MARYLAND Association of COUNTIES

Next Generation 9-1-1 County White Paper

Introduction

9-1-1 is the most valuable phone number any Marylander knows. These three numbers represent the most fundamental connection – a link to help and protection – and the moment when those in need call on government for support.

Maryland's 9-1-1 system for emergency communications constitutes a remarkable achievement over the past half-century. But, the systems supporting today's emergency communications are over 50 years old. They lag behind the advanced communications technology that residents have come to expect.

Many Marylanders today have ready access to data connectivity, split-second responsiveness, and sophisticated geo-location tools in a cell phone which is with them at all times. The advent and proliferation of cell phone technology drives and enhances the ability of government emergency communications and response.

9-1-1 is a lifeline. We drill it into young children so that it becomes second nature to them: 9-1-1 = help. Our residents dial this number when they cannot breathe, as they bleed, when their neighbor lies unconscious on the floor. Investment in the next generation of 9-1-1 service will fulfill government's promise of support and protection. Now is the time to answer that call.

This report is intended as an informational document on Maryland's 9-1-1 structure and anticipated needs as the State moves to Next Generation 9-1-1 service. The Maryland Association of Counties (MACo) has gathered this information about Maryland's county public safety answering points from county governments and other sources. MACo submits this collection of data toward the Commission's exploration of Next Generation 9-1-1 (NG9-1-1) and hopes that these are helpful ingredients toward the Commission's future findings.

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Background

County governments are at the heart of 9-1-1 service delivery. In Maryland, there are 24 primary public safety answering points, corresponding to the 23 counties and Baltimore City. In some counties, primary public safety answering points, commonly called PSAPs, coordinate with secondary offices in their municipalities. In other jurisdictions, the primary PSAP performs all call response and dispatch county-wide.

Dorchester County MD Public Safety Answering Point

As described in more detail later in this report, less than half of the funding for PSAPs is provided by Maryland's 9-1-1 fee. This situation, which has persisted for many years, has constrained PSAPs as they seek to sustain aging infrastructure and respond to increasing call volumes.

In Maryland, unlike every other state in the nation, a fee of $1.00 *per bill*, rather than *per line* is charged to wireless and landline users. This antiquated system was created before the widespread shift to cell phone technology, which brought with it the adoption of family plans and the ability for several phone lines to be combined into one bill.

This fee-per-bill rather than fee-per-line system causes Maryland's 9-1-1 revenues to fall far short of those gathered by other states on a per capita basis. As one example, West Virginia's 9-1-1 fees gathered from a family of four with one landline and four cell phones would be 89% more than those gathered in Maryland. While the past several decades have seen technology shifts and a revolution in the use of cell phone technology, Maryland's 9-1-1 fee structure has remained the same.

Without adequate funding, maintenance of service delivery has become more challenging, and in recent years, several incidents—from busy-signals to service interruptions—have highlighted infrastructure needs. Introduced in this environment of constrained resources, Next Generation 9-1-1 could prove to be like the cowbird – the aggressive intruder who eats up the scant resources carried to the treetops, leaving its own fledglings to starve.

BEWARE THE COWBIRD EFFECT -- ENHANCED TECHNOLOGY NEEDS EAT UP CONSTRAINED RESOURCES, LEAVING CORE 9-1-1 SERVICES TO STARVE.

Lacking a supportive foundation – a fee that aligns with modern phone and data usage, and that provides for available next generation technology enhancements – one more mouth to feed could prove to be too much.

Maryland's 9-1-1 Structure and Legislative History

In 1967, the President's Commission on Law Enforcement and Administration of Justice recommended the creation of 9-1-1 for reporting emergency situations. In 1979, Maryland became the second state in the nation to adopt 9-1-1 as the statewide universal number for emergency services access. The Maryland Emergency Number Systems Board (ENSB) was established to coordinate 9-1-1 implementation efforts.

Maryland state law (now the Public Safety Article §1-310 & §1-311) initially established two funding streams that support 9-1-1. The first is the State "9-1-1 Fee," which is $0.25 per bill per month. The second is the County "Additional Fee" in an amount determined by each county, through local ordinance, up to a maximum of $0.75 per bill per month. Every single Maryland jurisdiction has long since passed its local ordinance establishing the "Additional Fee" at the $0.75 ceiling, recognizing actual operating costs well in excess of this level.

Maryland's 9-1-1 fee structure has not kept pace with rapidly changing technology and consumer behavior. 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 for several years. As a result, 9-1-1 fees covered less than 40% of 9-1-1 operational costs in 2016, forcing counties to supplement with $44 million in general revenue.

There are 24 primary and 70 secondary Public Safety Answering Points (PSAPs) in Maryland. Put simply, a PSAP is an answering location for 9-1-1 calls originating in a given area. A PSAP may be designated as Primary or Secondary, referring to the order in which calls are directed for answering. Primary PSAPs respond first; Secondary PSAPs receive calls on a transfer basis only and generally serve as a centralized answering location for a particular type of emergency call.

9-1-1 communications have evolved over time to include the advent of computer-aided dispatch, wireless telephone communications, and most recently, IP-based communication and telematics (automatic crash notification) services. These have brought about fundamental changes in the 9-1-1 infrastructure and added training and equipment challenges.

Next Generation 9-1-1 (NG9-1-1), is the communication service whereby one or more Public Safety Answering Points (PSAP) designated by the local 9-1-1 authority may receive calls from various devices dialed to the telephone number 9-1-1. The calls may be voice, text, photo, video, or telematics generated by smart devices, Voice over Internet Protocol (VoIP) telephones, or landline telephones.

In its 2018 legislative session, the Maryland General Assembly passed a bill setting up the Commission to Advance Next Generation 9-1-1 Across Maryland. The Governor signed the bill into law on April 24, 2018. Chapter 302 of the 2018 Laws of Maryland requires the Commission to Advance Next Generation 9-1-1 Across Maryland to submit preliminary and final reports to guide the State's implementation of Next Generation technology. The first report is due December 1, 2018.

Information on the Preliminary Report's Deliverables

The following information is broken out by the Commission's December 1, 2018, deliverables. Each deliverable appears in a blue box. The information included below is not meant to be comprehensive, but to provide a starting point. There may be areas that require additional information-gathering, or entire sub-categories that are absent. MACo hopes to continue to serve as a resource for additional information from county governments throughout the Commission's deliberations.

In gathering the information found below, MACo has worked with the Emergency Communications Committee of the Maryland Association of County Emergency Managers and relied on information in a variety of sources, including:

- Reports by Mission Critical Partners
- Information from the NG9-1-1 tariffs from Fairfax County, Virginia and Montgomery County, Maryland
- The APCO Report, *Project 43*

Legislative Charge 1	**On or before December 1, 2018, the Commission shall submit a preliminary report to the Governor and General Assembly on: "the needs, both capital and operating, to bring efficient and effective NG9–1–1 technology and service across Maryland, and estimated costs required to effect this priority outcome"**

The existing 9-1-1 infrastructure has performed admirably for decades. However, new data-rich communications devices and services are driving the existing 9-1-1 infrastructure toward its operational limits. Consumers are increasingly relying on enhanced wireless and IP-based communications technologies, which offer expanded data capabilities such as text, picture, and video messaging.

Many public safety-related service providers are also seeking to share crash notification data, personal health, family, and other pertinent records with emergency responders using the 9-1-1 system.

The transition to NG9-1-1 cannot be achieved without significant funding to upgrade our existing 9-1-1 equipment and communications systems, which are already under-funded through existing user fees.

According to the ENSB, Maryland's 9-1-1 system handled over 5 million calls in 2016.

Maryland 2016 PSAP Statistics

County	Director	Wireline	Wireless	Total
Allegany	Roger Bennett	10,671	32,269	42,940
Anne Arundel	Lt. John McAndrew	120,142	288,391	408,533
Baltimore City	Scott Brillman	435,774	884,312	1,320,086
Baltimore	Marie Whisonant	166,842	447,868	614,710
Calvert	Yvette Myers	5,083	26,223	31,306
Caroline	Bryan Ebling	2,896	12,502	15,398
Carroll	Jack Brown	17,002	39,643	56,645
Cecil	Richard Brooks	10,114	48,417	58,531
Charles	Tony Rose	21,717	57,005	78,722
Dorchester	Kim Vickers	3,660	16,020	19,680
Frederick	John Woelfel	16,372	92,771	109,143
Garrett	Kenneth Collins	5,332	9,770	15,102
Harford	W. Mitch Vocke	24,806	81,088	105,894
Howard	Lt. Edward Sprinkle	26,165	107,817	133,982
Kent	Wayne Darrell	2,656	7,071	9,727
Montgomery	Bill Ferretti	116,992	344,386	461,378
Prince George's	Charlynn Flaherty	129,583	1,078,689	1,208,272
Queen Anne's	Scott Haas	5,266	21,126	26,392
Somerset	Yvette Cross	2,433	11,333	13,766
St. Mary's	Robert Kelly	11,629	35,308	46,937
Talbot	Clay Stamp	6,842	12,632	19,474
Washington	Bardona Woods	21,842	74,068	95,910
Wicomico	David Shipley	13,129	59,372	72,501
Worcester	Fred Webster	8,438	31,696	40,134
Maryland Total 9-1-1 Calls		**1,185,386**	**3,819,777**	**5,005,163**

Data Source: Maryland Emergency Numbers Systems Board

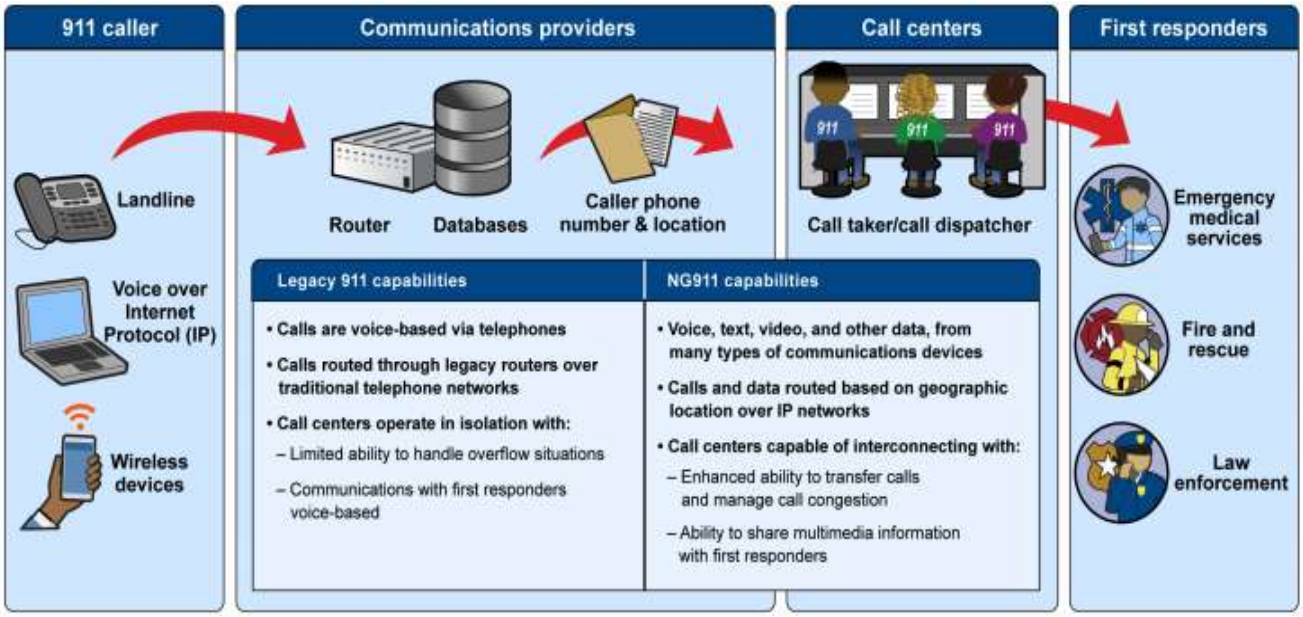
The total costs of 9-1-1 service in Maryland provided in audit reports to the ENSB was $98 million in 2016 (the most recent data available). However, that figure may not fully reflect the true costs of operating Maryland's 9-1-1 system. The FY2016 9-1-1 fee revenue and cost figures shown were collected in support of audits required under MD Public Safety Code §1-312 to demonstrate the appropriate use of state and local 9-1-1 fee revenue to support the installation, enhancement, maintenance, and operation of a county or multicounty 9-1-1 system as defined. Each of the 24 jurisdictions may have additional direct and indirect costs related to the provision of 9-1-1 service not fully reflected within the current figures.

Total 9-1-1 user fee revenues in 2016 totaled just $54 million; a total revenue shortfall of $44 million.

The Federal Communications Commission (FCC) estimates that the per capita cost of providing 9-1-1 service in Maryland in 2016 was $16.89. In the same year, revenues from 9-1-1 user fees totaled just $9.35 per capita – a further representation of the funding gap in existing services.

Based on a recent contract in Virginia, and one adopted by Montgomery County, Maryland, a preliminary estimate of transitional costs associated with the implantation of NG9-1-1 in Maryland is $33 million, while annual operating costs could total $11.5 million.

Overview of 9-1-1 Communications and Dispatch Process



Source: Based on GAO analysis of public safety industry documents. I GOA-18-252

Infrastructure costs include:

- Capital
- Software
- Start-up: including consulting and contractor salaries
- Legacy System/transition (Shifting to new technology)
- Upgrading Geographic Information Systems (GIS)
- NG9-1-1 non-recurring costs – This is the one-time cost charged from an NG9-1-1 solution provider to implement NG9-1-1.
- Special construction – This includes the cost to install a diverse and/or redundant IP connection to the PSAP and may involve the installation of additional fiber optic cable or the use of another technology. It is necessary to ensure the high reliability of the 9-1-1 system; however, it may not be available at all PSAP locations. Alternate approaches may be necessary in some locations.
- GIS data preparation – These are the costs associated with ensuring that the local GIS data is of a quality to support NG9-1-1. To be considered ready, 98% of all existing 9-1-1 location records must be retrievable in the local GIS data.

- Originating service provider (OSP) transition – These are the costs associated with any actions required by the OSP to deploy NG9-1-1. They may include costs such as the installation and testing of new connectivity to the ESInet point of interconnection and its recurring cost until the legacy connectivity to the selective router is disconnected.
- Legacy 9-1-1 service provider transition – During the transition, there may be periods of time when costs are incurred by the PSAP for both the NG9-1-1 network and the current 9-1-1 network. These costs cover those periods of time and any other costs incurred by the legacy 9-1-1 service provider in the transition to NG9-1-1.
- Project management assistance – Not all PSAPs have the resources to manage the deployment of NG9-1-1. These are costs associated with providing project management assistance to those PSAPs in need of assistance.
- Data analytics upgrade – This is the cost to upgrade the existing data analytics program to support the NG9-1-1 system.

Operating Costs

Operating costs of Public Safety Answering Points (PSAPs) will increase dramatically after the implementation of NG9-1-1 technology. One of the primary drivers of operating costs for NG9-1-1 will be enhanced personnel needs. Personnel Needs associated with NG9-1-1 technology include filling existing gaps in PSAPs, new job duties of Emergency Communications Specialists, and the need for new positions, including GIS support.

Existing Personnel Gaps in Public Safety Answering Points Must Be Filled

Based on the annual survey of the Emergency Number Systems Board, there were 234 new hires in public safety answering points spanning 2017-2018. Every county reported new hires to fill continuing vacancies, which totaled 182 at the time the survey was conducted.

Every new hire demands significant investment. Each new hire must be trained by current staff, essentially requiring deployment of two persons to a post, and then backfilling the trainer's post with additional staff.

Public safety answering point directors estimate the cost of bringing on a new hire at $40,000. Based on the number of new hires statewide for 2017, the cost of filling current personnel gaps may be estimated as a **$9.36 million annual operating cost**.

Counties' 9-1-1 Staff

County	Full Time	Part Time	New Hires	Position Title
Allegany	23	0	4	Telecommunicator (Tiers 1-4)
Anne Arundel	80	5	8	PCO1-4 (Call-takers, Dispatchers, Supervisors, Admin)
Baltimore City	220	0	13	911 Operator
Baltimore	191	2	63	Emergency Communications Technician I
Calvert	23	2	8	Public Safety Call Taker
Caroline	12	6	1	Public Safety Dispatcher I-IV
Carroll	34	7	5	Emergency Communications Specialist 1-3
Cecil	31	4	10	Dispatcher
Charles	25	5	5	Public Safety Dispatchers
Dorchester	25	3	10	911 Dispatcher
Frederick	63	15	20	Emergency Communications Specialist
Garrett	12	0	2	Communications Officer
Harford	68	0	11	Public Safety Dispatcher 1
Howard	75	0	2	Emer. Comm. Telecommunicator
Kent	12	3	4	Emergency Services Dispatcher
Montgomery	191	0	21	Public Safety Emergency Communications Specialist I-IV, and Senior
Prince George's	201	1	19	Emergency Call Taker I/II
Queen Anne's	21	4	6	Public Safety Dispatcher
Somerset	12	4	2	Emergency Communications Clerk
St. Mary's	28	12	9	Communications Specialist
Talbot	19	1	3	Communication Specialist
Washington	44	24	7	Call-Taker
Wicomico	19	0	4	Operator 1 or 2
Worcester	23	0	5	Communications Clerk
Total	**1452**	**98**	**235**	

Enhanced Personnel Training and Skills Are Needed to Address Modern Technology

The workforce of Next Generation PSAPs will need to expand existing knowledge, skills, and abilities to include cybersecurity awareness and familiarity with digital, broadband, and IP-based technology. As described by the Association of Public-Safety Communications Officials (APCO) in *Project 43: Broadband Implications for the PSAP*, NG9-1-1 Telecommunicators will need to sift through and prioritize increased volumes and types of data, including unsettling imagery.

> THE WORKFORCE OF THE FUTURE WILL NEED... CYBERSECURITY AWARENESS AND FAMILIARITY WITH DIGITAL, BROADBAND, AND IP-BASED TECHNOLOGY. . .
>
> -Association of Public Safety Communications Officials International (APCO)

The chart below provides an overview of the differences between a 9-1-1 Call Taker today, and a NG 9-1-1 Telecommunicator. The salaries below are estimates, however, the Commission may be able to further refine these estimates, including the salary and benefit

enhancements incumbent upon the changing role of NG9-1-1 Telecommunicators through inquiry to Fairfax, Virginia. Fairfax has begun a transition to NG9-1-1 service, and may have data and experience to share with regard to changing job descriptions and recruitment.

9-1-1 Job Positions vs. NG 9-1-1 Job Positions

9-1-1 Call Taker	NG 9-1-1 Telecommunicator
Duties	**Duties**
Answer, triage, and process incoming emergency and non-emergency calls of service.	Triage/evaluate incoming data, including video from fixed systems, vehicle and body worn camera systems, and NG9-1-1 callers
Operate a work station that receives calls through emergency and non-emergency telephone systems, and includes geographical mapping tools, aerial photography, and Computer Aided Dispatch information.	Receive and process information coming in from sensors and analytical systems. This could include devices that are used by first responders (e.g. biometric telemetry from firefighters working on HAZMAT scenes or a gunshot detection sensor on an officer's vest).
Determine the type of service(s) required and initiate calls for service in accordance with emergency dispatch protocols to Police, Sheriff, Fire/EMS.	Collect, analyze, and distribute data from a variety of new sources made available by broadband technology. For example, a PST may need to review multiple incoming video or picture images to determine which (if any) should be forwarded to responding units, flagged for review by investigators at a later date, or stored.
Identify when it is appropriate to refer callers to other county, state, or federal agencies or outside jurisdictions.	Liaise between the PSAP and external entities who are managing data on behalf of the agency. For example, a PSAP may elect to initially dispatch EMS units and then route all video calls needing pre-arrival medical care to a third party center that specializes in that function.
	Monitor or analyze social media feeds to identify information critical for first responders. Some PSAPs are already using data mining filters to monitor Twitter message traffic to obtain intelligence at large events, including the location of disturbances and other problems being noted on social media.
	Manage the equipment, software, and network components.
Minimum qualifications	**Minimum qualifications**
High school diploma or GED.	Post-secondary education training in IT, public safety telecommunications.
Salary	**Salary**
$40,000	$60,000

In addition to the changing role of a call taker, IT and GIS professionals will require additional services to provide ongoing support in the transition to Next Generation 9-1-1. The Maryland State Geographic Information Committee may provide more information to the Commission on this topic.

Legislative Charge 2	On or before December 1, 2018, the Commission shall submit a preliminary report to the Governor and General Assembly on: "the current funding structure for both State and local support for 9–1–1 service and its adequacy in supporting both current service and anticipated next generation service"

The transition to NG9-1-1 cannot be achieved without significant funding to upgrade our existing 9-1-1 equipment and communications systems, which are already under-funded through existing user fees.

With the transition to NG9-1-1, costs which may not have traditionally been associated with 9-1-1 services, may now fall within the purview of such services. This includes additional systems that are needed to support the additional types and formats of data which may be transmitted to PSAPs.

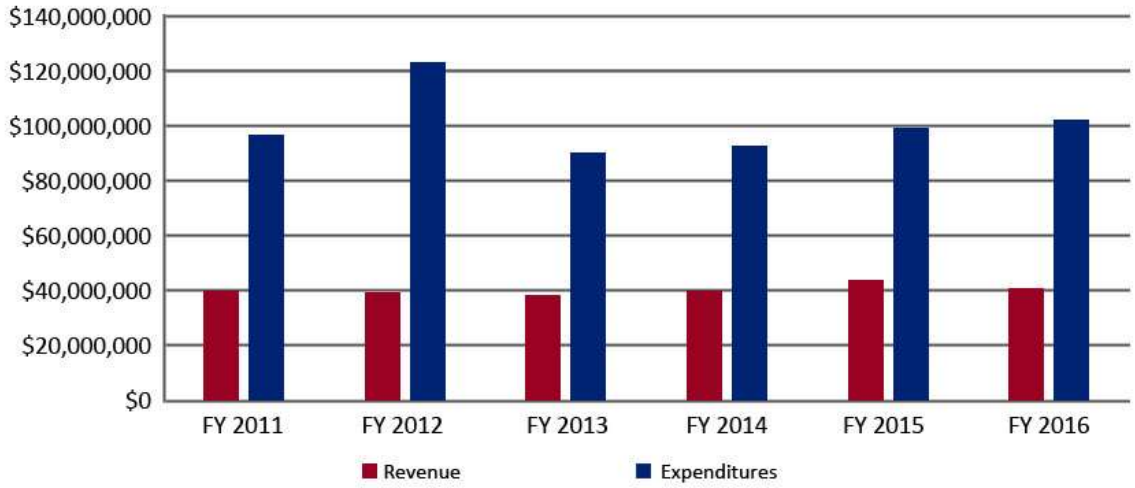
Maryland's current funding structure is, effectively, $1.00 per subscriber bill for landline and wireless phone service and $0.60 per pre-paid wireless phone. This funding structure is not adequate to support either current services or anticipated next generation service needs. From each $1.00 fee, $0.25 is deposited to a State Trust fund and $0.75 is remitted to the county. Unfortunately, the local "additional fee" covers less than 40% of county PSAP's operational costs, causing counties to supplement with $44 million in general revenue in 2016.

2016 Revenue Shortfall – County 9-1-1 Operating Costs

County	County 9-1-1 Revenue Fees	County 9-1-1 Expenses	Percent of 9-1-1 Fee Offset
Allegany	$370,160.98	$2,429,009.00	15.24%
Anne Arundel	$4,131,508.44	$6,956,026.00	59.39%
Baltimore City	$3,400,116.95	$9,440,736.58	36.02%
Baltimore	$6,139,385.14	$10,860,890.00	56.53%
Calvert	$615,658.68	$2,732,130.14	22.53%
Caroline	$175,252.65	$1,012,556.89	17.31%
Carroll	$1,088,028.80	$2.725,308.00	39.92%
Cecil	$604,133.02	$2,052,732.00	29.43%
Charles	$1,105,606.76	$2,413,538.00	45.81%
Dorchester	$177,921.60	$1,493,678.00	11.91%
Frederick	$1,597,201.10	$6,465,002.00	24.71%
Garrett	$191,973.90	$1,332,731.00	14.40%
Harford	$1,734,007.69	$6,135,994.00	28.26%
Howard	$2,283,975.44	$6,210,100.00	36.78%
Kent	$130,741.12	$971,980.00	13.45%
Montgomery	$7,358,479.21	$11,628,020.00	63.28%
Prince George's	$6,513,717.87	$11,221,564.00	58.05%
Queen Anne's	$316,834.60	$1,510,753.00	20.97%
Somerset	$107,335.40	$1,032,201.00	10.40%
St. Mary's	$616,158.50	$2,686,662.00	22.93%
Talbot	$271,724.27	$3,488,177.00	7.79%
Washington	$821,317.51	$4,188,200.00	19.61%
Wicomico	$549,693.71	$1,094,737.00	50.21%
Worcester	$424,392.82	$2,476,317.00	17.14%
Total Operational Cost Offset by 9-1-1 Fee			**39.71%**

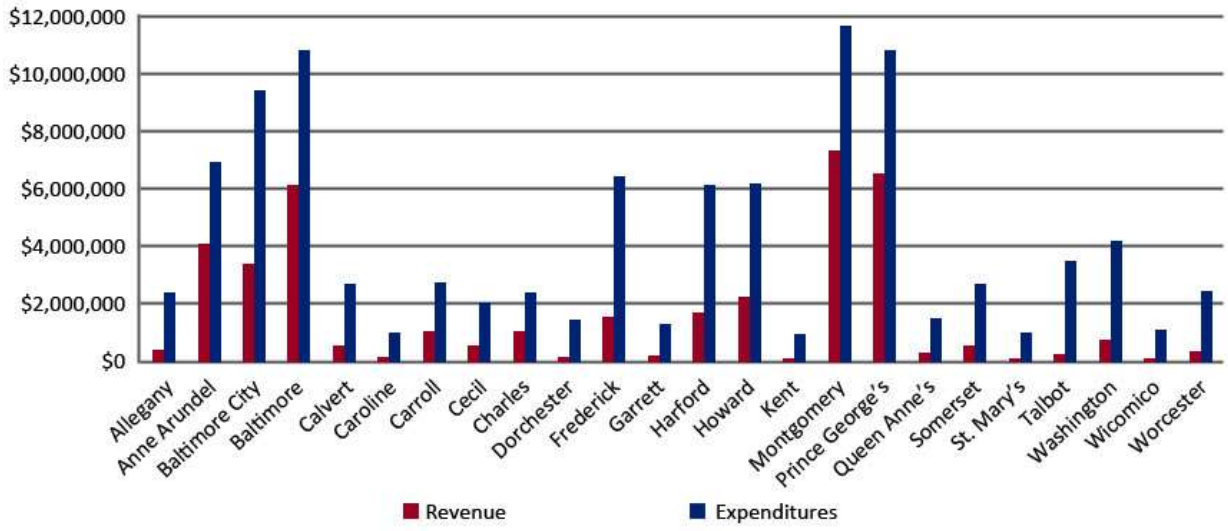
Data Source: Maryland Emergency Number Systems Board

Total County 9-1-1 Fee Revenue and Operational Expenditures
Fiscal 2011-2016



Note: Prepaid wireless 9-1-1 fee revenues were first collected in fiscal 2014. County operating expenditures are costs as reported by county-selected independent auditors and typically include 9-1-1 related personnel salaries and benefits, recurring maintenance and service fees, mapping maintenance and updates, network associated fees, and capital expenditures not covered by the Emergency Number Systems Board. Dara Source: Department of Legislative Services

9-1-1 Fee Revenues and Operating Expenditures by County
Fiscal 2016



Data Source: Department of Legislative Services

Maryland's 9-1-1 fee structure is unlike those levied by every other state in that it assesses one user fee per bill, rather than assessing fees based on a per-line or per-device basis.

Even though the number of interconnected devices capable of two-way communications with a PSAP has continued to grow, the revenue to pay for it has remained flat or even declined.

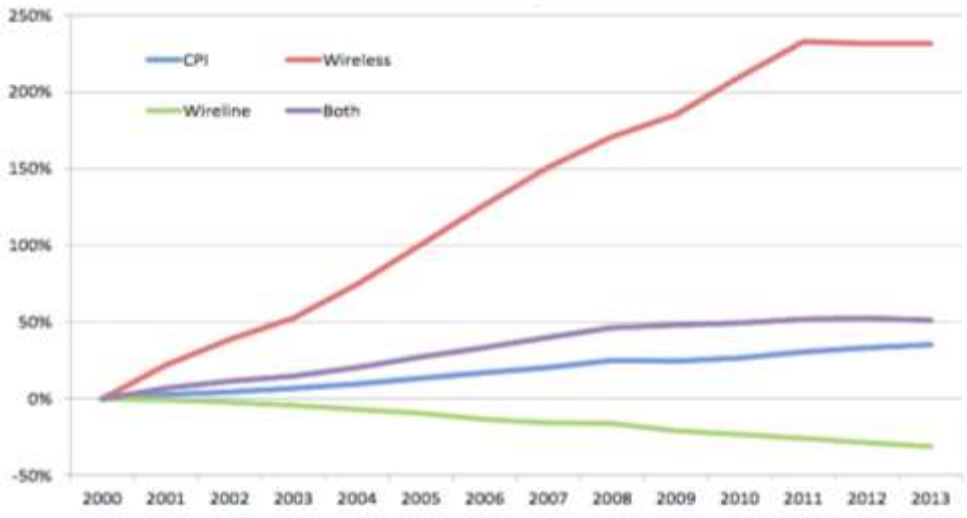
With the growing popularity of wireless technology devices that provide users with a variety of communication methods, the wireline customer base has been stagnating or declining for several years. Consumers are moving from wired phones to wireless and prepaid phone plans. According to the National Association of Counties (NACo), from 2003 to 2015, the percentage of adults in the United States that only had wireless telephone service grew from under 5 percent to over 47 percent.

In 2015, 20 percent of emergency phone calls were made on wired telephones, while 80 percent were made on wireless devices. The number of 9-1-1 calls from wired telephones dropped by 13.4 percent, while 9-1-1 calls from wireless phones increased by 9.8 percent in just one year, between 2014 and 2015.

Because income from wired phones has decreased, counties in Maryland rely increasingly on their general fund revenues to operate primary PSAPs.

Maryland's 9-1-1 fee structure has not kept pace with rapidly changing technology and consumer behavior. For instance, "family plans," which consolidate multiple cellular telephone lines onto one bill, have become increasingly popular. Additionally, workplaces may use one primary phone line to handle all of their phone traffic. In each of those cases, those customers would still pay just $1 a month, regardless of the number of lines in service.

Telephone Subscriber Growth vs. CPI
(Cumulative Percentage Growth Since 2000)



Data Source: National Association of Counties (NACo)

Legislative Charge 3	On or before December 1, 2018, the Commission shall submit a preliminary report to the Governor and General Assembly on: "comparisons of the current Maryland 9–1–1 fee and additional charge mechanism under § 1–310 of the Public Safety Article and comparable systems used in other states"

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 9-1-1 services on newer technologies.

The Maryland Public Safety Article (§1-310 & §1-311) initially established two funding streams that support 9-1-1. The first is the State "9-1-1 Fee," which is $0.25 per subscriber per month. The second is the County "Additional Fee" in an amount determined by each county, through local ordinance, up to a maximum of $0.75 per bill per month.

All Maryland counties and Baltimore City have passed local ordinances establishing the "Additional Fee" at $0.75. Telephone companies, wireless carriers, and other 9-1-1 accessible service providers, collect and remit both portions of the 9-1-1 Surcharge to the State Comptroller, monthly, for deposit into the 9-1-1 Trust Fund.

A third funding source was codified, effective July 1, 2013, when the Maryland Public Safety Article was amended to extend the collection of the Maryland 9-1-1 Surcharge Fee to the sales of pre-paid wireless service ($0.60 per transaction), collected at the point of sale (Maryland Pre-Paid Wireless E9-1-1 Fee).

Money collected from the State "9-1-1 Fee" and 25% of all collected Maryland Pre-Paid Wireless E9-1-1 Fees may be used to reimburse counties for the cost of enhancing Maryland's 9-1-1 system through payment to a third-party contractor (Public Safety Article §1-308). COMAR (12.11.03.12) further defines equipment qualifying for funding or reimbursement.

Money distributed quarterly to the counties from the collection of the county "Additional Fee" and Maryland Pre-Paid Wireless E9-1-1 Fee may be spent on the installation, enhancement, maintenance, and operation of a county or multi-county 9-1-1 system. Maintenance and operation costs may include telephone company charges, equipment costs, equipment lease charges, repairs, utilities, personnel costs, and appropriate carryover costs from previous years (Public Safety Article §1-312).

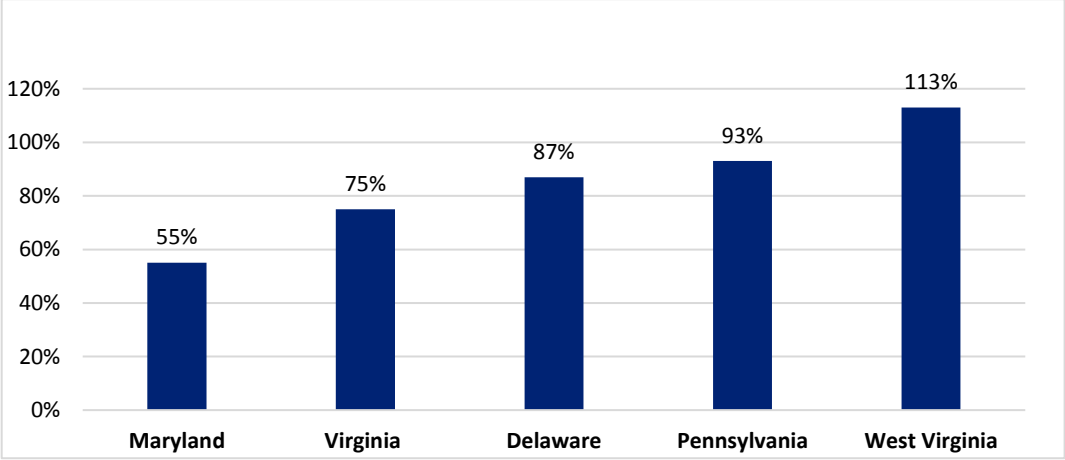
Maryland 9-1-1 Surcharge Fees

County	State Fee [8]	County Additional Fee [9]	Pre-Paid Wireless [10]	Effective Date [11]
Allegany	$0.25	$0.75	$0.60	October 1, 2003
Anne Arundel	$0.25	$0.75	$0.60	July 1, 2005
Baltimore City	$0.25	$0.75	$0.60	June 23, 2004
Baltimore	$0.25	$0.75	$0.60	April 23, 2004
Calvert	$0.25	$0.75	$0.60	June 15, 2004
Caroline	$0.25	$0.75	$0.60	November 9, 2004
Carroll	$0.25	$0.75	$0.60	June 8, 2004
Cecil	$0.25	$0.75	$0.60	October 1, 2003
Charles	$0.25	$0.75	$0.60	January 1, 2004
Dorchester	$0.25	$0.75	$0.60	October 1, 2003
Frederick	$0.25	$0.75	$0.60	July 1, 2004
Garrett	$0.25	$0.75	$0.60	October 1, 2003
Harford	$0.25	$0.75	$0.60	May 4, 2004
Howard	$0.25	$0.75	$0.60	July 1, 2007
Kent	$0.25	$0.75	$0.60	January 30, 2004
Montgomery	$0.25	$0.75	$0.60	October 1, 2003
Prince George's	$0.25	$0.75	$0.60	March 5, 2004
Queen Anne's	$0.25	$0.75	$0.60	October 1, 2003
Somerset	$0.25	$0.75	$0.60	February 10, 2004
St. Mary's	$0.25	$0.75	$0.60	July 1, 2004
Talbot	$0.25	$0.75	$0.60	May 11, 2004
Washington	$0.25	$0.75	$0.60	October 21, 2003
Wicomico	$0.25	$0.75	$0.60	January 1, 2004
Worcester	$0.25	$0.75	$0.60	October 1, 2003

Data Source: Maryland Emergency Numbers Systems Board

The FCC reports that, in 2016, 9-1-1 user fees covered just 55% of the total cost to provide 9-1-1 service in Maryland.

Percentage of 9-1-1 Costs Covered by User Fees



Data Source: Federal Communications Commission

There is no uniform manner in which states and local governments fund the nation's 9-1-1 systems. According to the FCC, generally speaking, 9-1-1 funding sources fall into one or more of four distinct categories: (a) fees on communications services (assessed by state or local authorities); (b) general funds from city, county, and/or state tax revenues; (c) targeted grant funds (federal or state); and/or (d) other sources. While the majority of states get most of their 9-1-1 funding through fees on communications services, some states rely on other sources for a significant percentage of their 9-1-1 funding. For example, according to the FCC's most recent report on 9-1-1 funding, Kansas, Maryland, and Wisconsin each get more than half of their funds from general tax funds at the county level.

The chart below compares Maryland's 9-1-1 fee structure with other states in the region.

Representative User Classes	Lines	MD	PA	VA	WV	DE	DC	NJ	NC
One land line	1	$1.00	$1.65	$0.75	$5.24	$0.60	$.076	$0.90	$0.65
Home – one land, one separate wireless	2	$2.00	$3.30	$1.50	$8.62	$1.20	$1.52	$1.80	$1.30
Home – one land line, separate wireless family plan w/4 lines	5	$2.00	$8.25	$3.75	$18.76	$3.00	$3.80	$4.50	$3.00
Prepaid – pays $100 for 3 months of service	n/a	$0.20	$1.65	$0.50	$2.00	$0.60	$0.66	n/a	$0.65
Small Business – 1 land line, separate wireless plan w/6 lines	7	$2.00	$11.55	$5.25	$25.28	$4.20	$5.32	$6.30	$4.20
Large Business – 5 land lines on one bill, separate wireless plan w/19 lines	24	$2.00	$39.60	$18.00	$93.00	$14.80	$18.24	$21.60	$14.40

Legislative Charge 4	**On or before December 1, 2018, the Commission shall submit a preliminary report to the Governor and General Assembly on: "potential changes to the Maryland 9–1–1 fee and additional charge mechanism, and their estimated effect on the implementation of full–service NG9-1-1 across Maryland"**

The availability of effective and reliable emergency services continues to be critically important to the safety and security of our state, and the ability to effectively transition to new and advanced NG9-1-1 services is equally important. However, those goals cannot be satisfied unless sufficient funds are available and used appropriately.

In the interest of statewide deployment, the Commission should consider a clear fiscal plan that supports implementation without causing additional fiscal burden to county governments.

Policy Options:

1. Maintain the current "per-bill" fee structure but change the state and local rate to more accurately reflect the true costs of operating primary PSAPs in a NG9-1-1 environment.
2. Remove the statutory cap on the "additional fee" to allow local governments to address shortfalls in the current 9-1-1 fee structure, while maintaining a fixed fee set by the State.
3. Conform Maryland's fee structure to other states, basing the fee on a per-line basis, rather than per-bill.
4. Create a tiered fee structure based on the number of lines on a subscriber's account.
5. Enact some combination of the preceding options – altering both the rate or the local cap, and also the base to which the rate applies.

Fiscal estimates arising from rate changes may be developed for the Commission using current revenue data and appropriate interpolation.

SB 466 of 2017 proposed to conform Maryland's fee structure to other states, with the fee based per line, rather than per bill. According to the bill's original fiscal note, special fund revenues would have increased by *at least* $26.6 million annually. However, because telecommunications companies consider information about the number of lines in accounts as proprietary and have been unwilling to share the data, the total impact cannot be reliably estimated.

SB 1051 of 2018 proposed a tiered fee structure based on the number of lines on a subscriber's account. According to the bill's fiscal note, telecommunications companies consider information about the number of lines in accounts as proprietary and have been unwilling to share the data. Therefore, while the bill is expected to increase special fund revenues for the 9-1-1 Trust Fund—potentially significantly—the total impact cannot be reliably estimated.

Legislative Charge 5	**On or before December 1, 2018, the Commission shall submit a preliminary report to the Governor and General Assembly on: "potential statutory or administrative changes to the scope of allowable uses for grant funding approved through the Emergency Number Systems Board, to promote and ensure ideal support for maintenance, training, and other costs associated with both the transition to NG9-1-1 service and the continued functions of effective call centers"**

The Commission should consider whether changes to the current scope of allowable uses for State Emergency Number Systems Board funding are warranted.

While the technological transition to Next Generation will create new types of costs, expansion of the scope of uses of the central fund may threaten the Number Systems Board's ability to provide funding across all counties on an annual basis.

Legislative Charge 6	**On or before December 1, 2018, the Commission shall submit a preliminary report to the Governor and General Assembly on: "other matters related to the financing and procurement of NG9–1–1 across Maryland"**

There are undoubtedly additional factors that would benefit from the Commission's input and advice. For example, there is much work to be done to ensure an efficient rollout of Next Generation 9-1-1 and to provide overall cost containment of implementation throughout all Maryland counties. Whether procurement of core or additional Next Generation 9-1-1 Services should be consolidated or coordinated on a regional basis will be for the consideration of the Commission.

Legislative Charge 7	**On or before December 1, 2018, the Commission shall submit a preliminary report to the Governor and General Assembly on: "the anticipation and prevention of cybersecurity threats to NG9–1–1 infrastructure"**

The transition to NG9-1-1 will significantly increase the vulnerability of 9-1-1 centers to cyber-attacks. This increased vulnerability raises significant concerns that must be addressed through effective cybersecurity measures, and these protective measures will result in new and ongoing expenses in an NG9-1-1 environment.

As described by APCO, the Association of Public Safety Communications Officials, in their report, *Project 43: Broadband Implications for the PSAP*, Next Generation 9-1-1 technology brings additional cybersecurity threats.

For Next Generation 9-1-1 technology, the threats to future systems include:

- An increase in complexity and risk from interconnections and touch points, including:
    - Non-secure networks and devices such as citizen callers, external databases, web-based traffic, and other data connections to systems beyond the operational ownership of the modernized public safety network;
    - Links between internal public safety networks, such as between ESInets, legacy PSAPs, and next generation core services, and between FirstNet systems and NG9-1-1 systems;
- Use of Land Mobile Radios that use servers, routers, and firewalls, or other IP-Connected devices;

- Integration of CAD, CPE, and GIS that expose PSAPs to new vulnerability by opening up more access points and information sharing connections between PSAPS;
- Reliance on internet access to obtain public information, including real-time weather and news reports; and
- Use of other IP-based systems within the PSAP, including:
    - Power supply systems, such as climate controls, building monitoring systems, battery chargers, and remote monitoring systems;
    - Security cameras;
    - Fuel pump systems; and
    - Any device with an assigned IP-address.

Maryland county PSAPs are currently working with the consulting firms Mission Critical Partners and SecuLore Solutions, to complete a dynamic 9-1-1 network discovery for all public safety answering points in Maryland. The project is ongoing and includes work assessing current cybersecurity threats to Maryland primary public safety answering points.

The Emergency Communications Committee of the Maryland Association of County Emergency Managers (a MACo Affiliate Organization), Mission Critical Partners, and SecuLore Solutions may be able to provide additional insight for the Commission into the difference between current cyber threats and protections costs as compared with those of the future.

APCO emphasizes the importance of cybersecurity education and training for personnel at all levels of PSAP operations in a Next Generation environment. The Association also notes that some cybersecurity resources might be provided centrally at the state level, to reduce ongoing costs. State and local cyber strategies to accompany the shift to NG9-1-1 would assist with planning, and create efficiencies statewide. In addition, APCO recommends statewide and local protocols for reporting suspicious activities, threats, or attacks.

> IT IS ESSENTIAL THAT CYBERSECURITY IS CONSIDERED AT THE ONSET, AND NOT TREATED AS AN AFTERTHOUGHT, WHILE ADOPTING NEW TECHNOLOGIES. IN OTHER WORDS, CYBERSECURITY MUST BE "BAKED IN," NOT "BOLTED ON."
>
> - Association of Public Safety Communications Officials (APCO)

Conclusion Framework

The Commission faces an important and urgent charge. Maryland's current 9-1-1 system already suffers a shortfall in dedicated funding – leaving these services at the mercy of each county's varying service priorities. This already undermines the policy goals of the dedicated funding source as originally envisioned.

In the years ahead, Maryland must advance toward Next Generation services to deliver the level of public safety services our residents deserve and demand. The costs, both one-time and ongoing, will be substantial, and will overwhelm the already inadequate fee structure. With equipment, staffing, employee training, cybersecurity, and other cost drivers, the move to Next Generation 9-1-1 will be fiscally demanding.

Maryland needs to advance Next Generation across the entire state, not merely jurisdictions with financial and/or political wherewithal. A coordinated plan to enable these improvements through the state-driven capital grants process and a locally generated fee structure is essential to this goal. The Commission should work toward a proposal that can deliver these essential services in a timeframe that will meet Marylanders' expectations.

References and Thanks

Project 43, Broadband Implications for the PSAP is referenced and relied upon throughout this report. The report may be found online via the Association of Public Safety Communications Officials website: https://www.apcointl.org

Several years ago, Ross Coates, the Manager of Harford County's Emergency Services Communications Center, approached MACo and the Maryland Association of County Emergency Mangers about creating a statewide group of county PSAP Directors. The Emergency Communications Committee of the Maryland Association of County Emergency Managers is now a vibrant and active association that gives an opportunity for PSAP Directors to share information, lessons learned, and to provide information and support on advocacy topics in emergency communications to MACo's Legislative Committee and Policy Team. The Emergency Communications Committee, under the leadership of Ross Coates, has been a primary and essential resource for this report.

MACo Contact

Kevin Kinnally, Policy Associate is MACo's point of contact for Next Generation 9-1-1.

For more information about this report, and for any other information that MACo may provide to the Commission over the course of its work, you may reach Kevin at:

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