counties with similar demographics. For example, TECB data shows that in fiscal year 2008, Bradley County (population 87,965) raised $907,433, while Madison County (population 91,837) raised $444,123, Sullivan County (pop. 85,085) raised $725,325, and Wilson County (population 88,808) raised $441,067. Until the reasons for such variation in revenue are determined, it is difficult to determine if the lowest populated ECDs raise less money than more populous ECDs. Thus, **TACIR staff recommends that the TECB analyze the significant differences in the amount of per capita landline revenue raised by ECDs with similar populations to determine the reasons for such wide differences.**

Any consideration of changes to Tennessee's E-911 funding system should consider the possibility of a single rate option across all technologies.

It is not possible to estimate the impact of a unitary rate without knowing the breakdown between residential landlines and business landlines.

TACIR staff also recommends that the General Assembly postpone any changes to the state's E-911 funding system until landline by customer type data is available. TACIR staff is not comfortable making recommendations based on estimates without accurate data. Any consideration of changes to the funding system should consider

the possibility of a single rate option across all technologies discussed later in this section; however, it is not possible to estimate the impact of a unitary rate without knowing the breakdown between residential landlines and business landlines. **Finally, TACIR staff also recommends that a sub-committee of TACIR be appointed to evaluate potential funding structures.**

911 Fees in Other States

In the 1970s, the initial cost of implementing basic 911 was largely absorbed by telephone companies and local communities. Starting in the 1980s, however, as part of a strategy to spur the deployment of E-911, a subscriber fee on telephone bills was implemented to pay for the necessary technological upgrade. In the 1990s, moreover, many states adapted their laws to institute fees for wireless services. Most recently, many states, including Tennessee, have further amended their laws to require subscribers of VoIP services to contribute to the support of E-911 services, and now states are grappling with how to impose and collect fees on prepaid wireless services.

Data from the FCC's July 2009 *Report to Congress on State Collection and Distribution of 911 and E-911 Fees and Charges* shows that 24 states collect both wireline and wireless surcharges, which are then either distributed to counties or administered directly by the state; eleven states allow counties and other local jurisdictions to impose both wireline and wireless surcharges, subject to state statutory requirements. Nineteen states employ a hybrid approach where both the state and local jurisdictions are involved in collecting the surcharges from customers.

The basic funding method used to finance E-911 service in Tennessee continues to be a two-pronged approach as Tennessee law imposes separate E-911 service charges on wireline and wireless telecommunication services.

NENA data shows that 49 states and the District of Columbia impose a fee, surcharge, or tax on wireline and wireless customers. Missouri is the only state that exempts wireless customers from a 911 fee. There is little consistency among and within states on 911 surcharge rates, which often differ based on the jurisdiction levying the fee (state or local governments), the service type (wireline, wireless, VoIP, or prepaid wireless), and the customer class (residential versus business). See Appendix D for 911 monthly fees by state.

Tennessee's E-911 Funding Method

The basic funding method used to finance E-911 service in Tennessee has not changed since TACIR completed a lengthy report on E-911 technology and funding in 2006. It continues to be a two-pronged approach as Tennessee law imposes separate E-911 service charges on wireline and

wireless telecommunication services. A fee on users and subscribers of wireline technologies funds the local ECDs, and a fee on users and subscribers of all wireless services funds the statewide board.

Wireline E-911 Funding Mechanism

Tennessee law authorizes the boards of directors of ECDs to levy an emergency telephone service charge "to be used to fund the 911 emergency telephone service." The E-911 fee is collected by wireline providers and remitted to each ECD every two months. ECDs may unilaterally set the E-911 fee on local landlines up to a maximum of $.65 per line for residential lines and $2.00 for business lines. ECDs may seek increases in fees up to $1.50 for residential lines and $3.00 for business lines through a public referendum or by applying to the TECB. The providers are authorized to retain 3% of the service charges collected as an administrative fee.

As of November 19, 2009, fees for 47 ECDs remained at or below $.65 for residential lines and $2 for business lines. Thirteen ECDs were below $.65 for residential lines and/or $2 for business lines. Forty ECDs were at the statutory maximum of $1.50 for residential lines, and 42 ECDs were at the statutory maximum of $3 for business lines. Residential wireline rates vary from a low of $.45 per month in the Madison County ECD to a high of $1.50 per month in 40 ECDs. Business surcharges vary from a low of $1.00 in the Sumner County ECD to $3.00 in 42 ECDs. See Appendix E for landline E-911 rates by each ECD.

While ECDs are primarily funded through monthly wireline surcharges, they are also authorized to receive funds from federal, state, and local governments or private sources, including funds from the issuance of bonds. State funds include reimbursements and grants from the TECB and the statutory remittance from state board wireless fee collections. In most areas, local governments share, to varying degrees, the costs of operating a 911 dispatch center with ECDs. ECDs are required to use funds received from all sources "exclusively in the operation of the ECD." Consistent with that mandate, the TECB has established E-911 Revenue Standards as criteria regarding acceptable uses of revenue for the ECDs. ECDs are subject to annual audits to assure compliance with the Revenue Standards and generally accepted auditing standards.

While ECDs are primarily funded through monthly wireline surcharges, they are also authorized to receive funds from federal, state, and local governments or private sources, including funds from the issuance of bonds.

Wireless E-911 Funding Mechanism

Tennessee law authorizes the imposition and collection of a monthly E-911 service charge on any non-wireline telecommunications service that connects a user dialing or entering the digits 911 to a Public Safety Answering Point (PSAP), including wireless phones and IP-enabled services. The law designates the TECB to set the E-911 fee at a flat statewide rate not to exceed $3, subject to ratification by a joint resolution of the General Assembly. The service charge remains at the rate set by the board in 1998, $1 per month per user or subscriber. TCA § 7-86-108 says, "It is the intent of the General Assembly that such rate be established at the lowest rate practicable consistent with the purposes of this section." The fee is collected by wireless service carriers and submitted to the TECB every two months. The carriers are authorized to retain 3% of the service charges collected as an administrative fee.

Regarding wireless and other non-wireline E-911 fees, TCA § 7-86-108 says, "It is the intent of the General Assembly that such rate be established at the lowest rate practicable consistent with the purposes of this section."

The board's activities are self-funded through the state's dedicated "911 Emergency Communications Fund" which is supported by the $1 monthly wireless fee. The 911 Emergency Communications Fund is designated for the purposes of funding the operational and administrative expenses of the board, the implementation, operation, maintenance, and enhancement of statewide wireless E-911 service, and deployment of E-911 service for emerging communications technologies.

Prepaid Wireless Fees

In today's wireless market, the familiar "postpaid" service, in which the consumer signs a contract and pays a regular monthly bill for services, has been augmented by the availability of prepaid service. Prepaid service refers to payment for specific minutes (or dollars) of service before the service is actually used. No lengthy contracts are required, and no extra fees are involved. According to the Telecommunications Industry Association, prepaid cellular service is the fastest growing segment of the wireless industry, with more than 40 million subscribers in 2008, comprising 17% of all wireless subscribers. The TECB reports that while the exact number of prepaid wireless users in Tennessee is not known, prepaid wireless revenue represents 7% of Tennessee's total wireless revenue.

Tennessee has imposed a fee on prepaid wireless services since 2003, and, until July 1, 2010 TCA § 7-86-108(a)(1)(B)(iv) allowed wireless providers to remit the E-911 service charge to the TECB under one of two methods:

> (iv) The service charge shall also be imposed upon customers who pay for service prospectively, known as prepaid customers.

> Commercial Mobile Radio Service (CMRS) providers shall remit to the board the service charge under one of two methods:
>
> (a) The CMRS provider shall collect, on a monthly basis, the service charge from each active prepaid customer whose account balance is equal to or greater than the amount of the service charge; or
>
> (b) The CMRS provider shall divide the total earned prepaid wireless telephone revenue received by the CMRS provider within the monthly 911 reporting period by fifty dollars ($50.00), and multiply the quotient by the service charge amount.

Collection and remittance methods vary widely in other states. For example, as of March 8, 2010, AT&T reported on its website that 26 states imposed 911 charges on its GoPhone Accounts: 23 imposed flat fee charges and three imposed point of sale charges. According to CTIA-The Wireless Association, 15 states[18] provide for optional methods that require prepaid wireless service providers to (1) remit the 911 fees on behalf of their prepaid wireless customers using an estimated monthly Average Revenue Per User (ARPU) to determine the approximate number of prepaid subscribers, (2) collect the 911 fee directly from the customers at the point of sale, or (3) deduct comparable minutes from the prepaid wireless customer's account each month, but only if they have a sufficient positive balance in their account to cover the fee when it is due.[19]

Collection and remittance methods for prepaid wireless fees vary widely in other states.

In 2009, three states, Louisiana, Maine, and Texas, passed legislation imposing 911 fees on prepaid wireless customers at the point of sale.[20] NENA supported the legislation in all three states, and the Association of Public-Safety Communications Officials (APCO) supported the bill in Louisiana. The National Conference of State Legislatures (NCSL) endorsed model legislation to implement the point-of-sale approach at its 2009 annual meeting, which several states have modified to fit their needs. As discussed below, Tennessee adopted this approach in 2010.

Under the point-of-sale method, prepaid wireless providers collect the surcharge from their subscribers at the point of sale, that is, at the retail level. Since a significant amount of prepaid wireless services (primarily minutes of service) are sold by large retail stores, taxing the service at

[18] Alabama, Arkansas, Connecticut, Georgia, Iowa, Kentucky, Maine, Nebraska, North Carolina, North Dakota, Ohio, Rhode Island, South Dakota, Tennessee, and Virginia.
[19] CITA-The Wireless Association 2009.
[20] Louisiana HB 1056 (Act No. 531), adopted July 10, 2009. Maine LD 1056 (P.L. 400), adopted June 15, 2009. Texas Health & Safety Code, Sec. 771.0712 – adopted June 19, 2009.

the point of retail sale is a common method. The 911 fee or surcharge in such cases can be set as a percentage of the retail purchase price of the prepaid service (e.g. Texas) or as a flat amount, regardless of amount of prepaid service purchased, for each retail transaction (e.g. Louisiana).

In 2010, the Tennessee General Assembly passed legislation replacing the state's two collection options with a point-of-sale method. Public Chapter 774 established a statewide prepaid wireless emergency telephone service charge of $0.53 on each retail transaction at the point of sale.

During the 2010 Tennessee legislative session, the General Assembly passed legislation that replaced the state's two collection options with a point-of-sale method. SB2497/HB3533, codified as Public Chapter 774, established a statewide prepaid wireless emergency telephone service charge of $0.53 on each retail transaction, and specified that such prepaid wireless E-911 charge shall be the only E-911 funding obligation imposed with respect to prepaid wireless telecommunications service in the state, and no tax, fee, surcharge, or other charge shall be imposed by this state.

The TECB deferred to the will of the legislature on SB2497/HB3533 because it included an immunity provision that gave prepaid retailers and providers the same immunity provided to other communications carriers providing E-911 service. Although the TECB was initially concerned regarding the potential impact of the legislation on funding, particularly whether or not a single transaction could include the sale of multiple cards or devices at one flat surcharge, the final legislation clarified that the fee applies to each card or device sold. Although TACIR staff had no recommendation regarding this particular legislation, staff will review the potential impact of this new collection method in the context of any future funding method study.

In 2006, the General Assembly heeded TACIR's recommendation by amending the law to expand the service charge on users and subscribers of wireless phones to include users and subscribers of all non-wireline technology capable of connecting a person dialing or entering the digits 911 to a PSAP.

Voice over Internet Protocol

In its 2006 E-911 Report, TACIR recommended the Emergency Communications statues be amended to include all devices, VoIP as well as other potential technologies with access to E-911, to pay E-911 surcharge fees. In 2006, the General Assembly heeded TACIR's recommendation by amending the law to expand the service charge on users and subscribers of wireless phones to include users and subscribers of all non-wireline technology capable of connecting a person dialing or entering the digits 911 to a PSAP. Approximately 30 states have amended their laws to require subscribers of VoIP services to contribute to the support of 911 services. According to the TECB, the percentage of VoIP revenue was a little less than 5% of Tennessee's total wireless revenue for the collection period November-December 2009.

USB Phones

New technologies have recently entered the market that are exempt from E-911 fees. An example of such technology is magicJack, a USB adaptor that allows standard telephones to be plugged in directly to the computer and utilized over the Internet. The magicJack utilizes VoIP, but, unlike Vonage and Comcast, the phone relies on the computer as its source of power. If the computer is off it defaults to voicemail. This characteristic has aided its categorization as a "device" rather than a "service," exempting it from 911 fees. The magicJack is sold at retailers for $40, which includes one year of local and long distance calling to the United States, Canada, Puerto Rico, and the US Virgin Islands. Consumers may place and receive unlimited phone calls over the company's Internet phone network for $20 a year. At such a low cost, magicJack has a successful following.

The TECB asserts that USB phones like magicJack should be subject to the 911 service charge, and note that information on the magicJack website seems to indicate that the provider is offering 911 service like any other VoIP provider.

When asked, the TECB responded that USB phones like magicJack should be subject to the E-911 service charge, and note that information on the magicJack website seems to indicate that the provider is offering 911 service like any other VoIP provider. The primary difference between traditional VoIP and magicJack is that VoIP connects the phone to the computer through a modem and magicJack connects through a USB port. But, just like VoIP providers, the Internet provider service could not be converted into VoIP without the telephone device. Neither traditional VoIP providers nor magicJack could offer 911 service without both the Internet connection and the phone device. TCA § 7-86-108(a)(1)(B)(vi) imposes a E-911 service charge on all non-wireline telecommunications services that can connect a person dialing or entering the digits 911 to a 911 call center. The TECB asserts that the phone device is part and parcel of the service—the service cannot exist without it, and that the provider should be charging their customers 911 fees and passing them through to the TECB.

The TECB and NENA have contacted magicJack's parent network, the competitive local exchange carrier YMAX Communications Corporation, but the company maintains that magicJack is a device and provides neither wireline nor non-wireline service. The TECB believes that the failure to collect fees on such devices could negatively affect E-911 funding, and the TECB is in communication with the Office of the Tennessee Attorney General to determine how to pursue this issue.

Telematics

In Tennessee, telematics have been granted exemption from the monthly wireless surcharge since they do not connect directly to a

911 PSAP but rather to a private call center. Some states do collect a 911 fee on telematics, but the TECB has not taken a position on their exemption in Tennessee. The TECB's Executive Director has noted that one advantage of telematics services such as "OnStar" is that PSAPs are receiving screened calls in which a trained call taker has decided that the emergency is of such a magnitude that emergency personnel are required. She notes that, considering the number of non-emergency 911 calls PSAPs receive, such screening is a good thing for the system as a whole.

Fiscal Impact of Wireless Trends

The fiscal impact of wireline and wireless trends in Tennessee (and other states with similar 911 funding systems) is somewhat different than in states that impose the same monthly fee or surcharge on telephony subscribers without regard to the type of service used (according to NENA, approximately 30 states including D.C. impose the same surcharge on all forms of telephony service). Wireless subscribers now outnumber traditional landline subscribers in every state in the country. The reason is straightforward: the number of landlines or wired lines is related to the number of households; the number of cell phones is more closely related to the number of persons.

Wireless subscribers now outnumber traditional landline subscribers in every state in the country.

If a state imposed the same surcharge on wireline and wireless service, and new wireless subscribers each year outnumbered those abandoning landlines each year, the fee/tax base would continue to grow and so would total E-911 revenue. In such states there would be no revenue problem until such time as the market for wireless service became saturated. At that point, increasing revenue would require an increase in the monthly fee or surcharge.

The problem in Tennessee and several other states is a result of a combination of circumstances:

> (1) Average wireline surcharges (weighted residential and business surcharge) are higher than the wireless fee in a majority of ECDs.[21]
>
> (2) Wireline fees are levied by local governments and in most of these cases, collected by local governments. Local government E-911 programs are partly dependent on these locally imposed subscriber surcharges.

[21] Business surcharges are over $1 in all but 1 ECD; residential surcharges are at or below $1 in 47 ECDs.

About fifteen states fall into this category, including Tennessee.[22] In Tennessee, E-911 service is funded by a combination of (1) local E-911 surcharges on wireline subscribers, (2) funding provided by the TECB to local ECDs from surcharge collections on wireless subscribers, and in some cases, (3) contributions from local governments. It is important to remember that the state does not consider E-911 and dispatch services to be synonymous. In most areas, local governments and ECDs both contribute to the costs of operating a dispatch center.

The problem in Tennessee that appears to be responsible for the proposal of SB0208/HB0204 to increase rates is more the result of a distribution problem than a revenue problem. Tennessee raises more 911 revenue per capita than most other states, and several counties already impose the maximum allowable surcharge rates on both residential and business wirelines.[23] ECDs face the same fiscal problem as many counties and cities in the state—an ongoing disconnect between local government fiscal responsibilities and local government fiscal capacity. Some ECDs do quite well with the surcharges they impose on local residential and business wirelines, but some do not. The TECB asserts that E-911 fees should and do cover the full cost of E-911 service, including the purchase of the equipment that allowed Tennessee to become the third state in the nation to be fully Phase II capable and to start funding for the NG-911 project. Yet E-911 fees are not sufficient to cover the costs of dispatch services. This is the same problem faced by many local governments as a result of low per capita property tax assessments and low per capita local option sales tax collections. The local tax base at these tax rates is insufficient to produce the necessary revenue to fund local services.

The problem in Tennessee that appears to be responsible for the proposal of SB0208/HB0204 to increase rates is more the result of a distribution problem than a revenue problem.

The 911 Emergency Communications Fund

As discussed earlier in this report, the TECB was established to provide statewide wireless E-911 service and to assist ECDs' boards of directors in the areas of management, operations, and accountability. The TECB administers the 911 Emergency Communications Fund, which is supported by the emergency telephone service charge on users and subscribers of non-wireline phone service. The funds are used to fulfill the TECB's statutory mandates of establishing emergency communications for all citizens of the state, and assisting the state's 100 ECDs in the areas of management, operations, and accountability. Since its inception,

[22] Exact number is hard to determine since landline rates in some states remain difficult to determine.

[23] Forty ECDs already impose both a $1.50 monthly surcharge on residential lines, and $3.00 on business lines.

expenditures of the board have included the statutory 25% distribution to ECDs, the board's operational and administrative costs, payments to wireless service providers, and additional grants and reimbursements to ECDs.

TCA § 7-86-303 requires the board to use the 911 Emergency Communications Fund for the following purposes:

- To distribute 25% of revenues to local ECDs based on their proportion of the population
- To pay operational and administrative expenses of the TECB
- To reimburse ECDs and wireless providers for expenditures to implement, maintain, operate, or enhance statewide wireless E-911 service
- At its discretion, and following policies, procedures, and criteria it has developed, to use any unspent funds to provide grants for operating and capital expenditures for basic or E-911 service and wireless 911 service to assist ECDs
- After implementing statewide wireless E-911 service pursuant to standards established by the board, to distribute any unspent excess revenue to each ECD, if the board first determines that such distribution is possible and practicable and does not threaten the solvency of the 911 Emergency Communications Fund

The Emergency Communications Fund was created in part to meet a 1996 FCC order that required a cost recovery mechanism be in place for both the wireless carrier and the PSAP before the carrier would be obligated to deliver E-911 service.

The 911 Emergency Communications Fund was created in part to meet the FCC order issued in July 1996 that required a cost recovery mechanism be in place for both the wireless carrier and the PSAP before the carrier would be obligated to deliver E-911 service. After finding that disputes about cost recovery had become a significant impediment to the implementation of wireless E-911 Phase I, the FCC eliminated the carrier cost recovery requirement in November 1999—but not the PSAP cost recovery requirement. Despite the FCC's change in policy, Tennessee continued its 100% cost recovery policy to ensure the expansion of wireless E-911 Phase II service, particularly in the state's rural areas, until 2009 when the TECB unanimously voted to divert all but 5% of the cost recovery funds to ECDs. **Tennessee's longstanding policy of full cost recovery is a reason cited for Tennessee's achievement as the third state in the U.S. to be fully wireless E-911 Phase II compliant.**

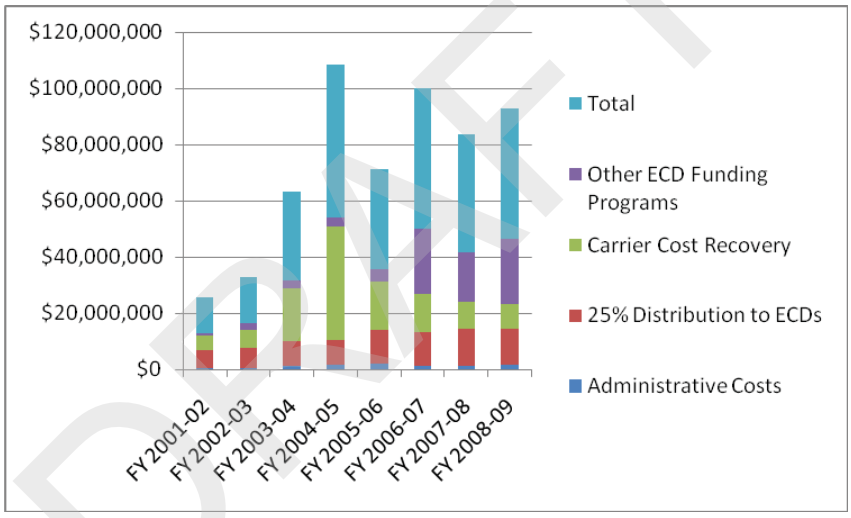
Due to the TECB's policy of 100% cost recovery to establish wireless E-911, wireless carriers received the majority of the wireless surcharge revenue from fiscal year 2001-2002 through fiscal year 2004-2005. During this time, wireless carriers received approximately 56% of wireless

revenue, compared to ECDs which received approximately 34%. In fiscal year 2004-2005 alone, 75% went to carriers versus 22% to ECDs.

After the full implementation of wireless E-911 Phase II statewide in 2005, the TECB had more flexibility under the Emergency Communications statute to adjust its funding focus. **As distributions to wireless carriers decreased, the TECB substantially expanded its current funding for ECD operations through new funding programs, grants, and reimbursements.** With the implementation of the $14 million ECD operational support fund in 2007, ECDs received 70% of the distributed funds versus 27% for wireless carriers. By 2009, 77% of the 911 Emergency Communications Fund expenditures went directly to ECDs.

Figure 2 and Table 4 indicate the shift in the 911 Emergency Communications Fund expenditures from fiscal year 2001-2002 through fiscal year 2008-2009.

Figure 2. TECB Fund Expenditures, Fiscal Year 02-09



Source: Tennessee Emergency Communications Board

Table 4. 911 Emergency Communications Fund Expenditures, Fiscal Year 02-09, $1000s.

	FY 2001-02	FY 2002-03	FY 2003-04	FY 2004-05	FY 2005-06	FY 2006-07	FY 2007-08	FY 2008-09
Administrative Costs	$428	$561	$1,176	$1,718	$2,081	$1,400	$1,424	$1,652
25% Distribution to ECDs	6,612	6,935	8,829	8,586	11,990	11,950	12,940	12,789
Carrier Cost Recovery	5,128	6,622	18,780	40,752	17,003	13,629	9,623	8,921
Other ECD Funding Programs	623	2,282	2,793	3,096	4,573	23,062	17,829	23,072
Total	$12,793	$16,401	$31,579	$54,151	$35,647	$50,041	$41,817	$46,433

Source: Tennessee Emergency Communications Board

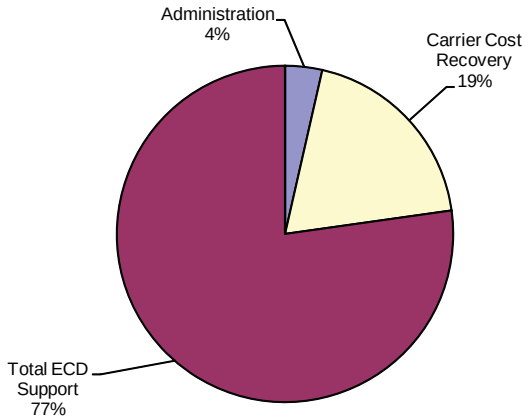
During the 2008-2009 fiscal year,[24] the board expended or distributed approximately $35.9 million in financial support to ECDs for various funding programs including: $12.8 million for the 25% statutory contribution, $14 million for operational funding, $1 million in grants, $6 million in equipment reimbursements and payment of wireless trunking and Automatic Location Information (ALI) charges. Approximately $9 million was expended for cost recovery for carriers and others to implement, operate, maintain, or enhance the state's E-911 system; another $1.6 million was expended for administration, which includes, among other things, contracts with the TECB's technical consultants and for the GIS mapping program as well as salaries, benefits, and travel. **The total percentage of the TECB's available non-wireline revenue distributed to ECDs was 77%. The TECB expects this number to increase by approximately 10% in 2010 based on the reduced distribution of carrier cost recovery funds and projected NG-911 equipment reimbursements.**

The law requires the TECB to distribute 25% of the revenue generated by the monthly service charge on users and subscribers of non-wireline telecommunications service to the ECDs, but the TECB distributes substantially more funding to the ECDs than the law requires.

TECB Funding Programs, Reimbursements, and Grants

The law requires the TECB to distribute 25% of the revenue generated by the monthly service charge on users and subscribers of non-wireline telecommunications service to the ECDs, but the TECB distributes substantially more funding to the ECDs than the law requires. The 25% distribution is based on the proportion of the population of each district to that of the state. The funds are distributed every two months and amounted to $12.8 million distributed to ECDs in 2009. The board distributed an additional $23 million to the ECDs in 2009 through a

Figure 3. TECB Expenditure for Fiscal Year 2009



[24] TECB 2009.

Table 5. TECB Expenditures for Fiscal Year 2009

Administration		$1,651,951	4%
ECD Support			
25% Distribution	12,788,509		
Operational Funding	14,000,000		
Grants	1,018,157		
Dispatcher Training	1,793,545		
Reimbursements	6,259,937		
Total ECD Support		35,860,148	77%
Carrier Cost Recovery		8,921,061	19%
Total Expenditures		$46,433,160	

Note: Fiscal Year 2009 total expenditures reflect all audit adjustments through 4th preliminary closing.

number of non-statutory funding programs. The TECB sets technical and operational standards for ECDs that improve E-911 service and works to avoid unfunded mandates through funding programs for specific equipment, training, and operations. See Appendix F for a list of all non-statutory support each ECD has received since fiscal year 2001-2002.

Annual Programs

Over 50% of the TECB's budget is for ECD recurring funding programs. These include the GIS Mapping Maintenance Grant, the Dispatch Training Fund, and the Recurring Operational Funding (ROF) program.

GIS Mapping Maintenance Grant

The TECB administers the GIS Mapping Maintenance Grant, which provides eligible ECDs with up to $10,000 annually to assist with the installation and maintenance of GIS mapping systems. GIS mapping systems assist PSAPs in determining the location from which each 911 call originates. In addition, GIS mapping systems enable emergency personnel to dispatch emergency vehicles more efficiently and effectively to the scene of the emergency. Like all maps, to work effectively GIS mapping systems must be consistently updated and maintained for accuracy.

Dispatch Training Funding

The TECB conducted a reimbursement-based pilot program for dispatch training in fiscal year 2008-2009 that proved difficult to administer before voting to revamp the funding program for 2010. The TECB budgeted approximately $2 million for dispatcher training under the new program. Those funds are distributed in an annual lump sum amount based upon the number of positions in each ECD's 911 call center for training. The funding is disbursed into the recurring operational funding program and funds not used for training may be expended consistent with TCA § 7-86-102(d) and 911 Revenue Standards. Tennessee law requires all call takers and dispatchers who receive initial or transferred 911 calls from the public to receive continuing education, and compliance with training requirements is monitored.

Recurring Operational Funding Program

In 2007, the TECB established a $14 million operational fund to address the challenge of declining revenue from wireline E-911 fees.

In 2007, the TECB established a $14 million operational fund to address the challenge of declining revenue from wireline E-911 fees. Under this program, each ECD received $40,000 as an acknowledgement of the basic costs intrinsic to providing E-911 service without regard to its size or population. The remainder of the $14 million ($9.96 million) was divided among the districts based on seven population groups. In 2010, the TECB reallocated $7.6 million from carrier cost recovery funds to the $14 million operational fund, and changed the fund's name to the Recurring Operational Funding Program, or ROF Program. With the additional $7.6 million, each ECD now receives $80,000, double the original base amount of $40,000, and the remainder of the $7.6 million ($3.6 million) is divided among the districts based on the same seven population groups.

These population groups receive a set amount based on the average audited cost ratios of each group, determined from an analysis of audited financial statements from the 2004-2005 fiscal year. In figuring this calculation, all personnel costs, including salaries and benefits, were excluded in order to assure more equal treatment between districts that dispatch and those that do not. Each ECD in each of the seven population groups receives the same dollar amount, which may be used in the operation of the districts for all purposes permitted under the 911 Revenue Standards.

Table 6 shows the previous annual distribution per population group under the $14 million operation support fund, the additional allocation from the $7.6 million increase in funds, and the new total annual distribution per population group under the ROF Program.

This formula lessens the disproportional aspect of the strictly population-based distribution required by law, which provides the larger districts with substantially more funding and provides comparatively less support to the smaller, more rural districts. In 2008, the four ECDs with the largest populations received over 37% of the 25% statutory funding distribution.[25] The formula also avoids the pitfalls of an equal distribution, which fails to reflect the cost differences related to the size of the populations served by the ECDs.

Table 6. Recurring Operational Fund Program Distributions by ECD Population Groups

ECDs Population Groups	Previous Distribution	Additional Distribution	Total Distribution
Under 15,000	$72,215	$51,894	$124,109
15,000 - 29,999	$86,169	$56,622	$142,791
30,000 - 49,999	$104,081	$63,072	$167,153
50,000 - 74,999	$120,041	$68,814	$188,855
75,000 - 99,999	$176,619	$89,184	$265,803
100,000 - 299,999	$234,923	$110,172	$345,095
over 300,000	$918,619	$351,300	$1,269,919

Source: The Tennessee Emergency Communications Board

See Appendix F for the amount of operational funding each ECD received in fiscal year 2007-2008.

One-time Funding Programs

The board also continues to offer ECDs prospective funding and reimbursements up to the following amounts:

- $50,000 for Geographic Information System (GIS) mapping systems
- $40,000 for controllers
- $150,000 for essential equipment
- $5,000 for master clocks
- $150,000 to each ECD that consolidates (to a maximum of 3 ECDs)
- $1,000 to train dispatcher trainers
- $100,000 to cover uninsured catastrophic losses

[25] TECB 2009.

Next Generation 911 Funding

The TECB has prepared for the financial challenges associated with modernizing Tennessee's 911 infrastructure. The board projects non-recurring build out costs of approximately $44 million over the next five years and recurring operational costs of around $16.5 million annually. The TECB originally plans to implement the NG-911 project in fiscal year 2006-2007, but the board opted to explore whether or not the Office of Information Resources (OIR) plans for a statewide IP network would be sufficiently redundant and robust for E-911 purposes. During the 2008-2009 fiscal year, net revenues exceeded expenditures by approximately 25%, due primarily to the board's decision to postpone deployment of the NG-911 project to work with the OIR. The board is taking preliminary steps toward deployment and received a budget improvement for the 2009-2010 fiscal year in the amount of $5.8 million, and requested an improvement for 2010-2011 of an additional $28 million necessary for deployment purposes.

The TECB contends that NG-911 will result in substantial savings for the ECDs, as the TECB will ultimately absorb all trunking and selective routing costs. The board estimates that the ECDs will collectively save around $5 million annually on trunking and selective routing costs as a result of NG-911 implementation.

The installation cost of NG-911 is approximately $90 million, but the TECB has accumulated the necessary reserves to pay for the installation of the system, as well as for trunking for the ECDs and the recurring operational costs through 2014. With anticipated normal growth in revenue, the TECB reports that it will be able to pay the recurring costs, estimated at $16.5 million, without any changes to wireless E-911 surcharges. The TECB contends that NG-911 will result in substantial savings for the ECDs, as the TECB will ultimately absorb all trunking and selective routing costs. Currently, the ECDs pay for most of those costs. The TECB estimates that the ECDs will collectively save around $5 million annually on trunking and selective routing costs as a result of NG-911 implementation. Once NG-911 is deployed, the TECB asserts that additional funds will be available for the ECDs.

At its February 18, 2010 meeting, the TECB voted to make $25 million available to the ECDs to purchase the local equipment necessary to connect to the NG-911 platform. The allotments are based on two components: (1) a $120,000 base amount and (2) an additional amount adjusted by the proportion of population in the ECD compared to that of the state.

Although the costs to implement the new infrastructure are significant, NG-911 appears by all measures to be a valid and valuable investment in public safety technology for the people of Tennessee. **TACIR staff makes no recommendation regarding changes to the current implementation plan for NG-911.**

Potential Ramifications of SB0208/HB0204 on E-911 Funding

While the TECB's total income would increase by $29 million under SB0208/HB0204, the TECB would face an increased mandatory disbursement to ECDs of $46 million and thus have to reduce expenditures by $15 million. The TECB's ability and flexibility to maintain its current distributions to ECDs and funding programs that encourage activities that improve E-911 service, and the timeline for NG-911 would have to be adjusted or curtailed if the bill was passed. This would be particularly problematic to the NG-911 project which was budgeted based on the current funding model.

SB0208/HB0204 would eliminate much of the TECB's discretion to provide support and assistance to ECDs for specific equipment, training, and operations that improve E-911 statewide.

The bill would eliminate much of the board's discretion to provide support and assistance to ECDs for specific equipment, training, and operations that improve E-911 statewide. Reduced resources will restrict the ability of the TECB to make improvements to the system, meet emergencies, fund mediation, or assist ECDs having difficulties. The bill specifies how the board would distribute most of the non-wireline funding—by population.

Distribution by population favors the most populous ECDs. In 2008, the four ECDs with the largest populations received over 37% of the 25% statutory funding distribution. The bill gives over $11 million of the over $25 million in new revenue to Davidson, Hamilton, Knox, Montgomery, Rutherford, and Shelby County ECDs. This is almost half of the new money. Of course, larger counties can be expected to have higher overall expenses. Fourteen ECDs would receive less under SB0208/HB0204 than they received in total TECB disbursements in 2008: Dyer, Clay, Fayette, Hancock, Henry, Hickman, Lafollette, Lake, Moore, Perry, Polk, Trousdale, Van Buren, and Wayne.

The bill would give ECDs more autonomy, which could hinder the ability to create a cohesive, statewide E-911 system with uniform functionality and standards. States with strong leadership have proven to be better at planning for the future, funding, dealing with technology, and serving the public.[26] A key lesson learned from Tennessee's wireless E-911 implementation was the effective role of the TECB's statewide coordination in focusing priorities for funding and support of E-911 services.

ECDs may feel more certain of their revenue stream if the bill passes. At present, however, there is no indication that the Recurring Operational Fund program will not continue. The board has added $21.6 million

[26] Robertson and Wagner 2009.

The Emergency Communications Fund is protected under a new federal law, the New and Emerging Technology 911 Improvement Act, which prohibits states from diverting funds designated for 911.

to its continuation budget, which cannot be eliminated without board action in an open meeting after proper notice. In addition, the 911 Emergency Communications Fund is protected under a new federal law, the New and Emerging Technology 911 Improvement Act, which prohibits states from diverting funds designated for 911.

If ECDs were asked to justify the non-wireline rate increase (as was required the last time a rate increase bill was filed and the issue was sent to TACIR for study), it could be difficult for many to establish actual need for additional funding at this time. The TECB added $14 million in operational funding to ECD revenues in 2007, and the number of ECDs that had a negative change in net assets dropped from 22 to zero after the funding program was initiated in 2007. Currently, there are fewer ECDs financially distressed (Hancock and Jackson) than at any time since the TECB was created. In addition, the TECB is already sending far more than 25% of the non-wireline revenue to ECDs: the TECB paid 74% of the TECB's fiscal year 2007 expenditures to the ECDs, 23% went to carrier cost recovery, and 3% went to TECB administrative costs. Over 50% of the TECB's budget is for recurring funding for ECDs.

While landline revenue decreased in fiscal year 2007, when balanced with increases in wireless revenue, only three ECDs had actual losses: Overton-Pickett had losses of 0.36%, Scott had 1.41%, and Union had 6.53%. Of the 56 ECDs that saw a reduction in landline rates, 47 had a reduction of less than 5%. In addition, ECDs can apply to increase their landline rates to provide additional funding. Only 42 of the state's 100 ECDs have requested that their landline rates be set at the maximum of $1.50 for residential lines and $3.00 for business lines.

With more funding, ECDs will face increased pressure from counties and municipalities to fund more PSAP operations.

Landline surcharges in Tennessee are some of the highest in the United States, while the state's wireless charge is also relatively high.

Landline surcharges in Tennessee are some of the highest in the United States, while the state's wireless charge is also relatively high. Tennessee's per capita E-911 fee is $16.73 compared with a per capita rate of $10.23 in other states. The higher per capita amounts are the result of a higher wireless rate ($1 versus an average of only $.80 cents in other states), and a higher average wireline rate of $1.33 than in most other states.

In 2009, TACIR staff estimated the average statewide residential rate at $.98 and the average business rate at $2.30. The weighted average (combined residential and business) statewide wireline rate is estimated

at $1.33 per month.[27] As shown in Appendix E, Tennessee's average wireline rate ($1.33) and wireless rate ($1) are both relatively high compared to rates in other states.[28] This is consistent with recently-available data that shows Tennessee per capita E-911 revenue ranks high among states for which comparable data is available (see Appendix H).

Based on Tennessee's already higher than average rates, **TACIR does not recommend an increase in the state wireless fee. TACIR also does not recommend any change in the allocation of the E-911 fee until sufficient data is available to conduct a full revenue analysis.**

E-911 Funding and Dispatch

The TECB asserts that E-911 and dispatching are not synonymous and must be considered independently. Tennessee law makes this distinction, and it is readily reflected in the relationships between ECDs and local governments across the state. Current law provides ECDs and local governments with the flexibility and discretion to determine locally the most advantageous method for conducting and funding dispatching. The geopolitical realities between ECDs and their local government entities create significant variation in E-911/dispatching relationships statewide.

The Emergency Communications Law (TCA § 7-86-103) states:

> "911 service" means regular 911 service, enhanced universal emergency number service or enhanced 911 service that is a telephone exchange communications service whereby a public safety answering point may receive telephone calls dialed to the telephone number 911. "911 service" includes lines and may include the equipment necessary for the answering, transferring and dispatching of public emergency telephone calls originated by persons within the serving area who dial 911.

E-911 service indisputably includes the technology and equipment necessary to connect a person dialing or entering the digits 911 to a 911 call center. It is well accepted throughout the state by emergency

[27] Residential lines subject to the fee are estimated to represent 75% of total lines subject to the fee (taxable business lines 25%). While ECDs generally are provided information by landline carriers (when remitting local surcharges to the ECDs) of the number of taxable residential and business lines, the data is not submitted to any single state agency.

[28] Comparable single rates are not available in all states.

communications experts that E-911 fees should and do cover the full cost of E-911 service, including the purchase of the equipment that allowed Tennessee to become the third state in the nation to be fully Phase II capable[29] and to begin funding for the NG-911 project.

While E-911 revenue is currently sufficient to cover the costs of E-911 service, it does not cover all dispatching costs.

While E-911 revenue is currently sufficient to cover the costs of E-911 service, it does not cover all dispatching costs. Dispatching remains, by far, the most expensive aspect of emergency communications, though its costs are not easily quantified statewide due to the wide range E-911/dispatching relationships in Tennessee. The TECB revenue standards list dispatching costs as a permissible expenditure.

The law states that E-911 service may include the equipment necessary for call taking, transferring, and dispatching calls. This reflects the fact that dispatching was a responsibility of local government long before 911 was invented or implemented. ECDs may, but are not required to, dispatch. As noted, most ECDs work together with local government to provide and fund dispatching.

TCA § 7-86-107 law requires districts to have the capability of utilizing at least one of the following three methods in response to emergency calls: (1) direct dispatch method, (2) relay method, and (3) transfer method.

In practice, ECDs fulfill this requirement in two basic ways: (1) local government employees provide dispatching and the ECD provides funding to local government to cover varying degrees of the costs, or (2) the ECD hires dispatchers and local government provides funding and/or facilities and/or other items or services to the ECD to cover varying degrees of the costs.

Many 911 call centers also transfer certain 911 calls. For example, emergency medical dispatching (EMD) requires dispatchers to stay on the line until help arrives. A small center may elect to transfer medically related 911 calls to a local ambulance service for EMD, leaving the center's dispatchers available to answer other calls. TCA § 7-86-107(b) allows all emergency responders to retain the right to dispatch their own services, so local governments' involvement with E-911 for dispatching is strictly voluntary. A number of responders in Tennessee have requested to receive transferred calls and dispatch their own services. Some employ this process in order to use dispatchers simultaneously as receptionists or jailers.

[29] Phase II capability means that each ECD has the equipment required to receive a callback number and the approximate latitude and longitude of wireless 911 callers.

ECDs that do not employ dispatchers seldom experience financial distress as defined by Tennessee Code Annotated § 7-86-304(d). Avoiding a negative change in net assets simply requires an adjustment in the amount of the ECD's financial contribution to local government, which, unlike an ECD, has numerous avenues available to raise revenue.

ECDs that do not employ dispatchers seldom experience financial distress as defined by Tennessee Code Annotated § 7-86-304(d).

ECDs that employ dispatchers face more financial challenges. Increases in population or other demographic changes can multiply staffing requirements and concomitant personnel and equipment costs. When local government contributions do not increase as costs rise, ECDs can become financially distressed. Most of the ten ECDs that became financially distressed in the last ten years employed dispatchers. The TECB adopted a maintenance of effort policy when approving ECD requests to increase local landline E-911 fees to assure that ECDs actually benefitted from rate increases. The policy requires local governments to maintain the same level of contributions after ECD requests to increase E-911 fees are approved. Most ECDs that employ dispatchers rely on local government contributions to cover the full cost of dispatching.

During the 2010 Tennessee legislative session, legislation was introduced that stated it was in the best interest of the public for ECDs to utilize the direct dispatch method and created an incentive for ECDs to select such method. SB3016/HB3165 would have authorized the county legislative body to levy a privilege tax in ECDs that adopted the direct dispatch method in lieu of the emergency telephone service charge. The privilege tax would be for the sole purpose of providing funding for the ECD that direct dispatches. Also under this bill, emergency responders would no longer have retained the right to dispatch their own services if the ECD elected the direct dispatch method; these same provisions also applied to ECDs that consolidated. This particular legislation, however, failed to garner the necessary committee support before either chamber could vote on the bill.

None of the professional public safety organizations specify a particular standard for whether dispatching should be a required ECD function.

No studies on actual dispatching costs in Tennessee have been undertaken. Surveys of ECD/local government relationships on dispatching and funding have not had sufficient participation to provide meaningful statewide data. Without such information, changes to the E-911 funding model that would restrict the TECB's authority to set the non-wireline E-911 service charge[30] and/or mandate the use of E-911 funds for dispatching appear to be premature.

[30] See TCA § 7-86-108(a)(1)(B)(i)(a) which states "It is the intent of the General Assembly that such rate be established at the lowest rate practicable consistent with the purposes of this section." The current rate was set by the TECB in 1998 at $1.00 per user or subscriber per month.

None of the professional public safety organizations specifies a particular standard for whether dispatching should be a required ECD function. The Association of Public-Safety Communications Officials (APCO) reports that 44% of call takers nationwide also dispatch.

TACIR staff makes no recommendation regarding changes to dispatching funding or requirements.

Structure

Organization of Emergency Communication Districts

Tennessee's emergency communications system is broken into Emergency Communication Districts (ECDs), which are generally consolidated on the county level. Tennessee has 100 ECDs in its 95 counties: 85 districts cover a one-county area and one district covers a two-county area. Six districts are just for a city area and eight districts cover the county outside the city districts (two cities with districts are located in multiple counties).

ECDs are further broken into 163 Public Safety Answering Points (PSAPs), or communications centers that are responsible for answering 911 calls. An operator either dispatches the appropriate emergency services agency or transfers the call to an appropriate public safety agency or other provider of emergency services. In some cases, PSAPs may dispatch some calls and transfer others, such as emergency medical calls transferred directly to an ambulance service.

Primary PSAPs receive incoming calls and can transfer them to secondary PSAPs, which dispatch emergency services and serve as a backup in case the primary PSAP fails or is overloaded with calls. Most districts (77%) have one primary PSAP that receives the initial 911 calls. An additional 11% have one primary PSAP and one or more secondary PSAPs. Twelve districts have multiple primary PSAPs that answer calls, six of which also have one or more secondary PSAPs. Call centers are either run by the ECD in cooperation with other county or city agencies, or run by the city or county with financial and/or equipment assistance from the ECD.

All of Tennessee's PSAPs affiliated with the 100 ECDs are in compliance with all applicable E-911 directives issued by the FCC.

All of Tennessee's PSAPs affiliated with the 100 ECDs are in compliance with all applicable E-911 directives issued by the FCC. They are wireless E-911 Phase II ready, meaning that each possesses the equipment and technology to receive a callback number and the approximate latitude and longitude of wireless callers. They are also equipped to receive 911 calls and location information from VoIP devices. In addition to

these 163 ECD-affiliated PSAPs, there are 17 unaffiliated PSAPs that do not have trunking systems to receive 911 calls directly from the public. Instead, these PSAPs receive transferred or relayed calls over their regular ten-digit lines.

Consolidation

Nationwide, the current trend in 911 systems is toward consolidation of PSAPs. The benefits accompanying consolidation include the opportunity to cut costs through economies of scale as well as the promise of better service. This is demonstrated by the elimination of surplus buildings and equipment, as well as the increased ease in meeting minimum staffing requirements with fewer positions and a combined staff. For example, if PSAPs required that two dispatcher positions be filled at all times even though call volume did not warrant such staffing, consolidating two PSAPs could allow them to pay for only two staff members, instead of four, cutting payroll by half. Secondly, the consolidation process often involves the pooling of funds to purchase more advanced equipment and the implementation of uniform training amongst employees, both of which yield a higher level of interoperability.

The main arguments against consolidation generally involve dispatcher unfamiliarity and the elimination of job positions.

Of course, there are some possible adverse consequences of consolidation. The main arguments against consolidation generally involve dispatcher unfamiliarity and the elimination of job positions. First, critics claim that since local dispatchers know more about their immediate environment than a centralized dispatcher in another town, they are better able to advise emergency services concerning an incident. Consolidation might actually make dispatchers less helpful and increase response time. Additionally, opponents point out that consolidation requires fewer staff members, which leads to job loss in the community. While many consolidations specify that positions will be eliminated only through attrition, this can still be a very unpopular policy for the community.

ECD Consolidation in Tennessee

Tennessee has a policy of encouraging consolidation within and among ECDs, evidenced by the statutory guidelines favoring consolidation and the monetary incentives provided by the Tennessee Emergency Communications Board (TECB). TCA § 7-86- 310, effective May 20, 1998, prohibits the creation of a new ECD within the boundaries of an existing district without the prior approval of the TECB. Additionally, TCA § 7-86-305 authorizes the TECB to study the possible consolidation or merger of two or more adjacent ECDs if one of the ECDs is financially

distressed, as a means to restore financial stability and ensure continued E-911 service for the public.

The TECB additionally provides monetary incentives to consolidating ECDs, with the full benefits of its grants programs and reimbursement programs continuing after consolidation. For example, a consolidated district will receive funds corresponding to the entirety of the sum of the funds allocated for each of its member districts. In July 2005, the TECB approved a program to reimburse the costs of consolidation up to $450,000, subject to the availability of funds. Notwithstanding these incentives, none of the ECDs has consolidated since TACIR's 2006 E-911 report.

TACIR staff recommends that the TECB continue to encourage ECD consolidation through the reimbursement of associated costs. The TECB should also require the completion of a thorough cost-benefit analysis demonstrating the potential benefits of a specific consolidation by any ECDs seeking reimbursement of consolidation costs.

Despite the lack of TECB incentives for PSAP consolidation, the number of primary PSAPs has declined from 139 to 127 since 2006.

PSAP Consolidation

In contrast, despite the lack of TECB incentives for PSAP consolidation, the number of primary PSAPs has declined from 139 to 127 since 2006.[31] More districts (77%) have only one primary PSAP that receives 911 calls than in 2006 (75%). Twelve districts, down from 16, have multiple primary PSAPs, and six of these districts have one or more secondary PSAPs, as opposed to the previous seven districts. At the same time, an additional 11% have one primary PSAP as well as one or more secondary PSAPs, compared with only 9% in 2006. These trends indicate that primary PSAPs have consolidated since 2006, but the number of secondary PSAPs in Tennessee has increased over the same period, from 26 to 37.

Although the traditional form of consolidation involves the integration of both buildings and equipment systems, there are alternative forms of PSAP consolidation that might appear more palatable to local governments. The first alternative is called collocation and consists of two PSAPs sharing the same building but keeping systems and services separate. This arrangement reduces building costs, while maintaining the same number of jobs and retaining autonomy. Due to the costs associated with separate equipment and staff, this is also generally not the most cost-effective solution. Another option is virtual consolidation, in which each PSAP retains its own location but is integrated into the same information system. This increases interoperability and allows

[31] These numbers are based on figures provided by the TECB.

PSAPs to share information without eliminating staff positions. Although this remunerates equipment costs by trading in separate systems for a unified one, the bulk of the costs, staffing and building, remain constant.

As Tennessee migrates to an IP-enabled communications system, consolidation is likely to become more of an issue. Such a system will not only increase capabilities to receive and disseminate multi-media information, but will also likely expand training requirements and staffing levels to maintain efficient and effective response to emergency situations. NG-911 will allow for greater interoperability, such as resource, workload, and data sharing, among PSAPs and ECDs. **Continual advances in E-911 technology will require review and evaluation of potential productivity improvements and cost savings from consolidation of existing PSAPs and the use of virtual PSAPs.**

Continual advances in E-911 technology will require review and evaluation of potential productivity improvements and cost savings from consolidation of existing PSAPs and the use of virtual PSAPs.

Consolidation Case Studies

Several notable examples of consolidation have occurred in the past few years; although there has been only one large-scale consolidation in Tennessee recently, other states have published consolidation feasibility studies in order to assess the consequences of centralizing their PSAPs. These case studies provide an opportunity to examine the cost-effectiveness of consolidation, as well as the unintended issues associated with it.

Hamilton County

Hamilton County recently formed a "unification" agreement between itself and several of its cities. This union was over ten years in the making, and was finalized when Hamilton County, Chattanooga, and East Ridge unified their systems in January 2008. Red Bank, Signal Mountain and Collegedale joined later in March. The new arrangement combines all dispatching for participating cities and trains current dispatchers to also operate as emergency medical dispatchers. The transition faced a number of obstacles, especially concerning the rate formula for calculating each city's contribution. With the new formula, based on call volume and population, Chattanooga and East Ridge's rates declined with the unification, while Hamilton County's rates increased slightly.[32] Red Bank, Signal Mountain, and Collegedale's rates increased dramatically, a fact that the cities contested. After a few months, the cities were able to draft a payment schedule to mitigate the abruptness of the rate increase, but their rates are still significantly

Hamilton County, Chattanooga, and East Ridge unified their E-911 systems in January 2008.

[32] Wilson 2007.

higher in order to remain in this pact. This scenario demonstrates the financial complications of consolidation, such as the distribution of costs between former districts and wage unification, and the political unpopularity of such considerations. Although it is too soon to evaluate total cost savings, it seems that the unification's main objective was increasing service level, rather than reducing costs.

New Jersey

In a 2006 New Jersey study, PSAP consolidation was found to produce economies of scale in regards to call and equipment costs. Through self-reported data from individual PSAPs, the study used Automatic Location Identification (ALI) dips as a proxy for call volume and compared the cost per call across varying volumes. The cost per call dropped dramatically as call volume increased to 4,000 calls per year, and then leveled off between 4,000 and 10,000 calls per year. By separating PSAP call volume into quintiles, the study found that the smallest PSAPs had three times the equipment cost per call as PSAPs in the 3rd quintile. Additionally, it was found that PSAPs in the 3rd quintile had equipment costs above the median, which indicates the cost per call declined precipitously in the 4th and 5th quintiles.

The New Jersey study noted that although cost per call declined, evidence of total cost savings were mostly anecdotal.

In regards to staffing, the study found that 80% of PSAPs with only one staff member on duty had equipment costs per call greater than that of the median, as opposed to 16% of PSAPs with multiple staff members. The same pattern was discovered in regards to the number of equipment positions.

The New Jersey study did note that although cost per call declined, evidence of total cost savings were mostly anecdotal. According to interviews of New Jersey officials, it was recognized that the cost-effectiveness of consolidation was not necessarily realized in the short term. The study also found that some systems, like Volusia County, Florida, focused on improving services through consolidation and actually incurred higher costs.

The New Jersey study also found that consolidated PSAPs were able to buy more advanced equipment than small PSAPs, and had a more highly trained staff than smaller PSAPs. Additionally, consolidated PSAPs experienced enhanced coverage and interoperability with police services; however, the study did note that these benefits were contingent on the consolidation of dispatch services with answering services.

As an incentive for efficiency, the study recommended that the state only fund PSAPs that have a certain level of staffing and call volume; however, the study did acknowledge that some of its recommendations

could be undermined by the existence of dispatchers performing dual roles, such as overseeing jails, while dispatching. Because of this, eliminating these positions would not result in higher efficiency, since the dispatcher would still be paid for his or her other duties.

Minnesota

A 2004 Minnesota study published several cases of consolidations within the state, along with the recommendations resulting from each. A particularly interesting consolidation took place between Ramsey County and the city of Maplewood. The Maplewood-Ramsey consolidation was based on a client-user model, where one party contracts services from the other. The consolidation only lasted for two years before dissolving. The study noted that there was very little political support for the merger and that the consolidation was mostly prompted by financial considerations. Ramsey County had offered to provide Maplewood with PSAP services for an unsustainably low price that did not cover payroll. Additionally, Maplewood employees were not totally integrated into the Ramsey PSAP and did not receive proper training on Ramsey protocol. Issues of seniority also complicated the transition, as Ramsey dispatchers were given seniority over Maplewood employees when choosing shifts. The study created several recommendations in response to this incident:

The Minnesota study found that a consolidated PSAP should not be under the governance of just one of the constituent jurisdictions.

- A consolidated PSAP should not be under the governance of only one of the constituent jurisdictions, as this breeds ill trust.
- Joining two understaffed PSAPs can yield one understaffed PSAP, if call volume is not taken into account.
- Sufficient training should be given to new staff, and employee buy-in should be sought in the consolidation process.
- Operating procedures should be chosen with care—either one PSAP should be willing to adopt the other's procedures or the two should jointly create new ones.

In contrast, the study also published the case of Anoka County, which has been consolidated for approximately thirty years. In that case, instead of just consolidating PSAPs, the county merged its communications, law enforcement training, criminal investigation, and records management. The county also uses a Joint Law Enforcement Council (JLEC), consisting of emergency services representatives from each city, to oversee these programs. The study found that Anoka County had a reputation for quality service, attributable to the existence of JLEC, as it coordinated emergency services while catering to local needs. This also confirms

the previous findings concerning the joint creation of new systems and independent review.

Other Consolidation Models

Other states have used incentives to encourage PSAP consolidation, with varying levels of success.

Other states have used incentives to encourage PSAP consolidation with varying levels of success. Most of the trends indicate that mandated consolidation is unsuccessful, while funding and mandated feasibility studies have limited effectiveness after a certain point.

Financial Incentives

Several states use financial incentives to encourage consolidation. Some states (Connecticut and Washington) provide extra funding for PSAPs that serve more than one county or municipality, while others (Maine and Washington) distribute extra state cost savings to consolidated PSAPs. As shown by Washington, it is possible to provide a combination of incentives. Probably the most common form of financial incentives is through grants, utilized by North Carolina, Maine, Washington, and Connecticut. Connecticut is one of the few states that offers data on this effort. Connecticut has no county governments and at the start of the grant program, in 1996, it had 108 PSAPs. To encourage consolidation, Connecticut provided $20,000 grants for groups of three or more jurisdictions to consolidate. These grants could be used to fund feasibility studies, transition costs, as well as an annual supplement for operating costs. The conditions surrounding the grants required PSAPs to use existing radio equipment, to combine resources, and to pay for their own facilities. The number of PSAPs dropped to 107 in 2003 and stabilized. The state director was hopeful that this number would further decline to 97, but Connecticut's performance suggests that the drive for consolidation has reached a plateau despite continuing financial incentives.

Mandates

Oregon's experience with consolidation illustrates the limitations of mandates and the observed natural limit of consolidation, despite coercion. A mandated consolidation was attempted in 2001 in Oregon, but was so ill-received that the measure was dropped in 2002. By contrast, in the 1980s and 1990s Oregon had undergone a rapid rate of consolidation without any mandate. In 1981 Oregon had 274 call centers, 65 by the late 1980s, 57 by 2000, and 54 by 2003. The 2001 mandate ironically only spurred three consolidations, which the state director thought would have invariably taken place. This suggests that

consolidation cannot be coerced and that after a point, incentives will not move PSAPs that were not previously considering consolidation.

Statewide PSAP Consolidation

New Hampshire has managed to consolidate into a statewide PSAP that fields about 2,000 calls a day and transfers them to dispatch centers across the state. This consolidated model earned them the Emergency Medical Dispatch Association's Accredited Center of Excellence (ACE) award, and, together with Rhode Island, New Hampshire is the only state with such a centralized system. In 2002 it reported 108 dispatch centers, which declined to 86 in 2007, consisting mostly of sheriff and police departments. This method is reported to be a highly cost-effective solution, as the 911 surcharge is a flat $.64 rate on each phone line. The dispatch centers charge the towns they serve through disparate formulas based on population, call volume, or activity based fees. Although this system seems to work well for New Hampshire, it might not be well-received in a state like Tennessee. Even with advanced technology that would allow for the seamless transfer of calls, it is unlikely that counties would relinquish their own PSAPs, making this solution politically infeasible.

Even with advanced technology that would allow for the seamless transfer of calls, it is unlikely that Tennessee counties would relinquish their own PSAPs, making statewide PSAP consolidation politically infeasible.

Still, several of the methods shown in the case studies hold lessons for potential consolidation efforts in Tennessee. These should be explored, though staff reiterates the need for the completion of thorough cost-benefit analyses demonstrating the potential benefits of any specific consolidation by any ECDs seeking reimbursement of consolidation costs.

Conclusion

This report has shown that Tennessee continues to be a leader in E-911 services, though continuing changes in technology are stressing service capabilities and the ability to fund those services. Staff provided numerous findings and recommendations.

Findings

- The Tennessee Emergency Communications Board (TECB) has worked with the state's ECDs to make Tennessee a national leader in 911 coverage for both wireline and wireless phones.
- Unlike many Public Safety Answering Points (PSAPs) across the nation, all PSAPs affiliated with Tennessee's 100 ECDs are wireless E-911 Phase II functioning. This means that each possesses the equipment and technology required to receive a callback number and the approximate latitude and longitude of wireless 911 callers. This assists emergency providers in locating callers. In 2005, Tennessee became the third state in the nation to reach this milestone.
- Tennessee's ECDs are in compliance with all applicable E-911 directives issued by the Federal Communications Commission (FCC).
- The number of Tennessee wireline subscribers has decreased every year since 2001. In contrast, the number of wireless subscribers has grown each year since 1999.
- From 2005 onward, wireless subscribers have outnumbered wireline subscribers in Tennessee.
- The percent of total wirelines provided to residential customers in Tennessee declined from 67% in 2005 to 61% in 2008.
- With advancement in technology, the emergency communication networks built four decades ago are becoming less efficient, less technologically advanced and, as a result, less able to provide the public with 911 services on newer technologies and devices.
- Seen as the future standard for emergency communications, NG-911 is the next phase in 911 service.
- Goals of Tennessee's NG-911 project include improving public safety for citizens and visitors, equalizing E-911 service across the state; preparing PSAPs for future 911 technologies; and transition E-911 related network costs from ECDs to the TECB.

- The TECB expects to begin deployment of NG-911 by early 2011.
- There is no consistent statewide reporting of taxable landline counts by customer type, residential versus business, for each ECD.
- Landline surcharges in Tennessee are some of the highest in the United States, while the state's wireless charge is also relatively high.
- There are wide variations in wireline collections among counties with similar demographics.
- The 911 Emergency Communications Fund is protected under a new federal law, the New and Emerging Technology 911 Improvement Act, which prohibits states from diverting funds designated for 911.
- Tennessee's longstanding policy of full cost recovery may be a reason for Tennessee achievement as the third state in the U.S. to be fully wireless E-911 Phase II compliant. As distributions to wireless carriers decreased, the TECB substantially expanded its current funding for ECD operations through new funding programs, grants, and reimbursements.
- The law requires the TECB to distribute 25% of the revenue generated by the monthly service charge on users and subscribers of non-wireline telecommunications service to the ECDs, but the TECB distributes substantially more funding to the ECDs than the law requires. The total percentage of the TECB's available non-wireline revenue distributed to ECDs was 77% in 2009. The TECB expects this number to increase by approximately 10% in 2010 based on the reduced distribution of cost recovery funds and projected NG-911 equipment reimbursements. Over 50% of the TECB's budget is dedicated to recurring ECD funding programs.
- The TECB's $14 million operational support fund, put into place partly in response to a recommendation in TACIR's 2006 report on E-911, had a clear effect on ECD solvency, as the number of financially distressed districts subsequently declined to two, the lowest since 1998. Also, the number of ECDs that had a negative change in net assets dropped from 22 to zero after the funding program was initiated in 2007.
- The TECB projects non-recurring, build-out costs of approximately $44 million over the next five years and recurring operational

costs of around $16.5 million annually for the NG-911 project. The TECB contends that NG-911 will result in substantial savings for the ECDs, as the TECB will ultimately absorb all trunking and selective routing costs. Currently, the ECDs pay most of those costs. The TECB estimates that the ECDs will collectively save around $5 million annually on trunking and selective routing costs as a result of NG-911 implementation. Once NG-911 is deployed, the TECB asserts that additional funds will be available for the ECDs.

- Tennessee ECDs are permitted, but not required, to use service fees to pay for dispatching services. It is well accepted by ECD officials throughout the state that E-911 fees should and do cover the full cost of E-911 service, including the purchase of the equipment that allowed Tennessee to become the third state in the nation to be fully wireless E-911 Phase II capable. While E-911 revenue is currently sufficient to cover the costs of E-911 service, it will not cover all dispatching costs.
- While the exact number of prepaid wireless users in Tennessee is not known, prepaid wireless revenue represents 7% of Tennessee's total wireless revenue. In 2009, three states passed legislation imposing 911 fees on prepaid wireless customers at the point of sale: Louisiana, Maine, and Texas. In 2010, Tennessee adopted similar legislation.
- Tennessee has a policy of encouraging consolidation within and among ECDs, evidenced by the statutory guidelines favoring consolidation and the monetary incentives provided by the TECB.
- Despite the lack of TECB incentives for PSAP consolidation, the number of primary PSAPs has declined from 139 to 127 since 2006.
- Nationwide, the current trend in 911 systems is toward consolidation of PSAPs.
- The benefits of consolidation include the opportunity to cut costs through economies of scale as well as the promise of better service.
- The main arguments against consolidation generally involve dispatcher unfamiliarity and the elimination of job positions.
- Other states have used incentives to encourage PSAP consolidation, with varying levels of success. Most of the trends indicate that

mandated consolidation is unsuccessful, while funding and mandated feasibility studies have limited effectiveness after a certain point.

Recommendations

- TACIR staff makes no recommendation regarding changes to the current implementation plan for NG-911.
- TACIR staff recommends that providers be required to file a standard line count return with each ECD and ECDs be required to file monthly or quarterly statistics with the TECB based on those returns.
- TACIR staff recommends the TECB analyze the significant differences in the amount of per capita landline revenue raised by ECDs with similar populations to determine the reasons for such wide differences.
- TACIR staff recommends the General Assembly postpone any changes to the state's ECD funding system until landline by type data is available.
- TACIR staff recommends that a sub-committee of TACIR be appointed to evaluate potential funding structures.
- TACIR staff does not recommend an increase in the state wireless fee.
- TACIR staff also does not recommend any change in the allocation of the E-911 fee until sufficient data is available to conduct a full revenue analysis.
- TACIR staff makes no recommendation regarding changes to dispatching funding or requirements.
- TACIR staff recommends that the TECB continue to encourage ECD consolidation through the reimbursement of associated costs.
- TACIR staff recommends that the TECB require the completion of a thorough cost-benefit analysis demonstrating the potential benefits of a specific consolidation by any ECDs seeking reimbursement of consolidation costs.
- TACIR staff notes that continual advances in E-911 technology will require review and evaluation of potential productivity improvements and cost savings from consolidation of existing PSAPs and the use of virtual PSAPs.

Appendix A. SB0208/HB0204

HOUSE BILL 204
By Matheny

AN ACT to amend Tennessee Code Annotated, Title 7, Chapter 86, relative to the Public Safety and Emergency Communications Act.

WHEREAS, 2009 marks twenty-five (25) years since the enactment of the Emergency Communications District Law of 1984 that laid the foundation for the statewide implementation of the enhanced 9-1-1 ("E-911") service, which service has greatly advanced public safety, and which law has facilitated increased professionalism in emergency communications, and gained Tennessee well-deserved recognition as the national leader in E-911; and

WHEREAS, since enactment of the 1984 act, each of Tennessee's ninety-five (95) counties, and six (6) municipalities, overwhelmingly approved referenda to authorize the creation of an Emergency Communications District ("ECD") governed by a locally-appointed Board of Directors; and

WHEREAS, the seamless, statewide ECD structure has significantly enhanced the ability of emergency service agencies, such as fire, police, emergency medical, hazardous materials, emergency management, and rescue units, to respond to Homeland Security priorities, and to coordinate responses through improved '"public safety answering points" (PSAPs), also known as 911 Dispatch Centers; and

WHEREAS, the 1984 public act was amended in 1998 to include within the E-911 system, users of cellular phones, defined as commercial mobile radio service (CMRS) subscribers, and to create the Tennessee Emergency Communications Board (TECB), and more recently amended to include within the E-911 system of internet-based, Voice over Internet Protocol (VoIP); and

WHEREAS, the impact of cellular (CMRS) and other wireless technology, including VoIP, has created a steady and continuing transition from the number of traditional landline based telephones, resulting in a revenue loss to Districts from the landline service, and creating a need to update the cellular/CMRS rate structure to provide fairness in funding the E-911 service; and

WHEREAS, reform of the funding will provide each ECD with resources to better cope with the growing demand for the life-saving E-911 service which now represents a majority of calls to PSAPs, the funds necessary to meet the demands of the next generation of E-911 equipment, and to assist funding a professional E-911 workforce of properly-trained dispatchers that assure each of the one hundred sixty (160) PSAPs in Tennessee is prepared to meet these public safety challenges; now, therefore,

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. This act shall be known and may be cited as the "Public Safety and Emergency Communications Act".

SECTION 2. Tennessee Code Annotated, Section 7-86-108(a)(1)(B)(i)(a), is amended by deleting the period at the end of the first sentence and by substituting instead the following:

, and not to be less than the residence-classification rate in subdivision (a)(2)(A).

SECTION 3. Tennessee Code Annotated, Section 7-86-303(d)(1), is amended by deleting the language "twenty-five percent (25%)" and by substituting instead the language "sixty-five percent (65%)".

SECTION 4. Tennessee Code Annotated, Section 7-86-303(d)(1), is further amended by adding the following language after the first sentence of such subdivision:

The board shall distribute an additional five percent (5%) of the revenue generated by such a charge to emergency communications districts created either pursuant to § 7-86-105 or this part to the fifty (50) lowest population districts as determined by the federal decennial census. Distribution by the board shall maximize the share of the lowest population districts within this group, but shall not distribute more to any district within this group than to any more populous district, including those not within this group. Unified or consolidated districts shall receive funding shares as if each were a separate district.

SECTION 5. That this shall take effect July 1, 2009, the public welfare requiring it.

Appendix B. SB0208/HB0204 Fiscal Note

February 2, 2009

SUMMARY OF BILL: Increases the monthly cell phone service charge from $1 to $1.50. Reallocates the distribution of this service charge from the Tennessee Emergency Communications Board (TECB) to local Emergency Communications Districts (ECDs) from 25 percent to 65 percent. An additional five percent of the revenue generated will be distributed to the 50 lowest populated ECDs.

ESTIMATED FISCAL IMPACT:

Increase State Revenue
$25,569,000/Emergency Communications Fund/FY09-10
$28,763,000/Emergency Communications Fund/FY10-11

Increase State Expenditures
$40,972,000/Emergency Communications Fund/FY09-10
$46,092,000/Emergency Communications Fund/FY10-11

Increase Local Revenue
$40,972,000/FY09-10
$46,092,000/FY10-11

Other Fiscal Impact – The increase in revenue and expenditures will increase each year as the number of cell phone subscribers grows.

Assumptions:

- According to the Department of Commerce and Insurance, increasing the distribution from 25 percent to 65 percent and adding an additional five percent to low population ECDs will increase state expenditures $40,972,000 in FY09-10 and $46,092,000 in FY10-11.
- Increasing the service charge from $1 to $1.50 will generate an increase in state revenue of $25,569,000 in FY09-10 and $28,763,000 in FY10-11.
- Local government revenue will increase $40,972,000 in FY09-10 and $46,092,000 in FY10-11 as a result of the reallocation.
- Revenue and expenditures will increase in FY10-11 as the number of cell phone subscribers increases. The Department estimates an increase of four percent in cell phone subscribers in FY10-11.

Appendix C. List of Stakeholders

In order to meet the short deadline for reporting back to the General Assembly on SB0208/HB0204 during the 106th session while still allowing for input from stakeholders, TACIR staff solicited written input from ECDs' boards of directors, county and city officials, public safety officials, wireless and wireline carriers, and related professional associations. Staff asked these stakeholders for comments concerning SB0208/HB0204 specifically and Tennessee's 911 emergency communications funding in general.

The written comments were published on the TACIR website (www.tn.gov/tacir) starting December 1, 2009. The deadline for comments was January 31, 2010, and the comments will remain posted on the TACIR website for one year, after which time they will be archived. Copies can be obtained through written request.

Responding organizations included:

- Cleveland Fire Department
- City of Chattanooga
- Coffee County ECD
- Coffee County
- Crockett County ECD
- CTIA - The Wireless Association
- Cumberland County
- Dekalb County ECD
- City of Dyersburg
- Germantown Fire Department
- Grundy County
- Hamilton County ECD
- Knoxville Police Department
- Knox County ECD
- Lauderdale County ECD
- Montgomery County ECD
- Shelby County ECD
- Sprint Nextel
- Sullivan County
- Sumner County
- Warren County
- Wayne County ECD

Appendix D. Monthly 911 Surcharges by State

State	Wireline	Wireless	VoIP
Alabama	$1.40 residential; $2.12 business	$0.70	5% of Base Rate
Alaska	$1.38(see note)	$1.38	
Arizona	$0.20	$0.20	$0.20
Arkansas	5% - 12% of Tariff Rates	$0.65	$65
California	.67% of intrastate calls	.67% of intrastate calls	
Colorado	$0.77 (see note)	$0.77 (see note)	$0.77 (see note)
Connecticut	$0.46	$0.46	$0.46
Delaware	$0.60	$0.60	$0.60
District of Columbia	$0.76 Wireline $0.62 Centrex	$0.76	
Florida	$0.50 (see note)	$0.50	$0.50
Georgia	$1.50	$1.00 - $1.50	$1.50
Hawaii	$0.27	$0.66	
Idaho	$1.15 (see note)	$1.15 (see note)	$1.00
Illinois	$0.25 - $3.20	$0.72 $2.50 City of Chicago	
Indiana	$1.44 (see note)	$0.50	$1.44 (see note)
Iowa	$0.95 (see note)	$0.65	
Kansas	$0.75 (see note)	$0.50	$0.50
Kentucky	$1.69(see note)	$0.70	
Louisiana	$0.62 - $1.00 Residential $1.30 - $2.00 Business	$0.85	
Maine	$0.37	$0.37	$0.37
Maryland	$1.00(see note)	$1.00(see note)	$1.00
Massachusetts	$0.75	$0.75	$0.75
Michigan	$1.44 (see note)	$1.44 (see note)	$1.44 (see note)
Minnesota	$0.75	$0.75	$0.75
Mississippi	$1.00 Res $2.00 Commercial (25 lines)	$1.00	
Missouri	15% of Base Rate (see note)	None	
Montana	$1.00	$1.00	$1.00
Nebraska	$0.82 (see note)	$0.50	$0.82 (see note)
Nevada	Varies by Jurisdiction – Property tax and/or Surcharge (max $0.25)	Must be equal to wireline Surcharge	
New Hampshire	$0.64	$0.64	
New Jersey	$0.90	$0.90	$0.90
New Mexico	$0.51	$0.51	

State	Wireline	Wireless	VoIP
New York	$0.35	$1.20 - $1.50(see note)	
North Carolina	$0.70	$0.70	$0.70
North Dakota	$1.00 - $1.50 (max)	$1.00 - $1.50 (max)	$1.00 – 1.50 (max)
Ohio	$0.50 (Max) Legally limited to a few Counties, no general surcharge.	$0.28	
Oklahoma	3-15% of Base Rate	$0.50 (Approx. 32 Counties)	$0.50
Oregon	$0.75	$0.75	$0.75
Pennsylvania	$1.35 (see note)	$1.00	$1.00
Rhode Island	$1.00	$1.26	$1.26
South Carolina	$.62 (see note)	$.62 (see note)	
South Dakota	$0.75	$0.75	
Tennessee	$0.98 residential / $2.30 business (see note)	$1.00	$1.00
Texas	Two separate surcharges imposed (see note)	$0.50	$0.50
Utah	$0.69 (see note)	$0.69 (see note)	
Vermont	Universal Service Funding	Universal Service Funding	
Virginia	$0.75	$0.75	$0.75
Washington	$0.20 Statewide $0.50 by Counties	$0.20 Statewide $0.50 by Counties	
West Virginia	$2.18 (see note)	$3.00	$2.18 (see note)
Wisconsin	$.75 plus local fee of $0.36 - $1.00	$0.75	$0.75
Wyoming	$0.75(maximum)	$0.75(maximum)	

Note: In states in which rates vary by jurisdiction, an average rate is shown when available.

Source: NENA (National Emergency Number Association), website http://www.nena.org/wireless-911-deployment#bottom, "State 9-1-1 User Fees.doc." and supplementary information obtained by direct contact with state officials.

State Notes

Alabama: The rates vary by district. Figures shown in table reflect average of rates in districts that impose monthly dollar surcharge amounts (as of 10/2009).

Alaska: Rates vary from $.75 to $2.00. Average rate of three largest cities is $1.38.

Colorado: Rates vary from $.43 - $1.25 (mostly county fees); average of rates (10/2009) was $.77.

Florida: Rates vary from $.41- $.50 maximum, most counties at the $.50 maximum.

Georgia: The majority of counties impose the maximum $1.50 wireline rate; wireless rates range from $0 to $1.50 (with no detailed data available by county).

Idaho: Forty-four counties impose the maximum standard fee of $1; 34 counties impose an additional $.25. Estimated average rate=$1.15.

Indiana: The rate is 3% in counties with a first or second class city, or 10% in other counties, of the average local wireline telephone billed rate.

Actual impact estimated in range of $.39 to $3.00 per month; estimated average for 92 counties is $1.44 per month.

Iowa: Rates vary from $0.00-$2.50. Average county rate (as of 7/08/2009) for 99 counties (80 impose full $1) was $.95.

Kansas: Almost all PSAPs impose $.75 monthly tax on wirelines.

Kentucky: Local wireline rates vary from $.00 to $4.50. Average rate for 128 taxing jurisdictions was $1.69

Maryland: There is a $.25 state fee, local fee max of $.75; all counties impose the full $.75.

Michigan: There is a $.19 state fee plus local surcharges of $.0-$3.56; average combined rate=$1.44 (effective 7/1/2009).

Missouri: An assessment of15% on a $20 base rate would be $3. Local rates imposed by vote.

Nebraska: Wireline fee range of $.50- $1.00; weighted average estimated at $.82.

Nevada: Counties can assess a property tax in lieu of surcharge; only two counties do so.

New York: state wireless fee is $1.20 ($1.50 in NYC); local wireline taxes are $.35 ($1.00 in NYC).

Oklahoma: A 15% rate equates to approximately $2-3 per month.

Pennsylvania: Wireline rates vary from $1.00 to $1.50; average rate as of 10/9/2009 was $1.35.

Rhode Island: Imposes a $.26 surcharge on wireless in addition to a $1 surcharge on both wireline and wireless access.

South Carolina: Local 911 wireline charges are based on number of local access lines (ranged from $.30 to $1.0). Weighted average wireline rate in 2008 (September) was $.62. This is then used as wireless rate.

Tennessee: Residential rates vary from $.65 to $2.00 (weighted average 2008 was $.98); business rates vary from $1.50-$3 (estimated average rate is $2.30); weighted overall rate is $1.33.

Texas: Local landline service fees vary by district: $.50 common residential rate. Some local governments impose higher rates on business lines. A separate 1% 911 surcharge is imposed on long distance service.

Utah: The local fee is $.61 and state fee is $.08 (as of October 2009).

Vermont: State 911 service is funded in part by funds raised by a 2% fee imposed on most revenues of telecommunications providers.

Washington: There is a local tax of $.50 and state tax of $.20.

West Virginia: Wireline rates vary from $.98 to $4.65. Average of all county rates is $2.18 (10/21/2009).

Wisconsin: Effective September 1, 2009 a $.75 per month "Police and Fire Protection Fee" is imposed on all subscribers in additional to local E-911 fee on wireline subscribers only.

Wyoming: Local taxing authorities set the rate but do not report specific data to any state agency.

Appendix E. 911 Landline Rates as of November 19, 2009

Emergency Communications District	Residential Rate	Business Rate	Increase Approval Date	Extension Approval Date
Anderson	$0.65	$2.00		
Clinton City	$0.65	$2.00		
Oak Ridge City	$1.50	$3.00	01/15/03	11/19/09
Bedford	$1.50	$3.00	06/22/06	09/24/09
Benton	$0.65	$2.00		
Bledsoe	$1.50	$3.00	07/14/04	04/19/07
Blount	$1.10	$2.45	11/05/04	04/19/07
Bradley	$1.50	$3.00	10/29/01	11/19/09
Campbell	$1.50	$3.00	06/22/06	09/24/09
LaFollette City	$1.50	$3.00	06/22/06	09/24/09
Cannon	$1.50	$3.00	04/19/07	
Carroll	$0.65	$2.00		
Carter	$1.50	$3.00	11/10/05	11/20/08
Cheatham	$1.15	$2.50	08/14/03	09/28/06
Chester	$0.65	$2.00		
Claiborne	$1.50	$3.00		Ref
Clay	$1.50	$3.00	08/28/08	
Cocke	$1.15	$2.50	11/01/01	11/19/09
Coffee	$0.55	$1.75		
Crockett	$0.65	$2.00		
Cumberland	$1.40	$2.75	05/27/04	01/24/08
Davidson	$0.65	$2.00		
Decatur	$0.65	$2.00		
DeKalb	$0.65	$2.00		
Dickson	$0.55	$1.65		
Dyer	$0.55	$1.67		
Fayette	$1.50	$3.00	10/25/07	
Fentress	$0.65	$2.00		
Franklin	$0.65	$2.00		
Gibson	$1.50	$3.00	01/15/03	11/19/09
Giles	$1.50	$3.00	07/25/05	01/24/08
Grainger	$1.50	$3.00	01/13/05	02/22/07
Greene	$0.65	$1.50		
Grundy	$1.50	$3.00	05/14/08	
Hamblen	$1.25	$2.75	09/10/04	02/22/07
Hamilton	$1.50	$3.00	03/17/05	05/14/08
Hancock	$1.50	$3.00	04/20/06	
Hardeman	$0.65	$2.00		
Hardin	$0.60	$1.50		
Hawkins	$0.90	$2.25		
Haywood	$0.65	$2.00		
Henderson	$0.65	$2.00		
Henry	$0.65	$2.00		
Hickman	$0.65	$2.00		
Houston	$1.50	$3.00	09/10/04	02/22/07
Humphreys	$1.50	$3.00	03/17/05	01/24/08
Jackson	$1.50	$3.00	06/08/01	04/19/07
Jefferson	$1.00	$3.00	01/15/03	09/24/09
Johnson	$1.50	$3.00	05/24/04	05/14/08
Knox	$1.50	$3.00	10/25/07	
Lake	$0.65	$2.00		
Lauderdale	$1.25	$2.25		Ref
Lawrence	$1.50	$3.00	08/14/03	11/19/09
Lewis	$0.65	$2.00		
Lincoln	$0.65	$2.00		
Loudon	$0.65	$2.00		
Macon	$0.65	$2.00		
Madison	$0.45	$1.64		
Marion	$0.65	$2.00		
Marshall	$1.50	$3.00	01/13/05	01/24/08
Maury	$1.50	$3.00	08/28/08	
McMinn	$0.65	$2.00		
McNairy	$1.15	$2.50	11/01/01	08/28/08
Meigs	$1.50	$3.00	07/27/05	11/20/08
Monroe	$0.65	$2.00		
Montgomery	$1.50	$3.00	10/30/01	11/19/09
Moore	$0.65	$2.00		
Morgan	$1.50	$3.00	11/10/05	05/14/08
Obion	$0.65	$2.00		
Overton-Pickett	$1.50	$3.00	10/29/01	05/14/08
Perry	$1.50	$3.00	06/22/06	09/24/09
Polk	$0.65	$2.00		
Putnam	$0.65	$1.66		
Rhea	$1.50	$3.00	03/17/05	01/24/08
Roane	$1.50	$3.00	05/24/04	01/24/08
Robertson	$1.50	$3.00	05/26/06	01/24/08
Rutherford	$0.50	$1.52		
Scott	$0.65	$2.00		
Sequatchie	$1.50	$3.00	07/27/05	08/28/08
Sevier	$0.55	$1.67		
Shelby	$0.65	$2.00		
Smith	$0.65	$2.00		
Stewart	$1.00	$2.50	07/27/05	08/28/08
Sullivan	$1.50	$3.00	03/17/05	02/22/07
Bristol City	$0.65	$2.00		
Kingsport City	$0.65	$1.65		
Sumner	$0.55	$1.00		
Tipton	$1.50	$3.00	07/16/04	01/24/08
Trousdale	$0.65	$2.00		
Unicoi	$1.50	$3.00	01/13/05	01/24/08
Union	$1.50	$3.00	03/17/05	01/24/08
Van Buren	$0.65	$2.00		
Warren	$1.00	$3.00	05/22/03	09/28/06
Washington	$1.50	$3.00	01/24/08	
Wayne	$1.00	$2.50	03/17/05	01/24/08
Weakley	$0.65	$2.00		
White	$1.50	$3.00	07/16/04	02/22/07
Williamson	$0.64	$2.00		
Brentwood City	$0.65	$2.00		
Wilson	$0.55	$1.67		

Source: Tenenssee Emergency Communications Board

Appendix F. TECB Status of Funding Support to ECDs from 7/1/01 thru 6/30/09

TENNESSEE EMERGENCY COMMUNICATIONS BOARD

STATUS OF FUNDING SUPPORT TO ECDS From 7/1/01 Through 6/30/09

All amounts are rounded to the nearest dollar.

Grants include GIS and Rural Dispatcher. Other reimbursements include dispatcher training, wireless trunk lines, catastrophe and miscellaneous.

Emergency Communications District	Operational Funding	Subtotal Grants	GIS Startup	Net Clock	Controller	Essential Equipment	Other Reimbursements	Total Non-Mandated ECB Support
Anderson	312,243	15,425	50,000	-	-	-	-	377,668
Bedford	312,243	114,575	50,000	2,510	40,000	150,000	2,539	671,868
Benton	258,506	30,000	7,091	-	-	-	1,900	297,497
Bledsoe	216,644	222,357	50,000	4,738	40,000	150,000	10,750	694,489
Blount	704,769	70,000	50,000	-	40,000	150,000	14,349	1,029,118
Bradley	529,856	42,494	50,000	5,000	-	150,000	27,238	804,588
Brentwood	312,243	40,000	50,000	5,000	-	-	703	407,945
Bristol	258,506	10,000	22,822	5,000	-	150,000	26,210	472,538
Campbell	312,243	84,575	50,000	-	-	35,385	17,604	499,807
Cannon	216,644	121,233	50,000	5,000	40,000	131,097	14,116	578,090
Carroll	258,506	169,452	50,000	-	40,000	111,444	68,484	697,886
Carter	360,122	40,000	53,769	4,359	40,000	137,275	17,015	652,541
Cheatham	312,243	94,575	50,000	5,000	-	49,239	968	512,025
Chester	258,506	109,452	46,812	4,954	-	42,957	-	462,681
Claiborne	312,243	154,575	50,000	5,000	40,000	141,313	11,911	715,042
Clay	216,644	140,000	50,000	5,000	40,000	150,000	6,595	608,239
Clinton	216,644	20,000	50,000	-	41,009	-	6,303	333,956
Cocke	312,243	54,877	50,000	-	-	-	-	417,120
Coffee	360,122	94,575	50,000	4,995	-	150,000	12,871	672,564
Crockett	216,644	82,717	50,000	4,984	40,000	60,237	3,988	458,570
Cumberland	360,122	120,000	50,000	5,000	40,000	150,000	-	725,122
Davidson	2,755,856	44,575	50,000	5,000	40,000	150,000	438,320	3,483,751
Decatur	216,644	169,452	50,000	4,937	40,000	150,000	30,236	661,269
Dekalb	258,506	154,877	49,357	5,000	39,950	73,581	5,949	587,221
Dickson	312,243	117,185	50,000	9,200	-	150,000	22,118	660,746
Dyer	312,243	122,055	50,000	-	40,000	150,000	7,085	681,383
Fayette	312,243	142,580	55,680	4,008	40,000	150,000	14,459	718,970
Fentress	258,506	164,877	50,000	5,000	40,000	150,000	17,447	685,831
Franklin	312,243	-	50,000	-	-	26,628	7,937	396,808
Gibson	312,243	90,000	50,000	4,800	14,981	150,000	1,959	623,983

Emergency Communications District	Operational Funding	Subtotal Grants	GIS Startup	Net Clock	Controller	Essential Equipment	Other Reimburse-ments	Total Non-Man-dated ECB Support
Giles	258,506	146,549	50,000	-	-	150,000	1,571	606,627
Grainger	258,506	232,521	50,000	5,000	14,900	150,000	74,098	785,025
Greene	360,122	-	50,000	5,000	40,000	150,000	5,086	610,208
Grundy	216,644	221,233	50,000	4,993	-	17,145	2,511	512,526
Hamblen	360,122	60,000	50,000	5,000	40,000	150,000	-	665,122
Hamilton	2,755,856	64,575	50,000	5,000	-	150,000	464,239	3,489,670
Hancock	216,644	145,425	50,000	5,000	40,000	150,000	-	607,069
Hardeman	258,506	169,452	49,968	5,000	40,000	150,000	-	672,926
Hardin	258,506	116,658	50,000	4,999	40,000	47,665	-	517,828
Hawkins	360,122	60,000	50,000	5,000	-	139,359	10,604	625,085
Haywood	258,506	121,233	49,327	-	-	-	-	429,066
Henderson	258,506	100,302	50,000	5,000	40,000	117,025	-	570,834
Henry	312,243	124,575	50,000	5,000	40,000	150,000	-	681,818
Hickman	258,506	154,575	49,457	4,998	40,000	98,598	-	606,134
Houston	216,644	141,233	50,000	5,000	-	133,676	-	546,554
Humphreys	258,506	169,452	50,000	5,000	40,000	150,000	-	672,958
Jackson	216,644	134,466	50,000	5,000	40,000	150,000	162,439	758,549
Jefferson	312,243	64,575	50,000	5,000	40,000	92,569	30,993	595,380
Johnson	258,506	149,452	49,982	5,000	39,978	149,377	-	652,296
Kingsport	312,243	64,575	50,000	5,000	40,000	143,315	16,827	631,960
Knox	2,755,856	64,575	50,000	-	40,000	150,000	103,959	3,164,390
Lafollette	216,644	115,425	50,000	5,000	40,000	150,000	-	577,069
Lake	216,644	186,502	47,545	4,954	-	132,695	6,833	595,173
Lauderdale	258,506	84,575	49,094	-	40,000	99,735	766	532,677
Lawrence	312,243	84,575	43,800	5,000	40,000	150,000	27,390	663,008
Lewis	216,644	104,575	49,137	4,954	40,000	150,000	-	565,310
Lincoln	312,243	128,274	50,000	-	-	74,621	4,795	569,932
Loudon	312,243	108,768	50,000	5,000	40,000	150,000	50,740	716,751
Macon	258,506	154,575	50,000	5,000	37,606	154,673	5,832	666,192
Madison	529,856	55,425	50,000	5,000	40,000	150,000	16,795	847,076
Marion	258,506	84,575	50,000	5,000	38,657	94,557	-	531,295
Marshall	258,506	30,000	50,000	5,000	40,000	27,301	-	410,808
Maury	529,856	50,000	50,000	5,000	40,000	150,000	12,009	836,865
McMinn	360,122	105,370	50,000	5,000	40,000	150,000	9,471	719,964
McNairy	258,506	169,452	49,837	4,998	-	136,725	5,718	625,236
Meigs	216,644	195,316	50,000	5,000	-	82,402	836	550,198
Monroe	312,243	120,000	50,000	5,000	-	100,510	5,834	593,588
Montgomery	704,769	64,575	50,000	5,000	40,000	150,000	56,509	1,070,852
Moore	216,644	125,808	50,000	5,000	-	36,608	-	434,060
Morgan	258,506	90,000	50,000	5,000	40,000	96,168	-	539,674
Oak Ridge	258,506	-	42,374	-	-	-	-	300,880

Emergency Communications District	Operational Funding	Subtotal Grants	GIS Startup	Net Clock	Controller	Essential Equipment	Other Reimburse-ments	Total Non-Man-dated ECB Support
Obion	312,243	90,000	50,000	5,000	40,000	150,000	14,918	662,161
Overton-Pickett	475,152	318,658	100,000	10,000	80,000	300,000	14,168	1,297,979
Perry	216,644	269,452	50,000	5,000	40,000	150,000	17,633	748,730
Polk	258,506	24,575	50,000	4,975	40,000	92,888	-	470,944
Putnam	360,122	64,575	50,000	5,000	40,000	150,000	13,125	682,822
Rhea	258,506	125,808	50,000	5,000	40,000	150,000	5,556	634,870
Roane	360,122	64,575	50,000	5,000	31,539	158,461	8,252	677,949
Robertson	360,122	14,575	-	-	-	150,000	-	524,697
Rutherford	704,769	34,575	50,000	3,357	40,000	150,000	41,112	1,023,813
Scott	258,506	144,575	50,000	5,000	40,000	54,280	18,166	570,527
Sequatchie	216,644	214,960	50,000	5,000	40,000	150,000	16,122	692,726
Sevier	529,856	50,000	50,000	5,000	40,000	150,000	24,736	849,592
Shelby	2,755,856	-	-	-	-	-	7,760	2,763,616
Smith	258,506	70,000	50,000	4,665	40,000	142,212	2,161	567,545
Stewart	216,644	130,000	48,963	5,000	-	13,995	-	414,603
Sullivan	529,856	64,575	50,000	-	40,000	115,978	13,079	813,488
Sumner	704,769	60,000	49,220	5,000	40,000	150,000	4,199	1,013,187
Tipton	360,122	42,494	49,500	5,000	40,000	150,000	24,874	671,991
Trousdale	216,644	14,575	50,000	3,380	40,000	150,000	-	474,599
Unicoi	258,506	140,302	50,000	3,895	40,000	145,542	11,004	649,250
Union	258,506	120,000	50,000	5,000	39,400	74,695	21,306	568,908
Van Buren	216,644	234,877	42,706	-	42,490	111,729	3,291	651,737
Warren	312,243	102,055	50,000	4,914	40,000	147,976	-	657,188
Washington	704,769	64,575	50,000	4,984	40,000	150,000	52,460	1,066,787
Wayne	258,506	24,575	50,000	4,307	11,053	107,627	11,376	467,444
Weakley	312,243	124,575	47,280	4,980	37,254	150,000	73,970	750,302
White	258,506	139,891	47,075	5,000	-	-	-	450,472
Williamson	704,769	10,000	50,000	5,000	-	149,406	21,769	940,943
Wilson	704,769	40,000	50,000	-	40,000	150,000	7,000	991,769
Totals	**$42,000,001**	**$10,198,521**	**$4,850,795**	**$398,838**	**$2,748,816**	**$11,598,669**	**$2,292,947**	**$74,088,588**

Appendix G. Wireline vs. Wireless Revenue Summary (Fiscal Year 2007-2008)

ECD	Wireline Revenue Increase / Decrease	Wireless Revenue Increase / Decrease	Difference Wireline vs Wireless	$14M Operational Funding Received	Total Increase in ECD Revenue
Anderson	$1,348.00	$6,009.43	$7,357.43	$104,081.00	$111,438.43
Bedford	-$4,399.00	$6,540.50	$2,141.50	$104,081.00	$106,222.50
Benton	$2,321.00	$2,877.68	$5,198.68	$86,169.00	$91,367.68
Bledsoe	-$1,008.13	$2,152.04	$1,143.91	$72,215.00	$73,358.91
Blount	-$21,328.00	$18,414.71	-$2,913.29	$234,923.00	$232,009.71
Bradley	-$17,390.00	$15,307.15	-$2,082.85	$176,619.00	$174,536.15
Campbell	$7,634.00	$5,555.92	$13,189.92	$104,081.00	$117,270.92
Cannon	$53,510.00	$2,231.90	$55,741.90	$72,215.00	$127,956.90
Carroll	-$17,548.00	$5,129.06	-$12,418.94	$86,169.00	$73,750.06
Carter	$3,394.25	$9,873.94	$13,268.19	$120,041.00	$133,309.19
Cheatham	-$2,163.00	$6,249.21	$4,086.21	$104,081.00	$108,167.21
Chester	-$1,426.00	$2,704.18	$1,278.18	$86,169.00	$87,447.18
City of Brentwood	$3,887.00	$4,079.80	$7,966.80	$104,081.00	$112,047.80
City of Bristol	$25,491.00	$4,319.18	$29,810.18	$86,169.00	$115,979.18
City of Clinton	-$5,305.00	$1,637.31	-$3,667.69	$72,215.00	$68,547.31
City of Kingsport	$83,700.00	$7,814.14	$91,514.14	$104,081.00	$195,595.14
City of Lafollette	$8,249.00	$1,379.23	$9,628.23	$72,215.00	$81,843.23
City of Oak Ridge		$4,765.70		$86,169.00	
Claiborne	-$10,386.00	$5,196.39	-$5,189.61	$104,081.00	$98,891.39
Clay	-$312.00	$1,387.93	$1,075.93	$72,215.00	$73,290.93
Cocke	$2,399.00	$5,840.78	$8,239.78	$104,081.00	$112,320.78
Coffee	-$12,227.00	$8,355.11	-$3,871.89	$120,041.00	$116,169.11
Crockett	-$2,755.00	$2,528.79	-$226.21	$72,215.00	$71,988.79
Cumberland	-$19,456.00	$8,144.21	-$11,311.79	$120,041.00	$108,729.21
Davidson	-$62,751.00	$99,169.18	$36,418.18	$918,619.00	$955,037.18
Decatur	-$2,051.00	$2,041.36	-$9.64	$72,215.00	$72,205.36
DeKalb	$975.52	$3,031.87	$4,007.39	$86,169.00	$90,176.39
Dickson	-$21,160.00	$7,509.76	-$13,650.24	$104,081.00	$90,430.76
Dyer	$4,283.00	$6,487.06	$10,770.06	$104,081.00	$114,851.06
Fayette	$89,699.00	$5,012.64	$94,711.64	$104,081.00	$198,792.64
Fentress	$391.98	$2,892.99	$3,284.97	$86,169.00	$89,453.97
Franklin	-$2,695.12	$6,833.56	$4,138.44	$104,081.00	$108,219.44
Gibson	$87,851.00	$8,379.14	$96,230.14	$104,081.00	$200,311.14
Giles	-$24,934.00	$5,124.19	-$19,809.81	$86,169.00	$66,359.19
Grainger	-$10,365.00	$3,594.94	-$6,770.06	$86,169.00	$79,398.94
Greene	-$26,622.00	$10,947.05	-$15,674.95	$120,041.00	$104,366.05
Grundy	-$136.00	$2,493.98	$2,357.98	$72,215.00	$74,572.98
Hamblen	$946.00	$10,115.08	$11,061.08	$120,041.00	$131,102.08
Hamilton	-$171,964.00	$53,578.29	-$118,385.71	$918,619.00	$800,233.29
Hancock	$5,043.00	$1,180.86	$6,223.86	$72,215.00	$78,438.86
Hardeman	$4,181.00	$4,890.69	$9,071.69	$86,169.00	$95,240.69
Hardin	-$2,852.00	$4,450.93	$1,598.93	$86,169.00	$87,767.93
Hawkins	$10,963.00	$9,320.72	$20,283.72	$120,041.00	$140,324.72
Haywood		$3,444.96		$86,169.00	
Henderson	-$4,630.00	$4,441.18	-$188.82	$86,169.00	$85,980.18
Henry	-$5,579.00	$5,414.45	-$164.55	$104,081.00	$103,916.45
Hickman	$643.00	$3,879.62	$4,522.62	$86,169.00	$90,691.62
Houston		$1,407.43		$72,215.00	
Humphreys	-$6,838.00	$3,119.89	-$3,718.11	$86,169.00	$82,450.89

ECD	Wireline Revenue Increase / Decrease	Wireless Revenue Increase / Decrease	Difference Wireline vs Wireless	$14M Operational Funding Received	Total Increase in ECD Revenue
Jackson	-$17,520.83	$1,911.36	-$15,609.47	$72,215.00	$56,605.53
Jefferson	-$9,769.00	$7,707.79	-$2,061.21	$104,081.00	$102,019.79
Johnson	-$2,297.00	$3,045.07	$748.07	$86,169.00	$86,917.07
Knox	$1,060,263.00	$66,479.04	$1,126,742.04	$918,619.00	$2,045,361.04
Lake	$286.00	$1,384.10	$1,670.10	$72,215.00	$73,885.10
Lauderdale	-$9,527.00	$4,715.97	-$4,811.03	$86,169.00	$81,357.97
Lawrence	-$7,878.00	$6,947.69	-$930.31	$104,081.00	$103,150.69
Lewis	$3,428.00	$1,978.02	$5,406.02	$72,215.00	$77,621.02
Lincoln	-$2,427.00	$5,453.61	$3,026.61	$104,081.00	$107,107.61
Loudon	-$3,103.00	$6,801.52	$3,698.52	$104,081.00	$107,779.52
Macon	-$1,561.00	$3,547.45	$1,986.45	$86,169.00	$88,155.45
Madison	-$16,785.00	$15,980.94	-$804.06	$176,619.00	$175,814.94
Marion	-$1,049.00	$4,833.41	$3,784.41	$86,169.00	$89,953.41
Marshall	-$7,455.00	$4,657.84	-$2,797.16	$86,169.00	$83,371.84
Maury	-$19,462.00	$12,093.65	-$7,368.35	$176,619.00	$169,250.65
McMinn	-$15,660.00	$8,529.33	-$7,130.67	$120,041.00	$112,910.33
McNairy	-$875.00	$4,289.99	$3,414.99	$86,169.00	$89,583.99
Meigs	-$4,003.26	$1,929.12	-$2,074.14	$72,215.00	$70,140.86
Monroe	-$21,051.00	$6,779.76	-$14,271.24	$104,081.00	$89,809.76
Montgomery	-$1,164.00	$23,451.54	$22,287.54	$234,923.00	$257,210.54
Moore	-$398.00	$998.85	$600.85	$72,215.00	$72,815.85
Morgan	-$4,136.00	$3,438.02	-$697.98	$86,169.00	$85,471.02
Obion	-$3,911.00	$5,646.77	$1,735.77	$104,081.00	$105,816.77
Overton - Pickett	$19,808.89	$4,361.32	$24,170.21	$158,383.00	$182,553.21
Perry	-$1,331.00	$1,327.91	-$3.09	$72,215.00	$72,211.91
Polk	-$15,609.00	$2,792.92	-$12,816.08	$86,169.00	$73,352.92
Putnam	-$27,838.00	$10,843.72	-$16,994.28	$120,041.00	$103,046.72
Rhea	$21,493.00	$4,942.01	$26,435.01	$86,169.00	$112,604.01
Roane	-$35,005.00	$9,033.11	-$25,971.89	$120,041.00	$94,069.11
Robertson	-$27,172.00	$9,472.11	-$17,699.89	$120,041.00	$102,341.11
Rutherford	-$11,925.98	$31,674.59	$19,748.61	$234,923.00	$254,671.61
Scott	-$4,186.00	$3,676.39	-$509.61	$86,169.00	$85,659.39
Sequatchie		$1,978.52		$72,215.00	
Sevier	$1,419.00	$12,384.57	$13,803.57	$176,619.00	$190,422.57
Shelby	-$390,113.00	$156,172.99	-$233,940.01	$918,619.00	$684,678.99
Smith	$955.73	$3,082.14	$4,037.87	$86,169.00	$90,206.87
Stewart	-$1,177.00	$2,152.56	$975.56	$72,215.00	$73,190.56
Sullivan	-$60,284.00	$14,499.23	-$45,784.77	$176,619.00	$130,834.23
Sumner	-$28,656.00	$22,699.98	-$5,956.02	$234,923.00	$228,966.98
Tipton	-$33,407.00	$8,921.87	-$24,485.13	$120,041.00	$95,555.87
Trousdale	-$2,354.00	$1,263.16	-$1,090.84	$72,215.00	$71,124.16
Unicoi	-$1,921.00	$3,074.30	$1,153.30	$86,169.00	$87,322.30
Union	$14,416.00	$3,098.86	$17,514.86	$86,169.00	$103,683.86
Van Buren	-$2,211.00	$958.45	-$1,252.55	$72,215.00	$70,962.45
Warren	-$7,818.00	$6,660.58	-$1,157.42	$104,081.00	$102,923.58
Washington	$79,543.00	$18,654.05	$98,197.05	$234,923.00	$333,120.05
Wayne	-$3,164.00	$2,930.79	-$233.21	$86,169.00	$85,935.79
Weakley	-$18,876.00	$6,072.23	-$12,803.77	$104,081.00	$91,277.23
White	-$5,251.00	$4,020.06	-$1,230.94	$86,169.00	$84,938.06
Williamson	$34,028.00	$17,957.11	$51,985.11	$234,923.00	$286,908.11
Wilson	$15,122.00	$15,454.05	$30,576.05	$234,923.00	$265,499.05

Appendix H. Per Capita 911 Revenues by State

State	Estimated Population as of July 1, 2008	Estimated 2008 Collections (in millions)	Per Capita Collections	State	Estimated Population as of July 1, 2008	Estimated 2008 Collections (in millions)	Per Capita Collections
Alabama	4,661,900	$60.5	$12.98	Montana	967,440	$13.2	$13.62
Arizona	6,500,180	$15.1	$2.32	Nebraska	1,783,432	$13.3	$7.45
Arkansas	2,855,390	$24.8	$8.69	New Hampshire	1,315,809	$10.9	$8.25
California	36,756,666	$106.8	$2.91	New Jersey	8,682,661	$130.0	$14.97
Colorado	4,939,456	$45.0	$9.11	New Mexico	1,984,356	$12.8	$6.44
Connecticut	3,501,252	$20.1	$5.75	North Carolina	9,222,414	$84.6	$9.17
Delaware	873,092	$7.7	$8.82	North Dakota	641,481	$8.2	$12.79
District of Columbia	591,833	$12.7	$21.53	Oregon	3,790,060	$43.8	$11.54
Florida	18,328,340	$131.0	$7.15	Pennsylvania	12,448,279	$190.2	$15.28
Hawaii	1,288,198	$8.8	$6.83	Rhode Island	1,050,788	$19.4	$18.46
Indiana	6,376,792	$71.0	$11.13	Tennessee	6,214,888	$95.6	$16.73
Iowa	3,002,555	$29.1	$9.68	Texas	24,326,974	$197.2	$8.11
Kansas	2,802,134	$22.5	$8.03	Utah	2,736,424	$23.4	$8.55
Maine	1,316,456	$6.7	$5.06	Virginia	7,769,089	$81.9	$10.54
Maryland	5,633,597	$57.2	$10.15	Washington	6,549,224	$69.5	$10.62
Massachusetts	6,497,967	$53.9	$8.29	West Virginia	1,814,468	$32.3	$17.79
Michigan	10,003,422	$68.9	$6.89	Wyoming	532,668	$6.7	$12.58
Minnesota	5,220,393	$51.3	$9.82				

Count	35
Sum	$358.02
Average	$10.23

Source: Collection data from FCC report: “Report to Congress on state collection and distribution of 911 and enhanced 911 fees and charges,” available at:http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-292216A2.pdf

Population data from U. S. Census at http://www.census.gov/popest/states/tables/NST-EST2008-01.xls.

District of Columbia imposes the fee on the provider but allows the fee to be recovered from the end-user. As a result, per capita collections partly reflect that the surcharge is collected on all government lines.

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