

ECONOMICS, POLICY, AND TECHNOLOGY OF CONSOLIDATING PUBLIC SAFETY ANSWERING POINTS (PSAPS) UNDER FEDERAL COMMUNICATIONS POLICY

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ABSTRACT

More capable internet-protocol, broadband technologies, and information systems are increasing the capacity of Public Safety Answering Points (PSAPs) to receive more calls and better support first responders through Next Generation (NG) 911 systems. This PSAP capacity is driving the need to consider whether state and local governments should consolidate some of their approximately 6,000 PSAPs. Little coherent federal policy guidance and less thoughtful state mandates on consolidating PSAPs point to the need for federal and state consolidation policy frameworks to urge and support the consolidation of PSAPs. Congress and state legislatures must face the subtle but contentious state and local policy concern of consolidating PSAPs. Creating contention is allegedly the adverse effect of the consolidation of PSAPs on PSAP culture, jobs, facilities, dispatch, and operations, but such effects have not prevented or greatly diminished the operations of existing consolidated PSAPs. Consolidation is made more challenging by the need to implement NG911 systems to provide NG911 services. Three not-for-profit organizations urge the implementation of NG911 services by 2020, and one other will examine how PSAPs manage and control the receipt of more emergency calls and data to notify and support first responders. Thus, state and federal policy-makers must recognize and address economic, technological, and policy interests to establish federal

and state policy frameworks to consolidate PSAPs while counties and municipalities also implement NG911 services.

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I. INTRODUCTION

More capable broadband and internet protocol-enabled communications networks, as well as geographical and other information systems are relentlessly driving changes to the nature and operations of emergency 911 call centers, or Public Safety Answering Points¹ (PSAPs) throughout the United States.² These

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¹ 47 C.F.R. § 20.3 2015 (“Public Safety Answering Point. A point that has been designated to receive 911 calls and route them to emergency service personnel.”); see MASTER GLOSSARY OF 9-1-1 TERMINOLOGY, NATIONAL EMERGENCY NUMBER ASSOCIATION (NENA)120 (Jul. 29, 2014), http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/Standards/NENA-ADM-000.18-2014_2014072.pdf [hereinafter *Master Glossary*] (“Public Safety Answering Point” (PSAP): An entity responsible for receiving 9-1-1 calls and processing those calls according to a specific operational policy.”).

² See Federal Communication Commission (FCC), *FCC Announces Release of the Consolidated Final Report of the Task Force On Optimal PSAP Architecture*

integrated networks and additional data-driven systems demand that state and federal policymakers firmly urge and fully support county and municipal (local) governments to consolidate PSAPs by identifying and addressing economic, technological, and public policy challenges facing the nation's 6,000 uncoordinated PSAPs.³

(Feb. 19, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DA-16-179A1.pdf (noting that the FCC chartered a task force to provide recommendations to the FCC about how PSAPs can “optimize their security, operations, and funding as they implement Next Generation 911 (NG911).”); see L.R. KIMBALL, INC., *The Data Difference in Next Generation 9-1-1 Systems 2* (May, 2010), <http://www.lrkimball.com/uploads/file/6a7e75dd308c42c69b068ca4f801df26/CT.T61.2010-05.WP007.NG9-1-1%20Data.pdf> (explaining the role of information systems to provide and deliver data in the NG911 systems, for example, attaching addresses in at the outset of a 9-1-1 call rather than having the receiving end conduct a database search to find the location of the caller).

³ See Donny Jackson, *FCC Commissioner O’Rielly Hints at PSAP Consolidation as Task Force Begins 911 Architecture Work*, URGENT COMMUNICATIONS (Jan. 29, 2015), <http://urgentcomm.com/ng-911/fcc-commissioner-o-rielly-hints-psap-consolidation-task-force-begins-911-architecture-work> (reporting that a Commissioner of the Federal Communications Commission (FCC) recognized PSAP consolidation as an option, but noted difficulties presented by that option given the current 5,900 PSAPs. The Commissioner further stated as few as three PSAPs would permit the current structure to operate at “optimal efficiency.”); see, e.g., FED. COMM’NS COMM’N (FCC), *TASK FORCE ON OPTIMAL PSAP ARCHITECTURE 8* (Feb. 29, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DA-16-179A2.pdf [hereinafter TFOPA] (“TFOPA) is a federal advisory committee chartered under the Federal Advisory Committee Act (FACA) to provide recommendations to the [FCC] regarding actions that [PSAPs] can take to optimize their security, operations, and funding.”); *Id.* at 27 (The TFOPA does not view a sole focus on consolidation as being constructive. Further, the TFOPA does not believe consolidation is within the exclusive scope of its work. Rather, the TFOPA seeks to focus on determining the funding mechanisms that offer the best approach in moving forward). Two states have mandated the consolidation of PSAPs. See e.g., N.M. CODE R. § 10.6.2.15 (LexisNexis 2016) (requiring the consolidation of PSAPs providing emergency call services and dispatch functions into one PSAP in each county); 50 ILL. COMP. STAT. ANN. 750/15.4 (LexisNexis 2016) (prior to January 1, 2016, corporate authorities could establish an Emergency Telephone System Board, the appointment of members thereof is based on population. After that date, any such board creation is contingent on the board being a Joint Telephone System Board based on an intergovernmental agreement.). In North Carolina, Cumberland County and City of Fayetteville, two local governments considered the need to merge PSAP operations and administration, but considered choosing mere co-location in a new facility. See Andrew Barksdale, *New Fayetteville-Cumberland 911 Center Would Cost More Than \$29 Million*, FAYOBSERVER (Feb. 25, 2016), http://www.fayobserver.com/news/local/new-fayetteville-cumberland-center-would-cost-over-million/article_28bab98c-765c-509d-8f2d-ca5ce3c48897.html (“Over the years, the city and county have taken steps to harmonize their 911 call centers. . . . But talk of merging the two departments in recent years has morphed into co-locating them under a new roof while maintaining separate staffs and pay scales.”).

The FCC is obligated to support state emergency 911 call services⁴ policies that govern and promote the planning, implementation, and management of Enhanced (E) 911⁵ and Next Generation (NG) 911⁶ systems. In fact, NG911 systems will replace E911 systems, but they depend on more capable information systems and Internet-Protocol (IP) enabled communications networks⁷ that

⁴ 47 U.S.C. § 615 (2015) (“The Federal Communications Commission shall encourage and support efforts by States to deploy comprehensive end-to-end emergency communications infrastructure and programs, based on coordinated statewide plans, including seamless, ubiquitous, reliable wireless telecommunications networks and enhanced wireless 9-1-1 service. In encouraging and supporting that deployment, the Commission shall consult and cooperate with State and local officials responsible for emergency services and public safety, the telecommunications industry (specifically including the cellular and other wireless telecommunications service providers), the motor vehicle manufacturing industry, emergency medical service providers and emergency dispatch providers, transportation officials, special 9-1-1 districts, public safety, fire service and law enforcement officials, consumer groups, and hospital emergency and trauma care personnel (including emergency physicians, trauma surgeons, and nurses). The Commission shall encourage each State to develop and implement coordinated statewide deployment plans. . .”).

⁵ 47 U.S.C. § 615b(10) (2015) (“The term ‘enhanced 9-1-1 service’ means the delivery of 9-1-1 calls with automatic number identification and automatic location identification, or successor or equivalent information features over the wireline E911 network (as defined in section 9.3 of the Federal Communications Commission’s regulations (47 C.F.R. 93) as of July 23, 2008) and equivalent or successor networks and technologies.”).

⁶ 47 U.S.C. § 1401(22) (2015) (Next Generation 911 service means “an IP-based system comprised of hardware, software, data, and operational policies and procedures” that “(A) provides standardized interfaces from emergency call and message services to support emergency communications; (B) processes all types of emergency calls, including voice, text, data, and multimedia information; (C) acquires and integrates additional emergency call data useful to call routing and handling; (D) delivers the emergency calls, messages, and data to the appropriate public safety answering point and other appropriate emergency entities; (E) supports data or video communications needs for coordinated incident response and management; and (F) provides broadband service to public safety answering points or other first responder entities.”)

⁷ See A POLICY MAKER BLUEPRINT FOR TRANSITIONING TO THE NEXT GENERATION 9-1-1 SYSTEM: ISSUES AND RECOMMENDATIONS FOR STATE AND FEDERAL POLICY MAKERS TO ENABLE NG9-1-1, NAT’L EMERGENCY NUMBER ASS’N 15 (Sept. 2008), https://c.ymcdn.com/sites/www.nena.org/resource/resmgr/ng9-1-1_project/ng9-1-1policy-maker-blueprintt.pdf [hereinafter POLICY-MAKER BLUEPRINT] (noting that once an IP achieves certain criteria it will become an NG9-1-1 that can replace an E9-1-1); see generally, *id.* at 8 (“ESInets [Emergency Services IP Networks] may be deployed at a state level and there may be increased efficiencies and economies of scale in doing so. However, ESInets will very likely be deployed at a sub-state level (regional/county) in many areas which must then be interconnected with other sub-state ESInets to establish a standardized, interconnected and interoperable statewide ESInet.”); *Master Glossary, supra* note 1, at 75 (“An [Emergency Services IP Network] ESInet is a managed IP

increase the operational capacity of PSAPs to receive more kinds of emergency calls from the public and give better notice and support to first responders.⁸ PSAPs can now provide more emergency 911 call services through more capable NG911 systems receiving voice and non-voice emergency service calls,⁹ supplemental and other data to notify and support first responders and other agencies.¹⁰

network that is used for emergency services communications, and which can be shared by all public safety agencies. It provides the IP transport infrastructure upon which independent application platforms and core functional processes can be deployed, including, but not restricted to, those necessary for providing NG9-1-1 services.”): FINAL REPORT: FIRSTNET AND NEXT GENERATION 9-1-1 HIGH LEVEL OVERVIEW OF SYSTEMS AND FUNCTIONALITY, NAT’L PUBLIC SAFETY TELECOMM’N COUNCIL (NPSTC) 4 (June 29, 2015), http://npstc.org/download.jsp?tableId=37&column=217&id=3465&file=NG911_Outreach_Report_2015_0629_FINAL.pdf [hereinafter NPSTC] (explaining connections between networks: “Telephone company provider network sends 9-1-1 emergency call from wireline, wireless, VoIP network into the NG9-1-1 service system via ESInet(s) [then] NG9-1-1 systems on the ESInet send the 9-1-1 call to correct PSAP and allow sharing of 9-1-1 call data with other PSAPs.”).

⁸ See TFOPA, *supra* note 3, at 23 (explaining that the NG9-1-1 format allows for communication between individuals and emergency service providers by utilizing various forms of communication such as text messaging); *Id.* (“NG9-1-1 technology offers tremendous flexibility to PSAPs in terms of sharing equipment, infrastructure, facilities and personnel. NG9-1-1 technology can be employed to streamline operations, reduce duplication and provide significantly improved redundancy, interoperability and robustness.”). In addition, personal access and communications devices are increasing the need of PSAPS to provide NG911 services that cannot be provided by E911 services. *Id.* at 22 (“The advancement of the 9-1-1 system is essential to meet public expectations to correlate basic telecommunications functionality with the capabilities of the modern mobile devices so ubiquitous in our nation. Without it, transmission and reception of essential emergency information including texts, photos, video, data, and telemetry – in real-time – is not feasible.”).

⁹ 47 U.S.C. § 1401(13) (2015) (“The term ‘emergency call’ means any real-time communication with a public safety answering point or other emergency management or response agency, including-- (A) through voice, text, or video and related data; and (B) nonhuman-initiated automatic event alerts, such as alarms, telematics, or sensor data, which may also include real-time voice, text, or video communications.”).

¹⁰ FINAL REPORT: KEY FINDINGS AND EFFECTIVE PRACTICES FOR PUBLIC SAFETY CONSOLIDATION, THE COMM’NS SEC., RELIABILITY AND INTEROPERABILITY COUNCIL & WORKING GROUP 1A 7 (Oct. 2010), <https://transition.fcc.gov/pshs/docs/csric/CSRIC-1A-Report.pdf> [hereinafter WORKING GROUP 1A] (“[P]olice officers, fire personnel, emergency medical technicians, transportation and utility workers and others need to share vital voice and data information across disciplines and jurisdictions to successfully respond to day-to-day incidents and large-scales emergencies.”); see generally, *Policy-Maker Blueprint*, *supra* note 7, at 14 (“Next Generation 9-1-1 (NG9-1-1) networks replace the existing narrowband, circuit switched 9-1-1 networks which carry only voice and very limited data. Currently there are difficulties in supporting such things as text

More PSAP capacity allows a single PSAP to provide more emergency 911 call services that are expected by first responder agencies, communities, and citizens alike.¹¹ Increased capacity and public expectations point to the need for state and federal policy-makers to urge county and municipal governments to consolidate PSAPs to provide timely NG911 services. As PSAPs increase in capacity and face greater public expectations, county and municipal resource needs, technological challenges, and intra-governmental relations must be addressed in the design, enactment, and support of legislative policies and regulatory schemes to consolidate some of the nation's 6,000 PSAPs.¹² Simply, these needs, challenges, and relations raise federal and state policy concerns regarding (1) the need to consolidate PSAPs and (2) address economic, technological, and policy interests likely to restrain or inhibit county and municipal efforts to consolidate PSAPs.

This article examines economic, technological and policy interests, as well as other concerns federal and state policy-makers must recognize and address to urge, guide, and support the consolidation of primary and secondary PSAPs¹³ that must accompany the timely implementation of NG911 services. The

messages for emergencies, images and video (including support for American Sign Language users), and easy access to additional data. . .”).

¹¹ *But see Emergency Communications*, NATIONAL TERROR ALERT, <http://www.nationalterroralert.com/communications/> (last visited Apr. 21, 2016) (“[I]f during a disaster or emergency the number of calls exceeds that peak (or the network transmission capacity is reduced), then some calls will be blocked.”).

¹² *See infra* Part VI.B and accompanying notes (discussing the regulation of the consolidation of PSAPs by state governments); *see generally* Emergency Telephone Act, 50 ILL. COMP. STAT. ANN. 750/15.4 (LexisNexis 2016) (requiring the consolidation of PSAPs); 50 ILL. COMP. STAT. ANN. 750/3(b) (LexisNexis 2016) (“By July 1, 2020, every 9-1-1 system in Illinois shall provide Next Generation 9-1-1 service.”); Joseph Bustos, *Under State Mandate, Counties Working to Reduce 911 Call Centers*, BELLEVILLE NEWS-DEMOCRAT (Feb. 14, 2016), <http://www.bnd.com/news/local/article60344026.html> (noting that in Illinois, several county and municipal officials did not agree with the decision of the Illinois legislature to mandate the consolidation of PSAPs).

¹³ *See Master Glossary*, *supra* note 1, at 118 (defining “Primary Public Safety Answering Point (PSAP):” A PSAP to which 9-1-1 calls are routed directly from the 9-1-1 Control Office.”); “Secondary Public Safety Answering Point (PSAP):” “A PSAP to which 9-1-1 calls are transferred from a Primary PSAP.” *Id.* at 126. “Selective Router AKA: Enhanced 9-1-1 Control Office:” “The Central Office that provides the tandem switching of 9-1-1 calls. It controls delivery of the voice call with ANI [Automatic Number Identification] to the PSAP and provides Selective Routing, Speed Calling, Selective Transfer, Fixed Transfer, and certain maintenance functions for each PSAP.” *Id.* at 127.

article consists of the introduction, seven parts and conclusion. Part I is the Introduction and sets forth the scope of the Article. Part II sets forth the backdrop for the examination of these interests and concerns regarding the consolidation of PSAPs that must provide NG911 services on IP-enabled network. Part III explains the impact of NG911 technologies, PSAP operations and public and private interests on the need to, at least consider the consolidation of PSAPs to provide NG911 services. Part IV explains seminal economic concerns that include public costs, efficiency and financing of consolidating PSAPs to provide NG911 services on an IP-enabled communications network. Part V discusses seminal federal, state and local policies that further support implementing NG911 services and affect the consolidation of PSAPs providing NG911 services. Part VI outlines technological policy concerns that include the nature and impact of communications, information technologies, geographical management, and other information systems on implementing NG911 systems and consolidating PSAPs to provide NG911 services. Part VII explains and outlines the need for federal and state consolidation policy frameworks that allows federal and state governments to address the economics, technology, and public policy to timely, cost effectively and efficiently consolidate PSAPs to provide NG911 services. Part VIII concludes that state and federal NG911 and communications policies must address and respond to the economic, public policy and technological interests of consolidating PSAPs in the transition to NG911 services. The consolidation of PSAPs is made more immediate by the migration of PSAPs to IP-enabled communications networks that can eventually connect to a nationwide, interoperable public safety broadband network. These communications and public safety networks allow PSAPs to provide more kinds and levels NG911 services and play greater roles in sharing information, coordinating operations, and furthering interoperability with first responders and the public.

II. EMERGING PUBLIC POLICY CONCERN ON THE CONSOLIDATION OF PSAPs

Public expectations and demands by individuals and business organizations, which are using more personal access devices and tools to request PSAPs to notify public safety, medical units, disaster relief, and other first responder agencies, require state and federal governments to examine and address the need to

consolidate PSAPs.¹⁴ This backdrop of consolidating PSAPs must include more than reducing PSAP operating costs, though the consolidation of PSAPs must be cost-effective to provide more kinds and levels of NG911 services that far exceed limited E911 services. These NG911 services not only notify, but support first responder units and agencies working and operating in emergency, emergency management, and threat environments that can include multijurisdictional incidents, events, disasters, and activities.¹⁵

A. *Recognizing State and Federal Public Policy Concerns*

Federal and state policy-makers have recognized public policy concerns involving the utility of a large number of PSAPs that now have a greater operational capacity to provide a higher level of emergency 911 call services, namely NG911 services.¹⁶ In January 2015, a Commissioner of the Federal Communications Commission (FCC) explicitly recognized that the consolidation of PSAPs was an important agency matter when this Commissioner stated that “there [are] more than 5,900 PSAPs . . . which highlight certain problems and potential vulnerabilities that

¹⁴ See *Final Report Of TFOPA Working Group 3*, TASK FORCE ON OPTIMAL PUBLIC SAFETY ANSWERING POINT ARCHITECTURE (TFOPA) 6 (Sept. 28, 2015), https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_WG3-Final-Report-09282015.pdf [hereinafter Working Group 3] (noting that policy makers at all levels need to be aware of the challenges and benefits of creating new PSAPs so as not to create a disservice for the citizens relying on 911 services from modern technology).

¹⁵ See *Whitepaper: A Next Generation 911 Cost Study: A Basis For Public Funding Essential To Bringing a Nationwide Next Generation 911 Network To America's Communications Users and First Responders*, FED. COMM'NS COMM'N 3 (Sept. 2011), https://apps.fcc.gov/edocs_public/attachmatch/DOC-309744A1.pdf (last visited Apr. 21, 2016) [hereinafter Whitepaper] (“NG911 also has the potential to enhance the ability of PSAPs and first responders to assess and respond to emergencies based on the texts, photos, and videos that consumers send to them, combined with information they gather and correlate from other sources and databases.”).

¹⁶ See TASK FORCE ON OPTIMAL PUBLIC SAFETY ANSWERING POINT ARCHITECTURE (TFOPA), *Working Group 2 Report: Optimal 9-1-1 Service Architecture*, FED. COMM'NS COMM'N 102 (Dec. 10, 2015), https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_WG2_FINAL_Report-121015.pdf [hereinafter Working Group 2] (noting that agencies and officials at all levels will need to reexamine policy in order to effectively implement NG911). See *id.* at 92 (“The transition to IP-based technologies and the standardized architecture developed to support NG 9-1-1 are explicitly designed to promote a diverse public / private ecosystem that will increase innovation, reliability, and competition, and enhance the functionality and utility of 9-1-1 services. . .”).

could be less prevalent in a more cohesive, integrated configuration.”¹⁷ Furthermore, this Commissioner went much farther by stating that the 5,900 PSAPs can be reduced to three PSAPs on IP-enabled communications networks.¹⁸ Shortly thereafter, the FCC established a Task Force on Optimal PSAPs Architecture (TFOPA) that has as one of its duties to study and make recommendations on the consolidation of PSAPs.¹⁹ Next, a few state policy-makers have mandated the consolidation of PSAPs by simply reducing the number of PSAPs, such as one PSAP per county or by population of a county or region.²⁰ Finally, state, county, and municipal governments have conducted studies to determine the feasibility of or making plans to consolidate PSAPs to provide NG911 and E911 services.²¹ Current federal and state efforts that urge, mandate, or support collapsing a large number of uncoordinated PSAPs lack the necessary federal and state policy frameworks to avoid frustrating local NG911 efforts, increasing PSAP operational risks, and minimizing public expectations.²² Therefore, one must conclude that the consolidation of PSAPs is mostly planned, implemented and managed under incomplete state and federal PSAP consolidation policy framework of communications and technology policies.²³

¹⁷ Jackson, *supra* note 3.

¹⁸ *See id.* (“By some estimate, the current structure would be able to operate at optimal efficiency with as few as three [PSAPs] nationwide.”).

¹⁹ TFOPA, *supra* note 3, at 27 (noting that TFOPA chose not to make findings and recommendations on the consolidation of PSAPs).

²⁰ *See infra* Part VI.B and accompanying notes (discussing the regulation of the consolidation of PSAPs by state governments); *see also* N.M. CODE R. § 10.6.2.15 (LexisNexis 2016) (requiring the consolidation of PSAPs providing emergency call services and dispatch functions); *see* Emergency Telephone Act, 50 ILL. COMP. STAT. ANN. 750/15.4, (LexisNexis 2016) (requiring consolidation or reduction in PSAPs based on their populations of local governments).

²¹ *See infra* Part V.B and accompanying notes (discussing the regulation of the consolidation of PSAPs by state governments); *see e.g.* L.R. KIMBALL, INC., REPORT FOR CONSOLIDATION ANALYSIS AND NEXT GENERATION 9-1-1 IMPLEMENTATION STUDY PREPARED FOR STATE OF OREGON OFFICE OF EMERGENCY MANAGEMENT, 12 (Feb. 2012) http://www.oregon.gov/omd/oem/or911/docs/kimball_consolidation_analysis_next_gen_implementation_study.pdf (last visited Apr. 21, 2016) (exemplar of a study about whether a single PSAP would benefit emergency services).

²² *See infra* Part VI and accompanying notes (explaining the how federal and state policy-makers should respond to technology, public policy and economic concerns).

²³ *See infra* Part VII.C and accompanying notes (explaining the need to create federal and state consolidation policy frameworks to address state and federal public policy concerns of consolidating PSAPs).

B. PSAP Capacity and NG911 Services Driving Consolidation

PSAPs must always be able to notify and support first responders and other agencies providing public safety, emergency services, disaster relief, and security assistance to persons and communities.²⁴ The consolidation of PSAPs will occur under more capable technologies, but still must fit within available financial resources and adapt to personal access and commercial devices creating more ways to request emergency 911 call services.²⁵ Concurrently, these technologies, devices, and resources are driving state, county, and municipal governments to implement NG911 services provided by IP-enabled communications networks capable of connecting to FirstNet's nationwide broadband public safety network to notify, coordinate, and share information with first responders.²⁶ Consolidated PSAPs that notify, coordinate, and share information with first responders "typically result in one organization, in one facility, utilizing common systems and serving multiple response agencies and/or jurisdictions."²⁷ Consolidated PSAP must have the capacity to initiate emergency management, emergency services and threat²⁸ (security) responses depending on the severity of the event, incident or situation.²⁹ The responses

²⁴ See NENA, NG9-1-1 SYSTEM AND PSAP OPERATIONAL FEATURES AND CAPABILITIES REQUIREMENTS 21-22 (June 14, 2011), http://c.ymcdn.com/sites/www.nena.org/resource/collection/2BEE3832-DD9B-4CD6-AB89-979F2CA8F789/57750_NG911_System_and_PSAP_Operational_Features_and_Capabilities_Requirements.pdf (listing the requirements that a NG9-1-1 must comply with for emergency response location).

²⁵ TFOPA, *supra* note 3, at 24 ("A primary message in this report is that NG9-1-1 architecture can be customized to support almost any configuration of PSAP operations. Factors that affect these configurations include financial, political, governmental and operational considerations.").

²⁶ See *infra* Part III.B and accompanying notes (explaining the creation of FirstNet by federal legislation); see also NPSTC, *supra* note 7, at 3 (describing the connecting between NG911 services and FirstNet's National Broadband Network).

²⁷ WORKING GROUP 1A, *supra* note 10, at 7.

²⁸ See Todd Piett, *What is This Big Data Thing and Why Should Public Safety Care?*, RAVE MOBILE SAFETY: THE SAFETY BLOG, <http://www.ravemobilesafety.com/big-data/> (last visited April 11, 2016) (describing a likely multijurisdictional incident that could be better predicted if first responders were coordinated and interoperable); see DEP'T OF HOMELAND SEC., NATIONAL INCIDENT MANAGEMENT SYSTEM 45 (Dec. 18, 2008), http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf (noting that resource needs grow exponentially as incidents affect multiple jurisdictions: "When a single incident covers a large geographical area, multiple local emergency management and incident response agencies may be required.").

²⁹ WORKING GROUP 1A, *supra* note 10, at 7 ("[T]he public safety community performs emergency first-response missions. . . . Public safety operations require

initiated by requests for emergency management, and emergency and threat (security) services demand that federal and state policy-makers identify and address specific economic, public policy, and technology interests affecting the consolidation of PSAPs.³⁰ These interests will determine how federal policy-makers urge and support state and local governments that choose to concurrently consolidate PSAPs and implement NG911 services.³¹ Thus, the consolidation of PSAPs must take place as state and local governments prepare to transition to NG911 services on IP-enabled communications networks, and not while PSAPs remain on limited E911 systems.

C. Concurrent Implementation of NG911 and Consolidation

The implementation of NG911 systems are subject to state and local fiscal and other constraints; it relies on information and communication technologies such as communications networks and information systems.³² These technologies possess greater capabilities and expand PSAP operational capacities³³ that require

effective command, control, coordination, communication, and sharing of information via dispatch centers or Public Safety Answering Point (PSAP) responsible for answering emergency calls for police, firefighting, and ambulance services.”). Recently, FirstNet Vice President stated that PSAPs must be prepared to take on a new role to support first responders. Donny Jackson, *FirstNet’s Johnson Envisions New Future Role for PSAPs as First Part of the Investigation*, URGENT COMMUNICATIONS (Jan. 5, 2016), <http://urgentcomm.com/psap/firstnet-s-johnson-envisions-new-future-role-psaps-first-part-investigation> [hereinafter Jackson-FirstNet]. The FirstNet Vice Chairman stated that “someone in the PSAP will need to decide whether a suspect’s photo—particularly one submitted via a 911 call with no other collaborating evidence—should be distributed to local public-safety officials.” *Id.*

³⁰ See *infra* Part VI and accompanying notes (explaining how federal and state policy-makers should respond to technology, public policy, and economic concerns).

³¹ See *infra* Part VI and accompanying notes.

³² See 47 U.S.C. § 1401(22) (2015) (stating that NG911 “services” means an IP-based system comprised of hardware, software, data, and operational policies and procedure” that completes and supports a number of systems and services used for emergency communication and response).

³³ See TFOPA, *supra* note 3, at 23 (recognizing that information and communications technologies give PSAPs greater flexibility); Susan Geoghegan, *Consolidation of Communication Centers*, LAW & ORDER: THE MAGAZINE FOR POLICE MANAGEMENT, http://www.hendonpub.com/law_and_order/articles/2013/02/consolidation_of_communication_centers (last visited April 22, 2016) (quoting Shawn Messinger, Police Consultant and Emergency Police Dispatch Instructor, Priority Dispatch Corp: “The 9-1-1 services using the new NG911 systems, such as Voice over Internet Protocol (VoIP) phone systems and Radio over Internet

state and federal policymakers to urge and support the transition by local governments to NG911 systems.³⁴ Federal and state policies must also include the migration to Internet Protocol (IP) enabled communications networks³⁵ so that PSAPs can receive voice and non-voice emergency calls and data and notify and support first responders and other agencies.³⁶ At the same time, these policy-makers must also urge and support local governments that implement NG911 systems on IP-enabled networks to consider consolidating two or more PSAPs by establishing efficient, cost-effective and operationally effective multijurisdictional consolidated PSAPs.³⁷ The consolidation of PSAPs without the implementation of NG911 services is a wasteful exercise in merging PSAPs to provide limited E911

Protocol (RoIP) radio networks, can now be provided from almost anywhere. . . .”); *see infra* Part III.A and accompanying notes (explaining the capabilities of the technologies and their impact on PSAP capacity).

³⁴ Jackson, *supra* note 29.

³⁵ *See* TFOPA, *supra* note 3, at 22 (“Sharing infrastructure among multiple PSAPs involves the utilization of equipment and software that take advantage of Internet Protocol (IP) technology via the ESInet transport networks. Infrastructure sharing offers the potential for optimization in many areas such as cost, operations, interoperability, shared services and survivability.”).

³⁶ *Id.* (“The advancement of the 9-1-1 system is essential to meet public expectations to correlate basic telecommunications functionality with the capabilities of the modern mobile devices so ubiquitous in our nation. Without it, transmission and reception of essential emergency information including texts, photos, video, data, and telemetry – in real-time – is not feasible.”). The implementation of NG911 services and consolidation of PSAPs are two distinct county and municipal functions that will overlap in the acquisition of facilities, technologies, equipment and services. NENA, FUNDING 9-1-1 INTO THE NEXT GENERATION: AN OVERVIEW OF NG9-1-1 FUNDING MODEL OPTIONS FOR CONSIDERATION, 13 (March 2007), <https://c.ymcdn.com/sites/www.nena.org/resource/resmgr/NGPP/NGFundingReport.pdf> (last visited Apr. 22, 2016). A coalition of not-for-profit organizations are promoting the implementation of NG911 services by the end of 2020. *See* Jackson, *supra* note 29. Depending on the consolidation model, the consolidation of PSAPs should be concurrently implemented with NG911 systems to avoid wasting funds and other resources on technology, equipment, services and IP-enabled networks that may need to be modified or discarded to merge or consolidate two or more PSAPs into a single PSAP in a new facility and location. *See* U.S. DEP’T OF TRANSP., NEXT GENERATION 9-1-1 (NG9-1-1) SYSTEM INITIATIVE: FINAL ANALYSIS OF COST, VALUE, AND RISK, INTELLIGENT TRANSPORTATION SYSTEMS 34 (Mar. 5, 2009), http://www.its.dot.gov/ng911/pdf/USDOT_NG911_4A2_FINAL_FinalCostValueRiskAnalysis_v1-0.pdf (displaying a “notional rollout schedule for NG9-1-1 and concurrent phase-out of the baseline system spans a 10-year implementation period.”).

³⁷ *See* Jackson, *supra* note 3; N.M. CODE R. § 10.6.2 (LexisNexis 2016) (mandating consolidation of PSAPs); 50 ILL. COMP. STAT. 750/15.4, (2016) (mandating consolidation of PSAPs).

services whose operational limitations shift more risk and liability onto governments, persons and business organizations.

III. INTERESTS IMPACTING PSAP CONSOLIDATION AND ITS IMPACT ON PUBLIC SAFETY

Several public interests must be addressed to consolidate PSAPs under new technological capabilities that expand PSAP capacity to support emergency, emergency management and threat environments. These interests involve economics, technology and public policy, and they overlap the consolidation of PSAPs and implementation of NG911 systems that include providing a broader level of NG911 services to the public, notifying first responders and other agencies, and sharing information with first responders and other agencies. The consolidation of PSAPs that must provide NG911 services requires federal and state government to provide support and guidance to county and municipal governments. Cooperatively, federal and state governments must address new technological and funding needs and emergency call demands imposed on PSAPs seeking to concurrently provide NG911 via regional IP-enabled communications networks and consolidate PSAPs within a region or county.

A. *Impact of Technological Capabilities on PSAP Capacity*

Consolidated PSAPs must incorporate new technological capabilities and additional capacity to provide NG911 services that will include but vastly exceed the identification of telephone numbers and locations of callers.³⁸ The efficient and cost-effective

³⁸ See POLICY-MAKERS BLUEPRINT, *supra* note 7, at 8 (stating that NG911 services replaces E911 services that are limited emergency call services). However, there is more than meets the eye to the replacement of E911 services with NG911 services., L.R. KIMBALL, INC., PUBLIC SAFETY ANSWERING POINT CONSOLIDATION: PREPARED FOR OHIO DEP'T OF ADMIN. SERV., 11 (November 2013), <http://911.ohio.gov/Portals/0/ESINet%20Steering%20Committee/RPT131125%20srw%20rjs%20Ohio%20PSAP%20Consolidation%20FINAL%20MAJ.pdf> (“The consolidation process is a complex and difficult process that can yield substantial improvements in service levels, responder safety, employee retention, and potential cost savings if implemented correctly.”). Foremost, consolidation requires a closer look at the economic nature of the public benefits that are provided by concurrently consolidating PSAPs (merging two entities) and producing NG911 services (giving public benefits). *5 Ways NG911 Can Improve Your Agency*, 911.GOV, http://www.911.gov/ng911_law/5ways.html (last visited April 17, 2015). Federal, state and local governments need to understand the economic nature of NG911 services that provide benefits to their citizens in a

operations and effective administration of consolidated PSAPs may only exist when the consolidation of PSAPs provides an increased level of emergency 911 call services (such as photographs, video, data, etc.) through NG911 services.³⁹ Consequently, consolidation must be a response to new communications and information technologies rather than maintaining obsolete circuit-switch technology and analog communications systems that greatly limit the capability of E911 services and PSAP capacity. The deployment and use of communications and information technologies by telecommunication carriers and other 911 communications service providers (911 service provider) and critical uses of geographical, management and other information systems to route calls, locate callers and manage PSAPs are new technological capabilities.⁴⁰

non-market environment. *Id.* (Benefits include improved officer safety, improved efficiency, improved public safety and other improvements). The National 911 Program describes and classifies NG911 services as non-excludable and non-rivalrous public goods that provide public benefits and services. *See* 911.GOV, BLUE RIBBON PANEL ON 911 FUNDING: REPORT TO THE NATIONAL 911 PROGRAM (Dec. 2013), <http://www.911.gov/pdf/BlueRibbonPanel-911Funding-report-dec2013.pdf> (last visited Apr. 22, 2016) [hereinafter National 911 Program-Blue Ribbon Panel] (noting that first, “goods can be characterized as either public or private and excludable or non-excludable. A public good is one that is both non-excludable and non-rivalrous in that individuals cannot be effectively excluded from use, and where use by one individual does not reduce availability to others. In that respect, a non-rivalrous good is able to be enjoyed by multiple consumers at the same time,” and that second, “a good or service is called excludable if it is possible to prevent people (consumers) who have not paid for it from having access to it. By comparison, a good or service is non-excludable if non-paying consumers cannot be prevented from accessing it. In this respect, private goods are both excludable and rivalrous.”) (citing, Paul A. Samuelson, *The Pure Theory of Public Expenditure*, 36 REVIEW OF ECONOMICS AND STATISTICS, 387, 387–389 (1954); Paul A. Samuelson, *Diagrammatic Exposition of a Theory of Public Expenditure*, REVIEW OF ECONOMICS AND 37 STATISTICS 350, 350–56 (1955)). Simply, NG911 services must be provided to everyone, but this public availability should not be an excuse not to expand the services by proclaiming they are too costly. NAT’L, *NARUC Comments on the Launch of the NG911 NOW Coalition* (Feb. 23, 2016), <http://pubs.naruc.org/pub/A014957A-DF5-0578-8B53-2DBFA-D967F62> (noting “[t]he cost of upgrading thousands of public safety answering points nationwide is daunting.”). *See* National 911 Program-Blue Ribbon Panel, tbl.1 (noting that NG911 services would be in a class with national defense and lighthouses in terms of public goods and listing various classes of goods and their rivalrous and excludability status as shown in Table 1).

³⁹ *See* L.R. KIMBALL, INC., *supra* note 21, at 11 (“Service level improvements – This is the single most important reason to consider consolidation. 9-1-1 telecommunicators are truly the ‘first responder on the scene’ and can substantially affect the outcome of an incident.”).

⁴⁰ The communications and information technologies and information systems are evident in NG911 system. *See* TFOPA, *supra* note, at 23 (explaining that

These capabilities permit NG911 services to increase the level of emergency call services, accessibility to more personal access and other systems, and availability of more calls, call data and supplemental or additional data.⁴¹ This accessibility, availability, and level of NG911 services that can be provided by PSAPs create and expand data retrieval services and push more kinds of emergency call and additional data to first responders⁴² who can use these data and information to make better tactical approaches to and assessment of emergencies or other incidents.⁴³ New

NG911 offers tremendous flexibility and that NG911s offer improved technology which help to make the system more efficient). *See* 47 U.S.C. § 1401(22) (2015) (noting how the federal communications legislation defines NG911 and what it includes). The NENA *Master Glossary* defines “Communications Service Provider” (“CSP”) as “all providers of telecommunications services that may be used to generate a 9-1-1 call, and who would interconnect in any fashion to the 9-1-1 network. CSPs include wireline [Incumbent Local Exchange Carriers] (ILECs) and [Competitive Local Exchange Carrier] (CLECs), Wireless Service Providers, VoIP Service Providers, operators of large PBXs and any other entity providing telecommunications services.” *Master Glossary*, *supra* note 1, at 53.

⁴¹ *See* L.R. KIMBALL, INC., *supra* note 21, at 11 (explaining that service levels affect the capabilities of “9-1-1 telecommunicators [that] are truly the ‘first responder on the scene’ and can substantially affect the outcome of an incident,” and noting achievements that are usually achieved by NG911 improvements).

⁴² *See generally* Stephan A. Parker, *Research Results Digest 385: The Legal Definitions of “First Responder,”* NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM, 1 (Nov. 2013) http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rrd_385.pdf (last visited Apr. 22, 2016) (“The term has come to be used popularly or colloquially to refer to law enforcement, fire, and emergency medical personnel, especially after the events of September 11, 2001.”).

⁴³ Adam Mazmanian, *NASA AI to Power First-Responder Tech*, FCW (Aug. 31, 2015), <http://fcw.com/articles/2015/08/31/nasa-ai.aspx> (noting that “first responders are eager to draw insight and awareness from the fire hose of information available to them. . .”). One such example of the large quantity of information available to and accessible by PSAPs is Smart911. *See generally*, *How Does Smart911 Help?*, SMART911, <https://safety.smart911.com/smart911/#.Vet6II3lsuR> (last visited Apr. 22, 2016) and *What is a Safety Profile?*, SMART911, <https://safety.smart911.com/safety-profile/> (last visited Aug. 6, 2016) (“Smart911 is a free service used by public safety agencies across the country to enhance communication and response for their community; this allows 9-1-1 agencies to quickly send first responders to the location of an emergency with more information to better plan, prepare, and respond to disasters and by municipalities to send emergency notifications to their citizens”). Eagle Education Services, *Mobile Apps We Recommend*, <http://www.eagleeducation.net/#!apps/c1nse> (last visited Apr. 22, 2016) (describing Smart911: “By creating a Safety Profile for your family, you are providing potentially life-saving information to public safety officials at the time when they need it most.”). Another example is the use of emergency call information and data to identify and respond to emergency security threats. *See generally* DEP’T OF HOMELAND SEC., NATIONAL INCIDENT MANAGEMENT SYSTEM 45 (Dec. 2008), http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf (last visited Apr. 22, 2016) (recognizing that one event can “expand to multidiscipline, multijurisdictional

technological capabilities must be fully covered by federal and state NG911 policies so that the consolidation of PSAPs with more capacity can increase productivity (service outputs) by increasing the level (numbers and kinds) of NG911 services to the public, first responders and other agencies.⁴⁴ Notwithstanding these capabilities, this integration of technologies include the costs of providing telecommunications services to PSAPs,⁴⁵ but higher service, equipment and other costs, fewer funds, and other resources⁴⁶ should be a consideration in deciding when should local governments implement NG911 systems by consolidating PSAPs.⁴⁷

These technological capabilities allow state and local governments to more readily consider the consolidation of PSAPs that can achieve efficiency, cost-savings and effectiveness based on expanding PSAP capacities to provide more emergency 911 call services to users and support to first responders and their dispatchers.⁴⁸ The consolidation of PSAPs of NG911 systems

incidents requiring significant additional resources and operational support,” and that “[e]ffective cross-jurisdictional coordination using processes and systems is absolutely critical in [multi-jurisdictional] situation[s].”).

⁴⁴ See WORKING GROUP 1A, *supra* note 10, at 10 (noting the difficulty of updating systems that were implemented with technology from the 1970 to the 1990s, and how many State and local governments have been able to reduce the difficulty of upgrading with the help of federal grants); see TFOPA, *supra* note 3, at 27 (recognizing that the consolidation of PSAPs is a state and local matter but emphasizing a cooperative approach among federal, state and local governments to consolidate PSAPs).

⁴⁵ See Pat Amodio, Henning Schulzrinne, & Jennifer A. Manner, *White Paper: A Next Generation 911 Cost Study: A Basis for Public Funding Essential to Bringing a Nationwide Next Generation 911 Network to America's Communications Users and First Responders*, PUBLIC SAFETY AND HOMELAND SECURITY BUREAU 2 (Sept. 2011), https://apps.fcc.gov/edocs_public/attachmatch/DOC-309744A1.pdf (last visited Apr. 22, 2016) (recognizing that wireless, wireline and other telecommunications carriers will incur costs to provide telecommunications services for state and local governments to connect to IP-enabled communications network and call routing services).

⁴⁶ See National 911 Program-Blue Ribbon Panel, *supra* note 38, at ES1 (recognizing that state and local governments will incur costs and need new funding mechanisms to establish NG911 services and use an IP-enabled network).

⁴⁷ See L.R. KIMBALL, INC., *supra* note 21, at 12 (“While cost savings are possible, understanding two main points is critical before consolidating for financial reasons alone. First, not all consolidations result in cost savings. A common misconception is that consolidating will result in significant personnel reductions, thus significant cost savings.”).

⁴⁸ NICE SYSTEMS, LTD., *All Together Now: PSAP Consolidation*, http://www.nice.com/ProtectingPeopleAndAssets/Lists/WhitePapers/PSAP_Consolidation_Whitepaper.pdf (last visited Apr. 22, 2016).

inherently includes PSAP operational capacity that would be an opportunity for more efficient, cost-effective, and effective PSAP operations.⁴⁹ These operational capacities are an immediate, full use and rapid expansion of the level and kinds of NG911 services that allow PSAPs to receive different as well as more kinds of emergency calls,⁵⁰ and provide more call data, and retrieve additional data.⁵¹ Moreover, NG911 services provide emergency call data and additional data to notify and support the dispatch, interoperability and coordination of first responders that respond to security incidents, natural disasters and personal emergencies by providing medical, fire, law enforcement, rescue and other services.⁵² As a matter of fact, the NG911 system that permits PSAPs to migrate to an IP-enabled network can connect to FirstNet's nationwide broadband public safety network to provide even greater NG911 services that include more support for first responders by sharing calls, data and information.⁵³ The operational capacity of PSAPs allows the consolidation of PSAPs to create an immediate impact on the level of emergency, emergency management and threat avoidance services, i.e., saving more lives, reducing personal injuries, and protecting private

⁴⁹ See, e.g., L.R. KIMBALL, INC., *supra* note 21, at 12 (finding that the consolidation of PSAPs of NG911 system can increase service levels that allow 911 communicators to better support first responders who must respond to emergencies and other incidents); see Mazmanian, *supra* note 43 (recognizing that more call and other data will be available to 911 communicators when NG911 services are fully implemented).

⁵⁰ See 47 U.S.C. § 1401(22) (2015) (“Next Generation 9–1–1 services’ means an IP-based system comprised of hardware, software, data, and operational policies and procedures that . . . (B) processes all types of emergency calls, including voice, data, and multimedia information”).

⁵¹ See *id.* (Next Generation 9–1–1 services to include “emergency calls, messages, and data); see TOFPA, *supra* note 3, at 22 (noting “transmi[tt]ing] and rece[iving] [] essential emergency information including texts, photos, video, data, and telemetry – in real-time – in not feasible” without an advanced 9-1-1 system.).

⁵² See 47 U.S.C. § 1401(22) (2015) (stating that Next Generation 9–1–1 services includes delivering calls to PSAPs and emergency agencies to coordinate emergencies or incidents).

⁵³ See TFOPA, *supra* note 3, at 18 (noting that emergency service can be interconnected, which grants services across Federal, State, and local providers under the same protection scheme and makes data available to everyone associated with this connection); see L.R. KIMBALL, INC., *supra* note 21, at 12 (finding that the consolidation of PSAPs of NG911 system can increase service levels that allow 911 communicators to better support first responders who must respond to emergencies and other incidents); see Mazmanian, *supra* note 43 (recognizing that more call and other data will be available to 911 communicators when NG911 services are fully implemented).

property.⁵⁴ Thus, state and federal policies must urge and support the use of PSAP operational capacities to firmly urge and soundly support local government decisions and actions to implement NG911 services and concurrently consolidate a reasonable number of PSAPs in regions of the state. Conversely, ignoring this capacity may result in the implementation of NG911 systems via IP-enabled communications network by local governments at such a slow and ineffectual pace that FirstNet's nationwide broadband network could initially be underutilized by PSAPs to broadly share large amount of information and make meaningful coordination and interoperability.

B. Federal Communications and Technology Interests

The Federal Communications Commission (FCC) has recognized the potential of consolidating PSAPs to provide NG911 services on IP-enabled communications networks.⁵⁵ In 2010, the FCC tasked its Communications Security, Reliability and Interoperability Council (CSRIC) “to identify challenges to public safety consolidation efforts and develop recommended best practices for overcoming them.”⁵⁶ CSRIC created “Working Group 1A [that] divided the problem of public safety consolidation into three separate areas of study—Technology, Governance and Operational concerns.”⁵⁷ In its report, the CSRIC Working Group

⁵⁴ See TFOPA, *supra* note 3, at 78 (“The combination of technologies, information sources and skilled 9-1-1 personnel are what make a difference in dispatching emergency response to save a life or protect property.”); see L.R. KIMBALL, INC., *supra* note 21, at 12 (finding that the consolidation of PSAPs of NG911 system can increase service levels that allow 911 communicators to better support first responders who must respond to emergencies and other incidents); see Mazmanian, *supra* note 43 (recognizing that NG911 services includes more call and other data and information will be available).

⁵⁵ WORKING GROUP 1A, *supra* note 10, at 4 (“first and foremost is the establishment of a trusted and secure governance structure.”); see Jackson, *supra* note 3 (reporting FCC commissioner’s remarks regarding PSAP consolidation: “FCC Commissioner Michael O’Rielly this week urged members of a new agency task force established to consider the optimal architecture for next-generation 911 to consider ‘all options on the table,’ including significant consolidation of the nation’s public-safety answering points (PSAPs).”)The TFOPA did not make findings and recommendations on the consolidation of PSAPs but chose to make findings and recommendations on matters that are “appropriately respectful of state and local government prerogatives and legally sustainable” and specifically, funding mechanisms. TFOPA, *supra* note 2, at 27.

⁵⁶ WORKING GROUP 1A, *supra* note 10, at 7.

⁵⁷ *Id.* at 8. CSRIC Working Group 1A used the following methodology to study the consolidation of PSAPs: “Working group participants identified agencies representing the various categories of consolidation and then developed a set of

1A acknowledged that public safety and other emergency needs exist within communities and first responders, and other public officials respond “to protect life, health, property, natural resources and to serve the public welfare.”⁵⁸ It also states that the current emergency environment calls for “need to share vital voice and data information across disciplines and jurisdictions to successfully respond to day-to-day incidents and large-scale emergencies.”⁵⁹ Finally, it found that first responders “require effective command, control, coordination, communication, and sharing of information via dispatch centers or Public Safety Answering Point (PSAP). . . .”⁶⁰ Thus, the emergency, public safety and operational needs point to the need to consolidate PSAPs to provide more emergency call services and greater support of first responders.⁶¹

Currently, the consolidation of PSAPs may not be a high federal legislative priority to implement NG911 services but remains a ripe communications policy concern to the FCC. In 2015, the FCC created a Task Force on Optimal PSAP Architecture (TFOPA) to study and make recommendations on the consolidation of PSAP.⁶² Moreover, TFOPA concluded that evidence does not support that the consolidations of PSAPs were always efficient and created cost-savings.⁶³ TFOPA chose not to issue recommendations on the consolidation of PSAPs in its final report.⁶⁴ Currently, federal interests are still embodied mostly by technical, policy and

interview questions (Interview Questionnaire - Appendix 1) to compare and contrast efforts. These projects were representative of the spectrum of consolidation types, ranging from 9-1-1 network or infrastructure only, to full consolidation of 9-1-1 and dispatch, communications systems and related technology. The goal was to have as many different examples of consolidation types as reasonably possible given the timeframe allotted for the study.”*Id.*

⁵⁸ WORKING GROUP 1A, *supra* note 10, at 7.

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ See generally NPSTC, *supra* note 7, at 2 (recognizing the new demands imposed on PSAPs needing to connect to the nationwide public safety broadband network).

⁶² TOFPA, *supra* note 2, at 8, 27; see Stephanie Toone, *FCC Task Force Suggests NG911 Funding Model That Includes Fees for Broadband Connections*, URGENT COMMUNICATIONS (July 28, 2015), <http://urgentcomm.com/ng-911/fcc-task-force-suggests-ng911-funding-model-includes-fees-broadband-connections> (discussing funding models for the implementation of NG911 systems); see Jackson, *supra* note 3 (discussing the task force’s goal to “improve the current structure” to eliminate prevalent “problems and potential vulnerabilities.”).

⁶³ TOFPA, *supra* note 2, at 27.

⁶⁴ See *id.* (explaining the need for TOFPA’s recommendations to respect governmental priorities and legal principles).

economic challenges and issues set forth in the FCC-sponsored CSRIC Working Group 1A's recommendations on the consolidation of PSAPs.⁶⁵ Still, in 2016, TFOPA added little but acknowledged that the consolidation of PSAPs is a policy concern that requires federal, state and local cooperation.⁶⁶ Although TFOPA and CSRIC Working Group 1A take different approaches and make different conclusions, they point to a need to develop a federal policy and regulatory framework for consolidating PSAPs that includes federal funds and guidance to support state policies and local decisions to consolidate PSAPs.

Recent federal legislation indicates that Congress has considered PSAPs and their roles in providing broader support of first responders. Congress enacted the Middle Class Tax Relief and Job Creation Act of 2012 (Act)⁶⁷ that established the First Responder Network Authority or FirstNet within the National Technology and Information Administration (NTIA).⁶⁸ FirstNet will "deploy and operate a nationwide public safety broadband network."⁶⁹ NG911 services and First Net's nationwide broadband network will "complement each other in multiple ways and will provide public safety with a broad range of new capabilities."⁷⁰ PSAPs will receive emergency calls, data and information that may be analyzed and repackaged and then transmitted to the first responders through FirstNet's nationwide broadband network.⁷¹ The current plethora of secondary and primary PSAPs that may be operated under different operational and technical standards⁷² could render FirstNet's broadband public safety network less effective for PSAPs to support coordination, establish interoperability, and share information with first responders.⁷³

⁶⁵ See WORKING GROUP 1A, *supra* note 10, at 10–13 (recognizing the public expectations imposing demands on our emergency 911 call systems and the need for PSAPs and first responders to meet those needs).

⁶⁶ See TOFPA, *supra* note 2, at 27 (endorsing collaborative development of NG911 architecture and technology).

⁶⁷ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112–96, 126 Stat. 156 (2012) (codified as amended in scattered sections of 5 U.S.C., 19 U.S.C., 22 U.S.C., 26 U.S.C., 42 U.S.C., 45 U.S.C., 47 U.S.C., 50 U.S.C.) (West).

⁶⁸ 47 U.S.C. § 1424 (2015).

⁶⁹ *Id.*

⁷⁰ NPSTC, *supra* note 7, at 2.

⁷¹ *Id.*

⁷² See Jackson, *supra* note 3 (recounting FCC commissioner's remarks regarding the number and capabilities of current PSAP technology).

⁷³ See Jackson-FirstNet, *supra* note 25 (discussing integration with, and impact of, consumer-oriented safety technology); See also NPSTC, *supra* note 7, at 2 (describing how a Public Safety Telecommunicator will have to identify the

C. *State and Local Consolidation and Related Interests*

State and local governments have been and still are consolidating PSAPs as a means of providing better emergency call services across first responder disciplines and geographical regions.⁷⁴ Driving the state and local need to consolidate PSAP is “evolution of 9-1-1 and the associated technology, coupled with difficult economic times. . . .”⁷⁵ State and local governments have considered four “basic models,” namely: “full, partial, co-location, and hybrid.”⁷⁶ These models can be customized to meet the unique or special needs of PSAPs and other first responders.⁷⁷ The Association of Public-Safety Communications Officials (APCO) sets forth seven models of the consolidation of PSAPs.⁷⁸ These models are co-location only, single discipline call taking, single discipline dispatch, consolidated call taking, full consolidation, virtual consolidation, and dual mode consolidation.⁷⁹ Although consolidating PSAPs can be difficult and challenging,

“single best picture of [an] incident” that is reported from all information received from different sources regarding the incident, and transmit only that single best picture to the first responder.)

⁷⁴ L.R. KIMBALL, INC., *supra* note 21, at 11; L.R. KIMBALL, INC., REPORT FOR CONSOLIDATION FEASIBILITY STUDY, PREPARED FOR OFFICE OF STATEWIDE EMERGENCY TELECOMMUNICATIONS STATE OF CONNECTICUT, 9 (Jan. 2012) http://www.ct.gov/despp/lib/despp/oset/rpt120118srw_state_of_connecticut_consolidation_feasibility_study_finalv2.pdf [hereinafter KIMBALL-CONNECTICUT]; MINNESOTA GOVERNOR’S WORK GROUP, PUBLIC SAFETY ANSWERING POINT CONSOLIDATION: A GUIDEBOOK FOR CONSOLIDATION STRATEGIES, 5–6 (Dec. 2009) https://dps.mn.gov/divisions/ecn/programs/911/Documents/PSAP_Guidebook.pdf [hereinafter MINNESOTA GOVERNOR’S WORK GROUP]. Several municipal and county governments have conducted feasibility and other studies of the consolidation of PSAPs. *See, e.g.*, MATRIX CONSULTING GROUP, REPORT ON THE CONSOLIDATED 911/DISPATCH FEASIBILITY STUDY, ALBANY COUNTY, NEW YORK (July 2011), https://www.dos.ny.gov/lg/publications/LGEProjectReports/Albany_County_PSAP_FeasibilityStudy.pdf (reporting on the feasibility of consolidating 911 services); DAILA SHIMEK ET AL., FEASIBILITY STUDY OF CONSOLIDATING PUBLIC SAFETY DISPATCH FOR THE CITY OF WOOSTER, CITY OF ASHLAND, AND WAYNE COUNTY, OHIO (Nov. 2011), http://engagedscholarship.csuohio.edu/urban_facpub/438 (last visited Apr. 21, 2016) [hereinafter SHIMEK-WAYNE COUNTY]; DAILA SHIMEK ET AL., FEASIBILITY STUDY: CONSOLIDATED DISPATCH CENTER FOR POLICE, FIRE AND EMS SERVICES, 3 (Dec. 2009), http://engagedscholarship.csuohio.edu/urban_facpub/155 (last visited Apr. 21, 2016) [hereinafter SHIMEK-CUYAHOGA COUNTY] (“This report provides an assessment of the feasibility of consolidation of public safety dispatch for 14 communities in Cuyahoga County, Ohio.”).

⁷⁵ KIMBALL-OREGON, *supra* note 21, at 11.

⁷⁶ *Id.*; MINNESOTA GOVERNOR’S WORK GROUP, *supra* note 74, at 7.

⁷⁷ L.R. KIMBALL, INC., *supra* note 21, at 11.

⁷⁸ WORKING GROUP 1A, *supra* note 10, at 84–85.

⁷⁹ *Id.*

consolidation can support state and local needs to provide more efficient and effective NG911 services.⁸⁰ Municipal and county

⁸⁰ L.R. KIMBALL, INC., *supra* note 21, at 11–12. Normally, three major reasons are given for the consolidation of PSAPs by state and local governments. *Id.* Service level requirements are given as the most important and include resource management, training, facilities, structure and others. *Id.* at 11. Another reason is personnel consolidation that may allow some agencies to transfer training and other responsibilities and redeploy public safety officers. *Id.* at 12. Finally, cost savings are a reason for consolidation, but it has been difficult to establish or justify under current PSAP operations. *Id.* The cost of consolidating PSAP is not one dimension but, instead, it consists of interdependent operational and technological areas. NG911 services will face incremental changes in operational and technological costs as new NG911 services, such as the receipt and perhaps analysis of videos and data, are added to respond to or manage accidents, incidents and events in emergency, emergency management and national threat environments. The various dimensions are made quite evident by the federal definition of NG911 that identifies various technologies, emergency calls, capabilities and services of NG911. 47 U.S.C. § 1401(22) (2015). Based on the federal definition of NG911 services, Table 2 lists specific 911 technological, call, and other components or inputs that are cost factors of PSAP infrastructure, administration, and operations to NG911 services and earlier emergency call services. *See id.* §§ 1401(B) and (E) (defining Next Generation 911 services).

Table 2: Economic Inputs of Technical Efficiency in the PSAP

| Input of 911 Services | Traditional 911 | Enhanced 911 | Next Generation 911 |
|--|---------------------------------------|--|--|
| Administrator and Their Costs | Specialist | Supervisor | Manager/ Director Supervisors |
| Labor and Its Costs | Telecommunicator | Telecommunicator | Telecommuni- -cator Information Specialist Data Analyst |
| IP, IS and Other Technology and Their Costs (Routing, Servers, GIS, MIS, etc.) | Circuit Switch Call Identification | Circuit Switch Call Identification Location Information | IP-Enable Network Broadband Services Call Identification Location Information |
| Message Processing, and Retrieval to Receive Messages and Their Costs | Voice | Voice Text Messaging | Broadband Services Voice Text Messaging Email Messaging |

governments can gain “improvements in service levels, regional interoperability, responder safety, employee retention, and potential cost savings.”⁸¹

On the state level, the “consolidation [of PSAPs] encourages inter agency cooperation, more effective use of resources, and large-scale incident management.”⁸² In urging interagency cooperation, state policymakers must not allow emergency 911 call service needs of a region or county to be determined by the culture, tradition, and operational preference of one first responder discipline, rather than fiscal and other resources, emergency service needs, public benefits, and other factors of the county or region.⁸³

| | | | |
|--|----------------------|--|--|
| | | | Accident Call Monitor |
| Unique Processing Retrieval, Receipt, and other Costs to Supplement Messages and Their Costs | | Basic Data Retrieval Basic Data Sharing | Broadband Services Videos Photographs Data Retrieval Sharing Data |
| Unique Processing, Retrieval and Sharing and Using of Data and Information and Their Costs | Emergency Management | Emergency Management | Broadband Services Coordination Interoperability Sharing Data Emergency Management |

These administrative, operational and technological costs are inputs that will increase as new NG911 services are provided to save lives, reduce injuries, and protect properties in the emergency, threat, and emergency management environments. Table 4 below demonstrates that the impact of NG911 services on emergency, threat, and emergency management environments that may generate public and private benefits and are an integral part of saving lives, reducing injuries and protecting property. These benefits are external cost savings that impact both public and private sectors. These cost-savings are taken by health care entities, insurance companies, property owners, business organizations and governments that may not know how to attribute cost-savings to emergency call services. These entities save funds by not paying for greater property damages, more severe harm and greater losses of life caused by manmade and natural events. More research is needed on the cost-savings to the public and private sectors directly attributable to emergency call services.

⁸¹ L.R. KIMBALL, INC., *supra* note 21, at 11.

⁸² *Id.*

⁸³ *See generally* WORKING GROUP 1A, *supra* note 10, at 23 (finding that

Finally, the consolidation of PSAPs could also mean more “efficient, streamlined, and cost effective”⁸⁴ uses of technology to provide NG911. States must urge and support the consolidation of PSAPs where these consolidations further additional kinds and levels of emergency, public safety, and security services; though the study, analysis, and decision of specific local PSAP operations and needs to consolidate PSAPs should remain primarily with local governments.⁸⁵

Increased technology capabilities and their impact on PSAPs drives state and federal policymaking to urge and support county and municipal governments needing to consolidate PSAPs. The transition to an IP-enabled communications system that consists of hardware, software, procedures, and policies will place demands on small, single jurisdictional PSAPs and could make consolidation more challenging, but still necessary for effective PSAP operations.⁸⁶ Furthermore, NG911 communications or broadband “enable powerful and innovative solutions that will add real-time awareness to [first] responder communications.”⁸⁷ Furthermore, these communications networks that “will require a more regional approach to deployments and effective partnerships across agencies and regions will become more critical.”⁸⁸ The FCC’s Working Group IA finds that technology is an extremely important factor, but “is a complex, multi-dimensional issue that involves technological, strategic, tactical, and cultural change.”⁸⁹ State and local governments must come to grips with the capabilities of information and communications technologies, as well as information systems and their benefits to the public through providing NG911 services.

The capabilities of IP-enabled communications networks and their connection to FirstNet’s nationwide broadband public safety network will impact the kinds and levels of NG911 services and notification and support of first responders and other agencies.⁹⁰

“consolidation represents a major culture change and is often threatening to participating agencies long accustomed to having complete control of their services.”).

⁸⁴ L.R. KIMBALL, INC., *supra* note 21, at 11.

⁸⁵ *See id.* at 1 (supplying a summary for the reasons behind PSAP consolidation in Oregon).

⁸⁶ *See* WORKING GROUP 1A, *supra* note 10, at 9–10 (reporting on the evolution of PSAPs).

⁸⁷ *Id.* at 12.

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *See* NPSTC, *supra* note 7, at 3 (stating that “NG9-1-1 and FirstNet systems

These networks impact PSAPs through eventually requiring “[t]elecommunicators . . . to assimilate, assess and integrate applications using available voice, data and video streams for incident response.”⁹¹ These applications include, among others, “computer aided dispatch (CAD), emergency calls, law enforcement databases, and video cameras. . . .”⁹² To provide full NG911 services, PSAPs will eventually need telecommunicators and other communications professionals⁹³ to decide on the data to be released to first responders, and establish a priority to release data among various first responders.⁹⁴ NG911 services include the capability to provide the traditional E911 services of notification, but can dispatch and provide other services⁹⁵ to first responders, which, in turn, may require additional information and perhaps different kinds of telecommunicators or specialists.⁹⁶ NG911 services that now depend on an IP-enabled communications network that connect to FirstNet’s broadband public safety network to notify and broadly support first responders, may eventually need more communications or information personnel or specialists.⁹⁷ State and local governments must consider the need for additional and varied personnel to concurrently provide NG911 services and consolidate PSAPs.

are . . . complementary” and increase capabilities).

⁹¹ WORKING GROUP 1A 1A, *supra* note 10, at 11.

⁹² *Id.*

⁹³ Telecommunicator is a “[p]erson employed by a PSAP and/or an EMD Service Provider qualified to answer incoming emergency telephone calls and/or provides for the appropriate emergency response either directly or through communication with the appropriate PSAP.” *Master Glossary*, *supra* note 1, at 137. The telecommunicator is also known as the dispatcher or call taker. *Id.*

⁹⁴ See WORKING GROUP 1A, *supra* note 10, at 11 (explaining the need to prioritize distribution of data).

⁹⁵ See Geoghagen, *supra* note 33, at 1 (“The National Academy of Emergency Dispatch (NAED) is a non-profit organization that promotes safe and effective emergency dispatch services. . . .”). See *id.* Communication centers may permit telecommunicators to take 911 calls and dispatch public safety and other services. See *Master Glossary*, *supra* note 1, at 137 (stating that telecommunicators can provide emergency call services and dispatch emergency services by direct dispatch).

⁹⁶ See NPSTC, *supra* note 7, at 2 (recognizing that data and information transferred through the nationwide public safety broadband network may need to edited, processed, reviewed and repackaged at the PSAP).

⁹⁷ See *id.* at 3 (explaining the ways in which NG-9-1-1 and FirstNet systems complement each other).

IV. ECONOMICS AND MANAGEMENT OF PSAP CONSOLIDATION

The economics of PSAP consolidations include an analysis of the cost, funding and efficiency of the consolidation of PSAPs to provide NG911 services. Economics include operational and infrastructural costs, cost-savings and cost-effectiveness to consolidate two or more PSAPs with new operational capacity and which will provide more than traditional E911 services by providing NG911 services. Beyond the PSAPs, economics also involve costs and cost savings to security safety, emergency, and emergency-management agencies as well as public and private medical, insurance, and other entities receiving financial benefits of consolidated PSAP. Finally, economics include the financing of consolidated PSAPs and the measurement of the efficiency of using funds, labor and other resources to receive calls and data and then notify and support first responders.

A. *Costs of Consolidating PSAPs Providing NG911 Services*

Costs and cost-savings are critical issues in the consolidation of PSAPs where consolidation of PSAPs should take place concurrently with the implementation of NG911 services. State and local governments have sought to address cost issues in preparing for the consolidation of PSAPs.⁹⁸ The Minnesota Governor's Work Group, through its guidelines titled, *Public Safety Answering Point Consolidation: A Guidebook for Consolidation Strategies*, "identifies different types of costs associated with consolidation including personnel, capital, and one-time project related costs."⁹⁹ The Governor's Work Group listed factors that may affect the cost of consolidating PSAPs.¹⁰⁰ First, the telecommunicators and other personnel costs must be

⁹⁸ See MATRIX CONSULTING GROUP, *supra* note 74, at 4–5 (reporting on the feasibility of 911 and dispatch consolidation in Albany County); see also SHIMEK-WAYNE COUNTY, *supra* note 74, at 13 (explaining the role of each entity in determining cost-benefit analysis); SHIMEK-CUYAHOGA COUNTY, *supra* note 74, at 41 (explaining cost effectiveness determinations of the authors' study).

⁹⁹ Minnesota Governor's Work Group, *supra* note 74, at 23. There are two costs that must be address in providing NG911 services. On one hand, the costs of consolidating PSAPs does not involve the costs of "funding the construction and ongoing costs for nationwide NG911 network connectivity and call routing between the public safety answering point (PSAP) and the commercial service provider." On the other hand, both PSAPs and carriers will incur capital and operational costs of transitioning to a local, regional or state IP-enabled network and migrating from E911 services to NG911 services. *See id.*

¹⁰⁰ MINNESOTA GOVERNOR'S WORK GROUP, *supra* note 74, at 23.

considered in consolidating PSAPs and include salaries and benefits.¹⁰¹ Second, the cost of “technology . . . include[s] CAD, RMS, 911 answering equipment, [and] radio consoles associated with procurement and maintenance of systems needed to support a consolidated PSAP.”¹⁰² Third, other costs include “the [h]igh-level, budgetary costs for new facility construction, if needed and identification of other capital costs associated with facilities.”¹⁰³ Fourth, another kind of cost is the “[i]dentification of one-time project costs such as initial employee training, hiring of management staff, and professional services fees.”¹⁰⁴ The various kinds of costs of consolidating PSAPs are a critical factor that must be addressed by state, county and municipal governments.¹⁰⁵

On the issue of cost-savings, the Governor’s Working Group proposed that governing bodies prepare “10-year cost projections for a consolidated PSAP that will identify what cost savings are achievable and the time required in achieving any actual savings.”¹⁰⁶ The Working Group also noted that the “elimination of redundant PSAP systems is the source of long-term cost savings.”¹⁰⁷ Consolidation costs will be greatly affected by the number of PSAPs wanting to consolidate within the state.¹⁰⁸

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*; See also Barksdale, *supra* note 3 (considering the construction of the new facilities to consolidate city and county PSAPs by co-locating these PSAPs).

¹⁰⁴ MINNESOTA GOVERNOR’S WORK GROUP, *supra* note 74, at 23.

¹⁰⁵ See *id.* (recognizing costs of various factors of providing NG911 services); See also L.R. KIMBALL, INC., *supra* note 21, at 12 (recognizing that cost savings may be difficult or uncertain to achieve under some circumstances). When we look beyond the PSAP and first responder agencies, our expectations of NG911 should be even greater. We must recognize that emergency call or NG911 services can have even greater financial, economic and social effects on operations and services of health care, insurance, business, and government entities. These effects are benefits that include cost savings, increase in business profits, and reductions in government expenditures, and thus are negative costs, saving, and profits to public and private sectors. Table 3 below illustrates the services that may reduce an entity’s costs or increase its benefits by mitigating or preventing disruptive or harmful accidents, incidents and other events.

¹⁰⁶ MINNESOTA GOVERNOR’S WORK GROUP, *supra* note 74, at 23.

¹⁰⁷ *Id.*

¹⁰⁸ See L.R. KIMBALL, INC., *supra* note 21, at 39–40. Cost is a critical factor, but other factors must be considered in determining the number of PSAPs in a region or state. L.R. Kimball studied PSAP consolidation for the state of Oregon and developed criteria to establish regional PSAPs for the Oregon. See *Id.* at 40. L.R. Kimball identified criteria that “would provide the most equitable and efficient use of resources statewide.” *Id.* These criteria are as follows:

- 9-1-1 call taking and dispatch functions remain together.
- 9-1-1 call volume – Where possible, the call volumes were balanced

States must develop sound costs-analysis that permits the development of cost models to ensure that the cost criteria and factors are taken into consideration to consolidate PSAPs.¹⁰⁹ Furthermore, federal communications and state 911 agencies must not allow local governments to overlook capital and operating costs, which may be passed on by private telecommunication carriers, as these costs of carriers and other 911 service providers increase to deploy and operationalize communications and information technologies to enable PSAPs to connect to IP-enabled networks that will connect to the nationwide broadband network and other data retrieval services.¹¹⁰ Preferably, the federal government should work with the states to develop a consolidation policy and regulatory framework to permit states to identify and thereafter distinguish the special costs and cost-savings of consolidating PSAPs from the unique costs and cost-savings of implementing NG911 services to replace E911 services. This distinction between consolidation and implementation costs avoids misallocating the technology, personnel, facility, and other costs of consolidating PSAPs while providing NG911 services in rural and urban areas.

B. Financing Consolidation of PSAPs Providing NG911 Services

The funding of the consolidation of PSAPs must be addressed with policies to fund NG911 services that can receive different

among the regions to ensure the maximum number of redundancy or backup options.

- Back-up or redundancy planning – Multnomah was identified as its own region. Although consolidating with Washington and Clackamas Counties would make sense, redundancy planning would be much more complex in a PSAP that is so much larger than any other in the state.
- Existing partnerships – Survey results and on-site interviews indicate that sharing of systems and the exploration of potential consolidations are being discussed across the state. Therefore, it would be logical to group these PSAPs together.
- State geography – Equalizing the distribution of 9-1-1 calls among regions is desirable whenever possible.
- *Id.* These criteria cover a number of state characteristics, emergency factors and management to decide where the state should consider forming consolidated PSAPs.

¹⁰⁹ See *id.* at 2, 40 (describing the various factors, in addition to the overall cost alone, that have been found to be important considerations in creating a cost analysis to determine whether consolidation is appropriate for a particular geographical region and how to effectively consolidate within that region).

¹¹⁰ See Amodio, Schulzrinne & Manner, *supra* note 45, at 3 (recognizing that telecommunication carriers will incur new capital and operational costs to enable PSAPs to provide NG911 services).

kinds of emergency calls and thereafter use regional and nationwide communications networks to notify and support first responders. If state and local governments treat the consolidation of PSAPs as another cost factor, similar to costs associated with personnel and technology, to implement NG911 services, the NG911 funding concern would be somewhat more challenging. Yet, the funding concern would be more strategic so as to address the new technological capabilities expanding PSAP operational capacities that are driving the eventual connection to IP-enabled communications networks which will then eventually connect to FirstNet's nationwide broadband public safety network.¹¹¹ A state NG911 funding model supporting the consolidation of PSAPs must be strategic or sustainable to adapt to changes in technologies and information systems impacting both PSAP capacity and management.¹¹² In fact, the build-out of telecommunications systems to support IP-enabled broadband networks and nationwide broadband public safety network not only demands strategic or sustainable funding models to cover public and private capital investments as well as new network and carrier services which enable PSAPs to provide NG911 services, but could also advance consolidation.¹¹³ Thus, NG911 funding has been and still remains a quintessential, if not the linchpin matter for state and local governments to begin and sustain the implementation of NG911 services connected to regional or state IP-enabled communications network.¹¹⁴

The consolidation of PSAPs providing NG911 services includes implementation and operational costs that must be paid by state and local NG911 or another funding models, or tax dollars.¹¹⁵ State

¹¹¹ See NPSTC, *supra* note 7, at 2 (“When properly designed and implemented, NG9-1-1 systems and FirstNet will complement each other in multiple ways and will provide public safety with a broad range of new capabilities.”).

¹¹² See TFOPA, *supra* note 2, at 155 (finding the need for state and local funding models to “provide 9-1-1 agencies an opportunity to deploy and upgrade 9-1-1 technologies as advancements are made [and be] . . . flexible enough to accommodate the evolution of communication technologies”); *see also id.* at 157 (stating that “[a]lthough no one can predict what technology will prevail in the next five-to-ten years, the 9-1-1 community must be more proactive in trying to anticipate these trends and developing a 9-1-1 funding mechanism that is sustainable and competitively neutral.”).

¹¹³ See Amodio, Schulzrinne & Manner, *supra* note 45, at 3 (recognizing that telecommunications carriers and other service providers will incur costs to enable PSAPs to NG911 services); *see also* TFOPA, *supra* note 2, at 155 (recognizing that state and local funding models must be adaptable to changes in technology).

¹¹⁴ National 911 Program-Blue Ribbon Panel, *supra* note 33, at ES1.

¹¹⁵ See WORKING GROUP 1A, *supra* note 10, at 29 (stating that, in determining

governments must enact state-specific funding mechanisms that provide an equitable and sustainable source of operations and administrative funds.¹¹⁶ State funding models must be able to adapt to municipal and county needs to provide timely NG911 services to the public and first responders by connecting to communications and public safety networks. One or more characteristics may be the basis for one or more state or local funding models, but one model to fit all states, municipalities, or counties providing or contracting NG911 services may not be possible.¹¹⁷ These characteristics may include a set fee per capita, population, and other characteristics¹¹⁸ which are used to determine the amount of fees that persons and organizations would pay to a state or local 911 authority to implement NG911 services and consolidate PSAPs.¹¹⁹ For example, a taxed-based funding model that would rely on “[o]ne or a combination of tax mechanisms such as sales tax, or property taxes”¹²⁰ that could be collected and used to implement NG911 and consolidate PSAPs.¹²¹ Next, it listed the population based or per capita that uses population to determine the amount of funds that should be collected by a state or county to implement NG911 services.¹²²

the cost savings of consolidation, the capital and start-up costs must be considered).

¹¹⁶ *Id.*

¹¹⁷ *See id.* (explaining that different areas, such as rural areas, will have different needs and considerations that will impact costs); *see also* National 911 Program-Blue Ribbon Panel, *supra* note 38, at ES1 (explaining that transitioning to NG911 will differ in terms of funding, depending on the jurisdiction, and coordination between organizations at federal, national, state, local levels is necessary to effectively implement changes); MINNESOTA GOVERNOR’S WORK GROUP, *supra* 74, at 29 (stating that perceptions of the components for best funding model differs by region).

¹¹⁸ MINNESOTA GOVERNOR’S WORK GROUP, *supra* 74, at 29; *See* WORKING GROUP 1A, *supra* note 10, at 29 (“Stakeholders must define what is equitable for their particular type of consolidation and that the established funding mechanism or cost allocation structure be sustainable.”); National 911 Program-Blue Ribbon Panel, *supra* note 38, at 17–25 (explaining various state funding models to finance E911 and NG911 services). For an analysis of the development of a state E911 funding model, *see* Elaine Seeman, James E. Holloway, James Kleckley & Frederick Niswander, *The First Step in Modernizing Our 911 Emergency Call Centers: Revising the State Enhanced (E) 911 Legislative Funding Scheme to Efficiently Distribute 911 Funds*, 2012 U. ILL. J. L. TECH. & POL’Y, 289 (2012).

¹¹⁹ WORKING GROUP 1A, *supra* note 10, at 29; MINNESOTA GOVERNOR’S WORK GROUP, *supra* 74, at 29.

¹²⁰ MINNESOTA GOVERNOR’S WORK GROUP, *supra* 74, at 29.

¹²¹ *See id.* (discussing funding mechanisms for the consolidation of PSAPs and 911 services).

¹²² *Id.*

Finally, the usage funding model uses the “number of 911 calls received and dispatched for each municipality or agency”¹²³ to determine the amount of funds to collect to implement NG911 services.¹²⁴ Some funding models may not include parameters or characteristics to reflect impact of technology, training, and other factors¹²⁵ to fund both NG911 services and consolidate PSAPs.¹²⁶ State and local governments must develop and agree on state NG911 funding models that sufficiently support county and municipal government to consolidate PSAPs in planning and implementing more kinds and levels of NG911 services that far exceed limited traditional E911 services.

NG911 services that are well in excess of traditional E911 services and benefits to persons, organizations, first responders and other agencies require state governments, with federal financial support, establish NG911 funding models that include sufficient funding for the consolidation of PSAPs by recognizing the use of funds and their impact on labor and other resources and public and private communications services. Financial and other resources directly impact the consolidation of PSAPs and their eventual benefits to the public.¹²⁷ On one hand, the “[l]ack of sustainable funding, especially in rural areas provides strong incentives to consolidate. . . . [but] higher funding levels tend to hinder consolidation efforts.”¹²⁸ Local and state governments that are faced with fewer funds are more willing to relinquish command and control.¹²⁹ On the other hand, unfunded liability that can be created by “[m]andated technology changes often create a fiscal

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ See NAT’L EMERGENCY NO. ASS’N, FUNDING 9-1-1 INTO THE NEXT GENERATION: AN OVERVIEW OF NG9-1-1 FUNDING MODEL OPTIONS FOR CONSIDERATION 3 (2007), http://c.ymcdn.com/sites/www.nena.org/resource/res_mgr/ngpp/ngfundingreport.pdf (last visited Apr. 21, 2016) (stating that current funding models will have challenges maintaining the current PSAPs and implementing NG911 given new technology).

¹²⁶ *Id.*; see National 911 Program-Blue Ribbon Panel, *supra* note 38, at ES1 (discussing how migration to NG911 will require exploring different funding and oversight opportunities); see generally TFOPA, *supra* note 3, at 152–57 (examining the state 911 funding concerns and making general findings and recommendations on making sustainable or strategic funding models).

¹²⁷ See WORKING GROUP 1A, *supra* note 10, at 29 (stating that cost saving are possible, but not always immediately identifiable and are not the only potential benefit of consolidation).

¹²⁸ *Id.*

¹²⁹ *Id.*

burden that could only be addressed through consolidation.”¹³⁰ Thus, state and federal governments must consider establishing incentives to encourage and support capital outlays and initial startup costs.”¹³¹

Thus, state and federal governments must consider establishing incentives to encourage and support capital outlays and initial startup costs.”¹³² Furthermore, “[b]udget restrictions inhibit the ability to keep pace with technology is another key driver for consolidation; individual agencies cannot afford new technology on their own.”¹³³ Federal and state funding policies must include the effects of NG911 funding levels on more labor, equipment and other needs and new services of communications service providers to ensure more kinds and levels of NG911 services are factors in local decisions to consolidate PSAPs in dynamic national threat, emergency and emergency management environments.

C. Efficiency of Consolidating PSAPs Providing NG911 Services

Public efficiency needs to include more than savings by reducing PSAP administrative and operating costs through the elimination or reduction in technology, personnel, and communications services. Technical efficiency involves the use of inputs that include funds, labor, equipment and telecommunications services¹³⁴ to provide NG911 services. These inputs are used to produce a

¹³⁰ *Id.*

¹³¹ *See id.* (stating that incentivized rather than mandated consolidation is more beneficial and that stakeholders need to plan and budget for capital costs and reserves).

¹³² *Id.* at 29, 30.

¹³³ *Id.* at 29.

¹³⁴ Noel D. Uri, *Changing Productive Efficiency in Telecommunications in the United States*, 72 INT. J. OF PRODUCTION ECON., 124, 125, 126, 127 (2001). The author defines “technical efficiency . . . [as] the proportional reduction in inputs possible for a given level of output in order to obtain the efficient input use.” *Id.* In the medical field, a more precise definition of technical efficiency identifies specific inputs and outputs for a specific medical treatment. *See* Stephen Palmer & David J. Torgerson, *Definitions of Efficiency*, 318 BRITISH MED. J. 1136, 1136 (1999), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1115526/> (discussing technical efficiency in the healthcare field). In the health care field, “[e]fficiency is concerned with the relation between resource inputs (costs, in the form of labour, capital, or equipment) and either intermediate outputs (numbers treated, waiting time, etc) or final health outcomes (lives saved, life years gained, quality adjusted life years (QALYs)).” *Id.* at 1136. Moreover, there are three kinds of efficiency that include technical, productive and allocative efficiencies, but this article’s focus is on technical efficiency. *Id.* Our focus is on technical efficiency that consider inputs and outputs to consolidate PSAPS to provide NG911 services that exceed traditional E911 services. *See id.* (discussing technical efficiency).

level of NG911 services or outputs, such as receiving calls, notifying first responders, sharing information, reducing medical services, and reducing insurance indemnification.¹³⁵ Efficiency may not always be easy to acquire in the short-term.¹³⁶ Furthermore, PSAP consolidations may not always reduce administrative and operating costs in the short-term, but if they do not so, this reduction may be long-term savings.¹³⁷

An elimination of operating and administrative inputs may occur in the consolidation of PSAPs to provide NG911 services. Consolidation will require capital and operations inputs that include facilities, equipment and personnel to improve the level and quality of NG911 services beyond those currently provided by E911 services may be a good measure of efficiency.¹³⁸ CSRIC

“Technical efficiency refers to the physical relation between resources (capital and labour) and health outcome. A technically efficient position is achieved when the maximum possible improvement in outcome is obtained from a set of resource inputs.” *Id.*; see also National 911 Program-Blue Ribbon Panel, *supra* note 38 at 50, 51, 52. Finally, the National 911 Program-Blue Ribbon Panel gives a thorough analysis of the application of efficiency concepts to 911 services. National 911 Program-Blue Ribbon Panel, *supra* note 38 at 50, 51, 52. These concepts include public goods, public welfare, free riders and others. *Id.* Table 3 illustrates internal outputs of NG911 services in the notification of first responders, dispatchers and others. See *infra* Table 3. Table 4 also illustrates the external outputs of NG911 services that are benefits of notification and support of first responders dispatched to manage, control and minimize incidents, accidents and other events that cause harm to persons, loss of lives and destruction of property in threat, emergency and emergency management environments. See *infra* Table 4. These joint actions of PSAP and fire responders provide benefits to insurance companies and business investors who are not the recipient of the NG911 and first responder services. *Id.*

¹³⁵ See Uri, *supra* note 133 (defining “technical efficiency . . . [as] the proportional reduction in inputs possible for a given level of output in order to obtain the efficient input use”). See also National 911 Program-Blue Ribbon Panel, *supra* note 38 at 47–52 (illustrating internal outputs of NG911 services in the notification of first responders, dispatchers and others, as well as illustrating the external outputs of NG911 services that are benefits of notification and support of first responders dispatched to manage, control and minimize incidents, accidents and other events that cause harm to persons, loss of lives and destruction of property in threat, emergency and emergency management environments).

¹³⁶ See CSRIC Working Group 1A, *supra* note 10, at 29 (discussing how savings, if they do occur, may not be observed until several years after implementation); see TFOPA, *supra* note 2, at 27 (noting that changes to funding mechanisms will involve a transition of several years).

¹³⁷ See CSRIC Working Group 1A, *supra* note 10, at 29 (discussing how consolidations can reduce long term costs).

¹³⁸ See CSRIC Working Group 1A, *supra* note 10, at 29 (discussing characteristics that impact consolidation). As illustrated in Table 3 below, too much emphasis on inputs (cost, financing, labor, equipment and information

Working Group 1A found that “having an emphasis on improving service with cost saving as a result was a much more realistic goal than placing the emphasis on cost savings and hoping for service improvements as a result.”¹³⁹ Efficiency would be achieved by “shared infrastructure that helps speed up communication, information access and dissemination yielding lower response time, improved quality of service and enabling collaboration between different agencies during an incident.”¹⁴⁰ The consolidation of PSAPs should be able to achieve greater efficiency by improving the quality (notification and support) and level (numbers and kinds) of NG911 services to the community.

Focusing on the PSAP’s more immediate outputs to emergency callers and first responders may understate the overall outputs of the NG911 services of consolidated PSAPs. Efficiency may need to include direct, but less immediate effects of consolidated PSAPs on the kinds, levels and quality of NG911 services that notify, dispatch and support first responders to provide benefits to private institutions and public nonemergency agencies. For example,

technology) may obscure the broad, unexplored outputs that should ultimately play a role in measuring the efficiency of the NG911 services.

Table 3: Internal Outputs of Technical Efficiency of Consolidated PSAPs

| Internal Outputs of 911 Services | Traditional 911 | Enhanced 911 | Next Generation 911 |
|---|--------------------------------|--|--|
| Call Identification | Telephone Number Callers' Name | Telephone Number Caller's Name | Telephone Number Caller Name |
| Location Information | Address | Address Coordinates | Address Coordinates |
| Messages | Voice | Voice Text Messaging | Voice Text Messaging Email Messaging Accident Call Monitoring |
| Supplement Data | | Basic Data Retrieval Basic Data Sharing | Videos Photographs Data Retrieval Sharing Data |

¹³⁹ *Id.* As illustrated in Table 3, much emphasis on costs and economics may obscure the kinds and service outputs of NG911 that will ultimately play an essential role in determining the efficiency of the NG911 services. Obviously, the output of NG911 services must be captured and measured to determine the efficiencies of consolidating PSAPs.

¹⁴⁰ *Id.*

emergency medical services will save lives and reduce injuries, and fire departments will save private property. The timely notification and dispatch of first responders with accurate call data and supplemental information and precise locations on medical and fire and rescue incidents play a role in reducing injury, saving lives or reducing property damages.¹⁴¹ Perhaps, the quality and level of NG911 services may better capture the other public and private benefits and permit the measurement of the efficiency of consolidated PSAPs on private institutions and public agencies.¹⁴² The institutions and agencies that receive the benefits and effects of a better level and quality of NG911 services would include private and public institutions, such as health care, insurance, risk management, investments, and other business.¹⁴³

¹⁴¹ Our argument is that outputs or outcomes of consolidated PSAPs providing NG911 services may be defined too narrowly, thus permitting technical efficiency to be understated under many security threats, emergencies and emergency management conditions. Our argument does not challenge the technology, equipment, funds, labor and other inputs provided to consolidate PSAPs to provide NG911 services that are outputs or outcomes. Within the public safety field, the outputs or outcomes are provided to emergency callers and first responders who provide emergency medical and other services to these callers who are persons and business organizations. Beyond the public safety field, other outputs or less immediate benefits are derived from highly effective NG911 and first responder services by business and government decisions. Namely, insurance companies and social service agencies make later decisions regarding medical and disability services that may have been greatly affected by highly effective PSAP and first responder practices and actions. For example, PSAPs use E911 services to notify emergency medical services and fire and rescue units that accompany the emergency medical services to the scene of automobile accidents. Consolidated PSAPs that provide more kinds and levels of NG911 services would be expected to have even a greater tactical impact on first responders managing, controlling and minimizing the severity of some incidents. We assume that deaths, severe injuries and total destruction of property will have a higher payout (less costs) than other personal injuries and property damages. More study is needed on this question.

¹⁴² See National 911 Program-Blue Ribbon Panel, *supra* note 38, at 6 (“By allowing access to all individuals within the community, public safety emergencies can be identified and dealt with an efficient and expeditious manner. In this respect, 911 services have ‘positive externalities’; that is, they produce social benefits beyond the benefit provided to the immediate consumer of the good.”).

¹⁴³ See National 911 Program-Blue Ribbon Panel, *supra* note 38, at 6 (discussing how 911 services are analogous to a public good that benefits private individuals and the community as a whole). NG911 will take on additional security, public management, information system and communications roles in that NG911 services will provide and share much more data and information by PSAPs and provide more public services by allowing PSAPs to notifying and support emergency, security and emergency management agencies. See TFOPA, *supra* note 2, at 25–26 (discussing how PSAPs will provide better data and

These institutions benefit financially when the level and quality of NG911 services of consolidated PSAPs reduce, prevent and mitigate the risk of loss or harm caused by incidents, threats and events attended by the timely arrival of more informed first responders.¹⁴⁴

equipment). Currently, Table 4 illustrates the external outputs of emergency call services greatly expanded through the capacities of NG911 services.

Table 4: External Outputs of Technical Efficiency of Consolidate PSAP

| Outputs of 911 Services | Traditional 911 | Enhanced 911 | Next Generation 911 |
|--|---|---|--|
| Reduction in Non PSAP Costs of Health, Insurance, Property, Security and other Services (First responders deliver emergency management services, take rescue, law enforcement, and other actions, and provide emergency medical services to prevent, mitigate and correct harm, losses and other detriments caused by incidents, accidents and events in emergency, threat and emergency management environments.) | Emergency Environment: Save Lives Reduce Injuries Protect Property | Emergency Management Emergency Save Lives Reduce Injuries Protect Property | Emergency Environment Save Lives Reduce Injuries Protect Property Coordination Sharing Information Interoperability Enhance Threat Environment National Security: Coordination Sharing Information Interoperability Enhance Emergency Management Environment Disaster Relief Coordination Sharing Information Interoperability |

The administrative, operational and technological costs are inputs that may increase as more NG911 services are provided to save lives, reduce injuries and protect properties in the emergency, threat and emergency management environments. The impact of first responders on these environments provides benefits that can improve efficiency if cost-savings by health care, insurance and other entities are considered by state and federal policy-makers when timely NG911 services permit first responders to take immediate actions that ultimately reduce or avoid intermediate or long-term medical cost, property losses, and other costs.

¹⁴⁴ See National 911 Program, *supra* note 38, at 6 (recognizing that “911

The level and quality of NG911 services that allow consolidated PSAPs to receive more calls and retrieve data and provide more information beyond traditional E911 services are new outputs or contributions to the efficiency.¹⁴⁵ More usable data and information permits first responders and other agencies to make better tactical responses and approaches to emergencies and threats. For example, more usable information could allow better diagnose and treatment of medical emergencies, such as strokes and heart attacks, and reduce accompanying medical care costs.¹⁴⁶ For instance, more information and data to fire and rescue services could potentially reduce harm to persons and properties, which, in turn, reduce the indemnification of property owners by insurance companies.¹⁴⁷ Federal and state governments must seek to measure efficiency by creating methods and means to measure the value of intermediate and long-term effects of NG911 services (outputs) beyond callers and first responders. These methods and means must capture the economic value to health care, insurance companies and government social agencies needing to provide fewer costly medical services, indemnify fewer owners for property losses, replace or repair fewer damaged facilities, and minimize the harm of avoiding natural and manmade disasters.¹⁴⁸ As a measure of positive externalities, the efficiency of consolidated PSAPs must recognize and include the value or cost-savings received by private entities and social agencies where the consolidation of PSAPs providing NG911 services significantly improve the quality and increase kinds and levels of NG911 services.

services have ‘positive externalities’; that is, they produce social benefits”).

¹⁴⁵ See CSRIC Working Group 1A, *supra* note 10, at 29 (discussing characteristics that impact consolidation).

¹⁴⁶ See Mazmanian, *supra* note 43, at 1 (discussing how a solution is being designed to filter down the available information that first responders are given); see *Smart911*, *supra* note 43, at 1–2 (noting some of the medical conditions that Smart911 can assist with identifying); See DEP’T OF HOMELAND SEC., *supra* note 43, at 59 (discussing a part of the National Incident Management System that functions to recommend cost saving measures).

¹⁴⁷ See Mazmanian, *supra* note 43, at 1–2 (discussing how response technology could aid firefighters in making improved tactical decisions).

¹⁴⁸ See National 911 Program, *supra* note 38, at 6 (recognizing that “911 services have ‘positive externalities’; that is, they produce social benefits”).

V. REGULATION AND PUBLIC POLICY OF PSAP CONSOLIDATION

The public policy perspective of PSAP consolidation covers federal, state and local 911 or communications legislation and policy. Current federal communications policies do not prohibit the consolidation of PSAPs.¹⁴⁹ The sheer numbers and necessity of PSAPs to emergency, emergency management, and threat environments justify a need for a federal and state policies to guide and support local decisions to consolidate PSAPs. These environments are a mixture of local, state and national events and incidents and demand a state and federal policies to provide funds and guidance for the consolidation of PSAPs and require municipal and county policy-makers to establish and provide a requisite number, level and quality of NG911 services. Federal and state communications policies must urge or encourage the consolidation of PSAPs providing NG911 services to notify and support first responders in dynamic threat, emergency management and emergency environments.

A. Federal Regulation and Policy

Federal legislative policy urging states to establish 911 obligations and imposing 911 obligations for telecommunications carriers has expanded with the development and deployment of communication and information technologies but explicitly remains silent on the consolidation of PSAPs.¹⁵⁰ Congress enacted legislative policy to address the impact of wireless or cellular access technologies on 911 services that include improving or enhance the location of emergency callers and identification of the telephone number of these callers.¹⁵¹ With this purpose in mind, Congress enacted the Ensuring Needed Help Arrives Near Callers Employing 911 Act of 2004 (ENHANCE 911 Act).¹⁵² The ENHANCE 911 Act sought, in part, “(1) to coordinate 911 services and E-911 services, at the Federal, State, and local levels and (2) to ensure that funds collected on telecommunications bills for

¹⁴⁹ See *infra* Part V.A (discussing the legislative policy enacted by Congress surrounding PSAP consolidation as a response to the need to improve public safety through implementing better 911 technologies).

¹⁵⁰ See *generally* Ensuring Needed Help Arrives Near Callers Employing 911 Act of 2004, Pub. L. No. 108-494, 118 Stat. 3986 (2004) (enacted to “improve, enhance, and promote [] homeland security, public safety, and [] emergency response capabilities through [implementation] of advanced 911 services”).

¹⁵¹ *Id.*

¹⁵² *Id.*

enhancing emergency 911 services are used only for the purposes for which the funds are being collected.”¹⁵³ The ENHANCE 911 Act provided financial incentives to support the states needing to complete the implementation of E911.¹⁵⁴ In addition, the ENHANCE 911 Act created the E-911 Implementation Coordination Office (ICO) that with the assistance of other federal agencies, managed the implementation of federal incentives grants and delegated to the ICO other duties to help implement E911 services.¹⁵⁵ The ENHANCE 911 Act is a federal communications policy that supports local and state efforts to provide timely E911 services, further the transition to NG911 services, and support the migration to an IP-enabled network.¹⁵⁶

A few years later, Congress sought to further communications policy by improving E911 services and encouraging the transition to an IP-enabled emergency services network infrastructure.¹⁵⁷ Specifically, Congress enacted the New and Emerging Technologies (NET) 911 Improvement Act of 2008 (Net Improvement Act).¹⁵⁸ The Net Improvement Act showed the willingness of Congress to urge the migration to IP-enabled emergency networks¹⁵⁹ and permitted the use of federal grant funds to transition to NG911 services.¹⁶⁰ Moreover, one eligibility requirements for federal grant funds was that the states establish plans to implement and coordinate E911 services.¹⁶¹ Additionally, the NET Improvement Act required 9-1-1 Implementation Coordination Office (ICO) to prepare a national plan to migrate to

¹⁵³ *Id.* § 103 (codified as amended at 47 U.S.C. §§ 901 note, 942 note).

¹⁵⁴ *See* 47 U.S.C. § 942(b) (2015) (describing the purpose of the financial incentives, eligibility and criteria in receiving them); *see* 47 C.F.R. § 20.18 (2016) (requiring the implementation of E911 in two phases that provided number identification and location for both wire-line and wireless callers).

¹⁵⁵ 47 U.S.C. § 942(a)(1) (2015).

¹⁵⁶ *See* National Telecommunications and Information Administration Organization Act—Amendment, Pub. L. No. 108-494 § 102, 118 Stat. 3986, 3986 (2004) (codified as amended at 47 U.S.C. § 942 (West) (explaining the purpose and motivation of the act).

¹⁵⁷ New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. No. 110-283, 122 Stat. 2620 (2008) (codified as amended in scattered sections of 47 U.S.C.).

¹⁵⁸ *Id.*

¹⁵⁹ *See id.* § 102 (detailing the required timeline for submitting to Congress an implementation plan of IP-enabled networks).

¹⁶⁰ *See generally* 47 U.S.C. § 942(b) (2015) (explaining how the federal grants will be awarded, the criteria to be awarded one, and other details surrounding the implementation of NG 911 services).

¹⁶¹ *Id.* § 942(b)(3)(A)(iii) (2015).

IP-enabled communications networks that are capable of “receiving and responding to all citizen-activated emergency communications and improving information sharing among all emergency response entities.”¹⁶² The NET Improvement Act, which recognized the effects of VOIP on voice-centric 911 call services¹⁶³ and granted the FCC regulatory authority to regulate VoIP service providers.¹⁶⁴ Thus, the NET Improvement Act continued to obligate federal agencies to urge states to plan and coordinate the transition to NG911 services and migration to IP-enabled networks.¹⁶⁵

Although recent federal communications policy indicated a growing but cautious federal policy role in the transition to NG911 services and migration to an IP-enabled network infrastructure, one may find a subtle hint that Congress may urge states to consider consolidation where appropriate. Specifically, Congress enacted the Middle Class Tax Relief and Job Creation Act (Act) of 2012¹⁶⁶ that addressed the need for state and local governments to implement IP-enabled communication networks and provide NG911 services.¹⁶⁷ Congress established the First Responder Network Authority (FirstNet), to establish a nationwide, interoperable public safety broadband network.¹⁶⁸ This network

¹⁶² New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. No. 110-283, § 102, 122 Stat. 2620 (2008) (codified as amended in scattered sections of 47 U.S.C.).

¹⁶³ Compare *id.* § 201, with 47 C.F.R. § 9.3 (2016) (showing the relation between the technology to be implemented and the definition of VoIP).

¹⁶⁴ 47 U.S.C. § 615a-1 (2015).

¹⁶⁵ See generally 47 U.S.C. § 942(b) (2015) (explaining the process by which federal agencies will compel states to implement the more sophisticated 911 services).

¹⁶⁶ H.R. 3630, 112th Cong. (2012) (enacted) (codified, in scattered sections of 47 U.S.C.).

¹⁶⁷ *Id.* § 6503.

¹⁶⁸ *Id.* § 6204(a) (codified as amended at 47 U.S.C. § 1424 (2015)). The Middle Class Tax Relief and Job Creation Act of 2012 (Act), H.R. 3630, 112th Cong. (2012) establishes the First Responder Network Authority (FirstNet) within the National Technology and Information Administration (NTIA). *Id.* §§ 6204(a), 6001(24). FirstNet will “deploy[] and operate[] a . . . nationwide public safety broadband network.” *Id.* § 6206(b)(1) (codified as amended at 47 U.S.C. § 1426 (2015); and must consult “with Federal, State, tribal, and local public safety entities, the Director of NIST, the Commission, and the public safety advisory committee established in section 6205(a).” *Id.* FirstNet has issued a Request for Proposals (RFP) to build out the interoperable nationwide public safety broadband network so that PSAPs via E911s can provide more call and other data and information to first responders. *FirstNet Issues RFP for the Nationwide Public Safety Broadband Network*, Press Release, FIRSTNET (Jan. 13, 2016), <http://www.firstnet.gov/news/firstnet-issues-rfp-nationwide-public-safety->

will permit PSAPs to connect to this public safety network through an IP-enabled communications networks.¹⁶⁹ Moreover, the Act contains specific subtitles that included federal policy placing greater emphasis on preparation and readiness for the implementation of NG911 services through adding the Next Generation 9-1-1 Advancement Act of 2012 (NG911 Advancement Act).¹⁷⁰ The NG911 Advancement Act identifies financial, operational and other needs and concerns to prepare for and guide the implementation of NG911 services.¹⁷¹ These needs and concerns include the coordination of the implementation of NG911 services, federal authority to manage NG911 policy, use of 911 funds, legal and regulatory framework to implement NG911 services, and funding and costs of NG911 service specifications and requirements.¹⁷² The Act demonstrated that Congress may be willing to robustly urge and support the coordinated transition to NG911 services and migration to an IP-enabled communication network that actually would permit 6,000 PSAPs to provide data and information through FirstNet's nationwide public safety broadband network to first responders.¹⁷³ However, Congress may

broadband-network. ("The First Responder Network Authority (FirstNet) today issued its Request for Proposals (RFP) for the deployment of the nationwide public safety broadband network, marking a major step forward in FirstNet's efforts to modernize communications for first responders and other public safety personnel across the U.S.").

¹⁶⁹ NPSTC, *supra* note 7, at 4. "When properly designed and implemented, NG9-1-1 systems and FirstNet will complement each other in multiple ways and will provide public safety with a broad range of new capabilities." *Id.* at 2. NPSTC issued a report that contrasts and compares FirstNet and NG911 systems and the interconnectivity. *Id.* Foremost, "[t]elephone company provider[s] network [will]send 9-1-1 emergency call from wireline, wireless, VoIP network into the NG9-1-1 service system via ESInet(s); NG9-1-1 systems on the ESInet [will] send the 9-1-1 call to [the] correct PSAP and allow sharing of 9-1-1 call data with other PSAPs." *Id.* "PSAPs will receive incoming calls for help via text message, voice call, or other messaging format. . . . Data calls . . . may also be generated from machines and sensor systems including automatic crash notification (ACN), break-in alarms, and body health monitors." *Id.* at 2. Data calls and messaging calls with data "may be reviewed/edited/repackaged by the PSAP," before they are transmitted by telecommunicators to the appropriate first responder. *Id.* These "data [and] information [][are] transmitted to the first responders via the FirstNet broadband network." *Id.* at 2.

¹⁷⁰ *Supra*, note 165 at § 6501.

¹⁷¹ *Id.* at §§ 6501–6509.

¹⁷² *Id.* at §§ 6501–6509.

¹⁷³ FED. COMM'N COMM'N. PURSUANT TO THE NEXT GENERATION (11 ADVANCEMENT ACT OF 2012 (PUB. L. NO. 112-96 (2012)): LEGAL AND REGULATORY FRAMEWORK FOR NEXT GENERATION 911 SERVICES REPORT TO CONGRESS AND RECOMMENDATIONS (Feb. 22, 2013).

want to know more about the need for 6,000 uncoordinated PSAPs wanting to connect to the nationwide, interoperable public safety broadband network.

B. State Regulation and Policy

States must continue to fund and support NG911 systems by making legislative policies to urge and support the consolidation of PSAPs by municipal and county governments. State NG911 policy-makers provide support and guidance to urge or require, finance and manage the consolidation of PSAPs to provide NG911 services.¹⁷⁴ Currently, few states have studied the consolidation of PSAPs to make findings, conclusions and recommendations on efficiency and costs of consolidating, operating and managing PSAPs within a state.¹⁷⁵ Several states have provided guidance to local governments and state agencies to require a specific plan, objectives and strategies to consolidate PSAPs as part of the transition to NG911 services and migration to IP-enabled emergency services networks.¹⁷⁶ Finally, state NG911 and communications policies must continue to weigh the role of the telecommunications industry and communication service providers in providing NG911 and communications technologies and services to consolidate and operate PSAPs.¹⁷⁷ States are

¹⁷⁴ National 911 Program-Blue Ribbon Panel, *supra* note 38, at ES2-ES3.

¹⁷⁵ L.R. KIMBALL, INC., *supra* note 21, at 11; KIMBALL-CONNECTICUT, *supra* note 74, at 1; MINNESOTA GOVERNOR'S WORK GROUP, *supra* note 74, at 5–6. Several local governments have conducted studies to determine the feasibility of consolidating PSAPs. *See, e.g.*, MATRIX CONSULTING GROUP, *supra* note 74, at 1 (discussing Albany County, New York's management of PSAPs); SHIMEK-WAYNE COUNTY, *supra* note 74, at 1 (discussing Ohio's management of PSAPs); SHIMEK-CUYAHOGA COUNTY, *supra* note 74, at 1 (discussing Ohio's management of PSAPs)

¹⁷⁶ *See, e.g.*, *North Carolina 911 Board PSAP Grants*, N.C. 911 <https://www.nc911.nc.gov/PSAPs/GrantAppDefault.asp>, (last visited April 11, 2016) (“A consolidation project involves combining one or more PSAPs with a primary PSAP with an integrated management structure that serves the same populations and jurisdictions. . . .”); Dep’t Pub. Safety, Regs. Conn. State Agencies § 28-24-5 (last amended March 2006) (“(a) On or after January 1, 2006, municipalities may apply for regional emergency telecommunications center or multi-town PSAP transition grants for the purpose of reimbursing such municipalities’ expenses related to the transition of existing emergency telecommunications services to an approved multi-jurisdictional emergency telecommunications center.”). States also require their state 911 agencies to develop state 911 plans that facilitate regionalization and consolidation of PSAPs.; N.J. Rev. Stat. § 52:17C-3(b)(3) (West 2015) (“requir[ing] the consolidation of PSAPs as appropriate, consistent with revisions in the plan to upgrade the enhanced 9-1-1 system. . .”).

¹⁷⁷ NENA-Policy Maker Blueprint, *supra* note 7, at 2.

making efforts to advance PSAP consolidation, but it remains to be seen whether these efforts have gone far enough to concurrently consolidate PSAPs and implement NG911 services.

Other policy issues and concerns must be addressed by state policy-makers to urge or mandate the consolidation of PSAPs that also further the transition to NG911 services and migration to IP-enabled communications networks. State PSAP and NG911 policy is needed to further intergovernmental relations between county and municipal governments and between state agencies and local governments to facilitate the efficient and cost-effective consolidation of PSAPs.¹⁷⁸ Next, states must continue to delegate to state 911 agencies (boards and commissions) the authority to urge the consolidation of PSAPs by setting aside specific 911 funds to a study, plan and implement the consolidation of PSAPs by two or more local governments.¹⁷⁹ Finally, state policy-makers must insure that mandates to consolidate PSAPs concurrently or immediately further the transition to NG911 services rather than mandating an immediate reduction in the costs of providing limited E911 services.¹⁸⁰ Thus, states must provide strong leadership and establish legislative policy to consolidate PSAPs that provide NG911 services are expected to receive different kinds and numbers of emergency calls, provide more support for

¹⁷⁸ N.J. Rev. Stat., *supra* note 175; *but see* Bustos, *supra* note 12 (In Illinois, several county and municipal officials did not agree with the decision of the Illinois legislature to mandate the consolidation of PSAPs.).

¹⁷⁹ *See, e.g., North Carolina 911 Board PSAP Grants, supra* note 175 (“A consolidation project involves combining one or more PSAPs with a primary PSAP with an integrated management structure that serves the same populations and jurisdictions. . . .”); Dep’t Pub. Safety, *supra* note 175, (“(a) On or after January 1, 2006, municipalities may apply for regional emergency telecommunications center or multi-town PSAP transition grants for the purpose of reimbursing such municipalities’ expenses related to the transition of existing emergency telecommunications services to an approved multi-jurisdictional emergency telecommunications center.”).

¹⁸⁰ *See e.g.* N.M. CODE R., *supra* note 3 (“The division requires that municipal and county public safety answering points (PSAPs) within their contiguous county boundaries consolidate their 911 call answering and radio dispatch functions within one consolidated PSAP in the county. . . .”); IND. CODE § 36-8-16.7-47(c) (2016) (“Subject to subsection (d), after December 31, 2014, a county may not contain more than two (2) PSAPs. . . .”); ME. CODE R. § 65-625-001 § 4(2)(B) (2015) (“As of Oct. 15, 2007, the Bureau will support with funds collected by the surcharge authorized in 25 M.R.S.A. § 2927, no more than the following number of PSAPs: 5 in Cumberland County; 3 in York County; 2 in Androscoggin County; 2 in Penobscot County; and 1 each in all other counties in the State”); Emergency Telephone Act, 50 Ill. Comp. Stat. 750/15.4(a) (2016) (requiring consolidation or reduction in PSAPs based on the populations of local governments).

first responders, and perform more efficient and cost-effective operations.

C. Local Policy-Making for PSAP Consolidations

PSAP consolidations are not new state, county or municipal actions in that several municipal and county governments have consolidated PSAPs to provide E911 services and prepare to provide NG911 services. The CSRIC Working Group 1A used existing consolidated PSAPs to study issues and concerns affecting the consolidation of PSAPs.¹⁸¹ Foremost, county and municipal governments that decide to consolidate must select a specific kind of PSAP consolidation model to implement within multiple jurisdictions. On one hand, the Minnesota Governor’s Working Group identifies four kinds of consolidated PSAP models that are as follows: full, partial, co-location, and hybrid.¹⁸² On the other

¹⁸¹ CSRIC Working Group 1A, *supra* note 10, at 9–10. The CSRIC Working Group 1A “identif[ied] consolidation efforts from across the country and representatives willing to share their experiences.” *Id.* at 12. Table 5 below lists the consolidated PSAPs and their disciplines that were used by CSRIC Working Group 1A to study and make recommendations on best practices for consolidated PSAPs. *Id.*

Table 5: Consolidated PSAPs of CSRIC Case Study

| Case Study Participants | Disciplines |
|---|---|
| Arlington, Virginia | PSAP & Communications |
| Dakota County, Minnesota | PSAP |
| Denco County 911 Area District (Dallas, TX) | PSAP |
| DHS Office of Emergency Communications | Communications |
| Hamilton County, Ohio | PSAP |
| Metropolitan Emergency Services Board [Minneapolis and St. Paul, Minnesota] | PSAP Management & Oversight; Regional Emergency Communications System |
| Pacific County, Washington | PSAP & Communications |
| State of Michigan | Communications |
| State of Minnesota | Communications |
| State of Vermont | 9-1-1 Network Infrastructure |
| State of Washington | 9-1-1 Network |
| Walla Walla, Washington | Operations and Facility Technology Consolidation |

Id.

¹⁸² MINNESOTA GOVERNOR’S WORK GROUP, *supra* note 74, at 7–8. The four kinds of consolidation of PSAP models that permit the consolidation of PSAPs and dispatch services include full, partial, co-location and hybrid. *Id.* The Minnesota Governor’s Work Group describes each model as follows:

hand, the American Public Safety Communications Association (APCO) identifies seven kinds of consolidation models that are as follows: co-location only, single discipline call taking, single discipline dispatch, consolidated call taking, full consolidation, virtual consolidation, and dual mode consolidation.¹⁸³ In contrast,

Full

Full consolidation refers to the consolidation of all 911 answering and emergency dispatch functions (law enforcement, fire, and EMS) within a defined geographical area into a single organization. This geographical area can include one or more units of government (e.g. county, city, town, or township). The highest level of service level improvements occurs under this model. . . .

Partial

A partial consolidation is the combining of emergency communications for multiple public safety agencies within a specified geographical area, but not all. For example, several Sheriff's Offices may combine their communications into a single PSAP, but fire and EMS handle their own communications individually . . .

Co-location

A co-location of PSAPs refers to the sharing of physical space and, at times, critical PSAP technology such as CAD, 911 answering positions, radio consoles, and logging recorders while remaining completely separate entities. For example, communications for a city police and fire department reside in the same physical space but each remains part of its original organization. Governance for each department remains under its original organization as well. Can be used as precursor to a full consolidation. . . .

Hybrid

A hybrid model refers to a model that has aspects of both a full consolidation and co-location. A typical example of this model would be the co-location of a commercial ambulance service with a fully consolidated PSAP. Sharing of systems may or may not occur and organizational structures remain separate. A partial consolidation could also potentially share space with a commercial or nonprofit entity as well. However, this document assumes a hybrid model includes full public safety consolidation. *Id.*

¹⁸³ CSRIC Working Group 1A, *supra* note 10, at 85 (using the APCO-Consolidation Models to consolidate of PSAPs). APCO's guide lists and describes the following consolidation models:

- **Co-Location Only:** Multiple agencies share common facility but maintain separate call taking/dispatch capability.
- **Single Discipline Call taking:** Multiple agencies of common discipline (i.e. police only) share common facility and consolidate call taking operations.
- **Single Discipline Dispatch:** Multiple agencies of common discipline (i.e. police only) share common facility and consolidate dispatch operations.
- **Consolidated Call taking:** Multiple agencies share common facility and consolidate call taking operations for more than one discipline.
- **Full Consolidation:** Multiple agencies share common facility and consolidate call taking and dispatch operations across multiple disciplines.

APCO's list of models contains three partial consolidation models (single discipline call taking, single discipline dispatch and consolidated call taking) and two hybrid consolidation models (virtual and dual mode).¹⁸⁴ Local governments and their first

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- **Virtual Consolidation:** Variation of scenarios 2–5 listed above wherein PSAP maintains separate physical locations but share common call taking and/or dispatch capabilities over a secure managed network.
 - **Dual Mode Consolidation:** Variation of scenarios 1–5 listed above whereby both public safety and non-public safety agencies share a common facility and potentially a degree of shared technology (i.e. 9-1-1 and 3-1-1 sharing common facility and common CAD system). *Id.* at 85–95.

APCO's guide includes criteria that consist of questions to guide state, county and municipal governments considering the consolidation of PSAPs, including 911 and dispatch services. *Id.* at 85. The APCO criteria are divided into economic, technology and public policy areas to demonstrate the expansive nature of a voluntary or mandated complexity of consolidation of PSAPs. Each area contains APCO criteria that must be considered in a mandated or voluntary decision by local governments to consolidate two or more PSAPs. Table 6 demonstrates the broad distribution of APCO criteria among economic, technology and public policy areas that are examined to determine the nature of state and federal policy and regulatory frameworks to consolidate PSAPs.

Table 6: Allocation of APCO Criteria among Author's PSAP Consolidation Areas

| Author's PSAP Consolidation Areas | APCO Criteria (External Factors) | APCO Criteria (Planning and Negotiation) | APCO Criteria (Implementation and Maintenance) |
|--|---|--|---|
| Economics (Funding, Costs, and Implementations) | State Funding Models Federal Grants | Agency Projection Cost Estimates Budget Funding | Personnel Management Operational Management |
| Public Policy (Legal, Governance, and Public Safety Interests) | State 911 Policy Federal 911 Policy Public Safety Interests | Local Participants Governance PSAP | Facilities Local Funding Model Training Phasing Out of E911 |
| Technology (MIS, Operations, and IP Networks) | IP Network NG911 Services | MIS Transition Plan NG911 Services | Technology Management CPE. Security, etc. Interoperability |

¹⁸⁴ MINNESOTA GOVERNOR'S WORK GROUP, *supra* note 74, at 7–8; WORKING GROUP 1A, *supra* note 10, at 85.

responder disciplines must decide which model best fits their circumstances and objectives.¹⁸⁵ Simply, “[e]ach group of potential participants considering consolidation must carefully consider what model will best fit their collective operational, economic, political, and regional needs.”¹⁸⁶ Moreover, the Minnesota Governor’s Work Group identifies eight issues that local governments must consider in decision-making regarding the appropriate consolidation model.¹⁸⁷ These issues include the following: (1) potential for service improvement, (2) potential for cost savings, (3) potential for improved communication, (4) potential benefits from shared technology, (5) potential for training consistency, (6) potential for organizational expansion, (7) degree of control loss, and (8) degree of change for management of non-dispatch tasks.¹⁸⁸ Thus, local policy-makers must weigh these issues and other factors to decide whether PSAPs should consolidate and if so, select a suitable PSAP consolidation model to provide effective NG911 services.

VI. TECHNOLOGY AND INFRASTRUCTURE OF PSAP CONSOLIDATION

The technology perspective of PSAP consolidation examines the need for federal and state communications and technology policies to encourage full use of regional, county and municipal IP-enabled communications networks and use of geographical, management and other information systems to provide NG911 services. State and federal policies must treat the consolidation of PSAPs as another step in policy-making by local governments to provide NG911 services on IP-enabled communications networks capable of connecting to the nationwide, interoperable public safety broadband network. Successful state and local policy-making enables consolidation of PSAPs that facilitate interoperability, coordination, and share information with first responders managing and controlling incidents and events across threat, emergency and emergency management environments.¹⁸⁹

¹⁸⁵ MINNESOTA GOVERNOR’S WORK GROUP, *supra* note 74, at 8.

¹⁸⁶ *Id.* at 7.

¹⁸⁷ *Id.* at 8.

¹⁸⁸ *Id.* at 17 (displaying table listing the eight issues and their impact on each model).

¹⁸⁹ See James E. Holloway et al., *State, Agency and Local Next Generation (NG) 911 Planning and Coordination to Implement State NG911 and Internet Protocol (IP) Enabled Network Policies*, 11 U. PITT. J. TECH. L. & POL’Y 3, 80 (2010) (demonstrating generally that it is important to consider and plan for easy

A. *Nature of Technologies and Systems of NG911 Services*

Consolidated PSAPs that provide NG911 services will depend on digital and broadband communications and information technologies and accompanying information systems. Section 6505(e)(5) of the NG911 Advancement Act identified information and communications technologies that include computer hardware, software, information systems, and networking technologies.¹⁹⁰ In the NG911 system, physical equipment consists of computer hardware that is “used for input, processing, and output activities in an information system.”¹⁹¹ Computer programs provide instructions to “control and coordinate the work of computer hardware components in an information system.”¹⁹² Data management technology provides the management and organization of data stored in computer databases.¹⁹³ Finally, physical devices and software connect networking and telecommunications technologies.¹⁹⁴ A network connects two or more computers that can share data and information,¹⁹⁵ such as voice, data, images and video.¹⁹⁶ Consolidated PSAPs that provide NG911 services on an IP-enabled communications network rely on computer hardware, software and networking technologies.¹⁹⁷

Federal legislation and private organizations recognize the utility and advantages of communications and information technologies in building NG911 systems. Federal legislation defines NG911 systems as containing specific technologies,

coordination in terms of all kinds of emergency 911 policies, necessarily including the services of first responders to emergency situations).

¹⁹⁰ See 47 U.S.C. § 1401(22) (2015) (using the terms, “hardware, software, data, and operational policies and procedures,” to mean computer hardware, software, information systems, and networking technologies); Elaine Seeman et al., *Utility And Contents Of Information Systems To Implement And Manage Next Generation (NG) 911 Under Federal Communications Policies*, 25 ALB. L.J. SCI. & TECH. 129, 139–144 (2015) (the authors explained the role of geographical and management information systems in the operations and administration of NG911 systems).

¹⁹¹ KENNETH C. LAUDON ET AL., *MANAGEMENT INFORMATION SYSTEMS: MANAGING THE DIGITAL FIRM*, G-3 (Rasheed Roussan et al. eds., Pearson Education Ltd. 2013).

¹⁹² *Id.*

¹⁹³ KENNETH C. LAUDON & JANE P. LAUDON, *MANAGEMENT INFORMATION SYSTEMS: MANAGING THE DIGITAL FIRM*, 20 (Bob Horan et al. eds., 12th ed. 2012).

¹⁹⁴ *Id.* at 20–21.

¹⁹⁵ *Id.* at G-8.

¹⁹⁶ *Id.* at 21.

¹⁹⁷ Holloway et al., *supra* note 188, at 9 (discussing generally how necessary these kinds of technologies are to the success of these programs).

equipment and activities to receive emergence calls and perform other functions.¹⁹⁸ In Section 6505(e)(5) of the NG911 Advancement Act, federal legislation describes the use of communications and information technologies to provide NG911 services that means an “IP-based system comprised of hardware, software, data, and operational policies and procedures. . . .”¹⁹⁹ These technologies and operations allow NG911 systems to “use[] service oriented architecture, software applications and data content to intelligently manage and control its IP based processes.”²⁰⁰ These technologies also permits NG911 services to be “software and database driven to enable an exponential increase in available data and information sharing possibilities.”²⁰¹ Next, the National Emergency Number Association (NENA), a private not-for-profit organization, describes how the capabilities of IP-based communications network technology will increase the PSAP capacity to provide NG911 services.²⁰² An Emergency Services IP Network (ESInet) can receive and deliver voice and data using internet protocols and standards on a broadband, packet switched technology.²⁰³ ESInets are multipurpose and designed to support public safety communications, including NG911 services.²⁰⁴ NG911 services rely on information and communications technologies to collect, retrieve and use new data and information to support first responders and other agencies.²⁰⁵

B. Management and Other Information Systems

PSAPs and first responders need management, geographical and other information systems to perform administrative tasks and respond to emergencies, security threats and disasters. NG911 services are expected to increase access by PSAPs to more data and information and use these data and information to notify and support PSAPs.²⁰⁶ In addition, PSAPs can share or transfer

¹⁹⁸ 47 U.S.C. § 1401(22) (2015).

¹⁹⁹ *Id.*

²⁰⁰ TRANSPORTATION SAFETY ADVANCEMENT GROUP, WHAT IS NG9-1-1?, 2 (2008), http://www.tsag-its.org/docs/NG9-1-1DefinitionFinal1_1.pdf [hereinafter NENA-Definition].

²⁰¹ *Id.*

²⁰² *Id.* at 3–5; see also NAT’L EMERGENCY NUMBER ASS’N, <http://www.nena.org/> (last visited Apr. 9, 2016).

²⁰³ NENA-Definition, *supra* note 199, at 2.

²⁰⁴ *Id.*

²⁰⁵ *Id.*

²⁰⁶ Mazmanian, *supra* note 43.

more data and information that can affect other expertise needed within consolidated PSAPs to provide a greater level and number of NG911 services.²⁰⁷ Sharing and managing data and information by PSAPs require the use of management and other information systems to “collect (or retrieve), process, store, and distribute information”²⁰⁸ and permit telecommunication and other professionals “to analyze problems, visualize complex subjects, and create new products. . . .”²⁰⁹ PSAPs use information systems to convert data that “are streams of raw facts representing events”²¹⁰ to information “that is meaningful and useful to human beings. . . .”²¹¹ Management and other information systems use database and database management to provide NG911 service that provide “validation, routing control, policy/business rules, and system-wide detail call records.”²¹² Information management systems require information technology and expertise that adds another dimension to the consolidation of PSAPs that permit them to share and use data and information to within traditional and emerging emergency, emergency management and threat environments.²¹³

C. Impact of Communications and Information Technologies

Federal and state policy-makers must fully grasp the unalterable reality that communications and information technologies are driving the need to provide NG911 services. The broader capabilities of new technologies and more PSAP capacity

²⁰⁷ See *id.* (recognizing that need for information systems to collect, retrieve and organize data as well as expertise use and distribute data). See also Elaine Seeman, James E. Holloway & James Kleckley, *Legal, Policy And Ethical Issues Of Using Supplementary Data In Next Generation (NG) 911 To Notify And Aid The Dispatch Of First Responders*, 25 ALB. L.J. SCI. & TECH. 547, 547–571 (2015) (examining the impact of the big data and predictive analytics on NG911 services and their notification and support of first responders).

²⁰⁸ KENNETH C. LAUDON & JANE P. LAUDON, *MANAGEMENT INFORMATION SYSTEMS: MANAGING THE DIGITAL FIRM*, (13th ed. 2013) at 45.

²⁰⁹ *Id.*

²¹⁰ *Id.* at 609.

²¹¹ *Id.* at 612. NG911 systems can retrieve and use external sources of data and information that include “telematics/[automatic crash notification] (ACN) data, hazardous material information, building plans, medical information, etc.” NENA-Definition, *supra* note 199, at 2.

²¹² LAUDON ET AL., *supra* note 190, at 13. See NPTSC, *supra* note 7, at 2 (recognizing that PSAPs will need to review, edit and repackage data); see NENA-Definition, *supra* note 199, at 2 (recognizing the use of database and database management in providing NG911 services).

²¹³ See NENA-Definition, *supra* note 199, at 2 (discussing the “highly standardized system” spanning multiple states and multitude of emergency response professions and agencies).

impose new demands on PSAPs and points to consolidated PSAPs as a means to take full advantage of these capabilities and capacities of NG911 systems.²¹⁴ Specifically, “[a]s the sheer volume of interactions continues to increase, the challenge is to integrate all communications, applications and data to and from a command center.”²¹⁵ However, “[t]he increased complexity has translated into both higher costs to procure and maintain the technology as well as increased training requirements for employees.”²¹⁶ We offer another perspective. Although the higher cost of NG911 services is not appealing to local, state and federal governments, the level and quality of NG911 services, support, accessibility and benefits may be the most cost-effective means to meet the welfare needs of emergency callers and disabled persons, tactical needs of first responders and other agencies, and help further the objectives of business organizations and social service agencies. Cost-effectiveness permits either full or incremental implementation of both NG911 services and consolidation of PSAPs but forecloses long-term reliance on E911 technology modified to include text messaging.²¹⁷ Yet, “the current means of collecting E911 revenues will not support cost, training and other demands of NG911 communications and information technologies.”²¹⁸ The NG911 revenue situation requires that local, federal and state policy-makers consider “mak[ing] [PSAP] consolidation a serious consideration”²¹⁹ to make a timely, cost-effective implementation of NG911 services.

The integration of information and communications technologies allows PSAPs to provide NG911 services to notify and support first responders by providing real-time information to make decisions and provide emergency and other services. The capacities of PSAPs include the ability to “assimilate, assess and integrate applications using available voice, data and video streams for incident response.”²²⁰ These applications “include

²¹⁴ See WORKING GROUP 1A, *supra* note 10, at 11–12 (discussing the advancement of technology and next generation solutions); see TFOPA, *supra* note 2, at 24 (noting that NG911 deployment will occur).

²¹⁵ WORKING GROUP 1A, *supra* note 10, at 11.

²¹⁶ *Id.*

²¹⁷ See NENA-Definition, *supra* note 199, at 4 (describing how NG911 will replace existing functions that and will have the ability to support interactive text messaging).

²¹⁸ WORKING GROUP 1A, *supra* note 10, at 11.

²¹⁹ *Id.*

²²⁰ *Id.*

computer aided dispatch (CAD), emergency calls, law enforcement databases, video cameras, historical records and more. . . . [and create the need to] “converge voice, data, and video information to optimize real-time decision making.”²²¹ This notification and support that rely on “[n]ew data sources based on the location, type of incident, and assigned personnel will stress resources as telecommunicators will need to prioritize and distribute only the most relevant data to responders in the field.”²²² Moreover, the “[c]onsolidation of radio systems in the long-term can significantly increase communications interoperability by placing first responders on the same platform.”²²³ “Next generation broadband wireless networks promise to enable powerful and innovative solutions that will add real-time awareness to emergency responder communications.”²²⁴ Expanded “public safety’s requirements [should] drive development of next generation solutions.”²²⁵ Consolidating PSAPs within two or more counties to provide NG911 services is consistent with “a more regional approach to deployments and effective partnerships across agencies and regions will become more critical.”²²⁶ “Technology is a critical element in advancing consolidation efforts, but it is not the sole element.”²²⁷ Thus, communications and information technologies are essential to the consolidation of PSAPs, both as a driver of the need to consolidate PSAPS by expanding PSAP capacities.²²⁸

VII. STATE AND FEDERAL POLICY FRAMEWORKS FOR PSAP CONSOLIDATION

State and federal consolidation policy frameworks identify and address specific economic, public policy and technological concerns to urge and support the consolidation of PSAPs by governments

²²¹ *Id.*

²²² *Id.*

²²³ *Id.* at 12.

²²⁴ WORKING GROUP 1A, *supra* note 10, at 12. TFOPA “envisioned [that] NG9-1-1 technology offers tremendous flexibility to PSAPs in terms of sharing equipment, infrastructure, facilities and personnel. NG9-1-1 technology can be employed to streamline operations, reduce duplication and provide significantly improved redundancy, interoperability and robustness.” TFOPA, *supra* note 2, at 23.

²²⁵ WORKING GROUP 1A, *supra* note 10, at 12.

²²⁶ *Id.*

²²⁷ *Id.*

²²⁸ *See generally id.* at 11–12 (discussing how, by taking advantage of newer technologies, PSAPs can be vastly improved).

ready to implement NG911 services.²²⁹ Economic concerns require that these frameworks identify and address economic matters to consolidate PSAPs and implement NG911 service and networks.²³⁰ Next, public policy concerns require that these frameworks create specific legislative and regulatory PSAP consolidation schemes to further public expectations, establish telecommunications carrier obligations and urge and enable local government to consolidate PSAPs capable of providing NG911 services.²³¹ Finally, technological concerns require that these frameworks urge and support county and municipal governments to acquire and use technological capabilities of internet protocol and broadband technologies to expand PSAP capacity supporting the consolidation of PSAPs that are capable of providing more kinds and levels of NG911 services.²³²

A. Policy to Improve Economics of PSAP Consolidation

The economics of PSAP consolidations involve costs, financing and efficiency of consolidating PSAPs to provide NG911 services. Federal communications policy requires the FCC to work with states to implement NG911 services and states by “encourag[ing] each State to develop and implement coordinated statewide deployment plans.”²³³ On the consolidation of PSAPs, the FCC must urge states to include in state plans to implement NG911 services and connect to networks specific goals and objectives and strategies to consolidate PSAPs under state-specific criteria, such as location, populations and size. The consolidation part of the NG911 plan should include the identification and management of consolidation-specific costs and acquisition of equipment and services to consolidate PSAPs providing NG911 services. Each PSAP must eventually implement NG911 services, but a single PSAP providing NG911 services may not need new facilities and more personnel.

The plan to implement NG911 services is one set of costs, but the costs to consolidate PSAPs are unique in some circumstances, such as facilities.²³⁴ This implementation of NG911 services

²²⁹ See *supra* Table 6 (demonstrating the criteria among economic, technology and public policy areas that should be considered when consolidating PSAPs).

²³⁰ *Id.*

²³¹ *Id.*

²³² *Id.*

²³³ 47 U.S.C. § 615 (2015).

²³⁴ See National 911 Program-Blue Ribbon Panel, *supra* note 38, at ES1

require the acquisition of new technologies, services and perhaps personnel to receive new emergency calls and provide more support to first responders.²³⁵ These costs must be distinguished from costs of increasing PSAP capacity to merge or consolidate PSAPs unless both costs are one and the same. New facility and equipment costs that are caused entirely by need to increase PSAP capacity in the merger of two or more PSAPs must be considered the costs of consolidating PSAPs. The economics of consolidating PSAPs include distinguishing the costs of implementing NG911 services from the costs of consolidating two or more PSAPs and determining the best approach to financing both a consolidated PSAP and NG911 services.

Financing NG911 services and PSAP consolidations are a matter that determines whether NG911 services rely on consolidated PSAPs to provide a new level and quality emergency 911 call services. Federal policy has sought to identify and present to state and local governments new funding models to implement NG911 services but may have included capital and operational costs of consolidating PSAPs as ordinary costs of providing NG911 services.²³⁶ These funds are need to acquire new equipment and services so that local governments can implement NG911 services and the lack of these funds will make it most challenging for local government to acquire new technology as well as operate consolidated PSAPs.²³⁷ The FCC and other agencies can further the consolidation of PSAPs by collaborating on the use of existing infrastructure funding programs to classify and acquire NG911 communications and information technology.²³⁸ Next, federal policy-makers should consider an infrastructural loan or financial assistance “through a variety of loan structures available depending on what works best for a particular state or local governmental entity.”²³⁹ Finally, the FCC and other federal agencies must encourage Congress to provide more incentive

(explaining how the current funding mechanism for 911 may not be adequate for the added costs associated with establishing PSAPs).

²³⁵ *Id.*

²³⁶ See National 911 Program-Blue Ribbon Panel, *supra* note 38, at ES2–ES3 (discussing that certain aspects of PSAP implementation may need more specificity and as a result so will it’s funding); see WORKING GROUP 1A, *supra* note 10, at 39–40 (recommending that the FCC support the development of a funding strategy).

²³⁷ WORKING GROUP 1A, *supra* note 10, at 39.

²³⁸ *Id.*

²³⁹ *Id.* at 40.

grants²⁴⁰ and thereafter develop grant guidance that would permit state and local governments to qualify for incentive grants without and with matching funds to consolidate PSAPs that timely provide NG911 services.²⁴¹ Federal and state governments must identify and collect sources of NG911 funds and allocate these funds equitably to consolidate PSAPs solely to provide a higher level and quality of NG911 services.

B. Policy to Support the Technologies Driving PSAP Consolidation

Federal policymakers must enact communications and technology legislation to permit federal agencies to give greater support to state and local governments consolidating PSAPs to provide NG911 services that use IP enabled communication and nationwide broadband networks. The NG911 services and communications and public safety networks that are greater support to first responders and other agencies firmly demand the more consideration of consolidation of PSAPs by state and local governments. The CSRIC Working Group 1A made some findings, conclusions and recommendations that must be revisited by federal and state policy-makers to urge and support the consolidation of PSAPs. First, state and local governments need “concepts of operation and requirements, technical and operational standards (human factors, training) to create roadmap to aid in the transition to NG911.”²⁴² Second, effective practices must be established to further consolidation by providing effective practices, operating procedures, staffing, and operational needs²⁴³ Third, the need to conduct research that “gather[s] data on consolidated public safety operations in order to obtain a valid . . .

²⁴⁰ See H.R. 3630, 112th Cong., Title VI § 6413(b)(6) (2012) (codified as amended at 47 U.S.C. §1457) (establishing the Public Safety Trust Fund that contains funds to provide NG911 grants). It states that “9-1-1, e9-1-1, and next generation 9-1-1 implementation grants. \$115,000,000 shall be available to the Assistant Secretary and the Administrator of the National Highway Traffic Safety Administration to carry out the grant program. . . .” *Id.*

²⁴¹ WORKING GROUP 1A, *supra* note 10, at 40; see E911 Grant Program, 27 C.F.R. § 400.4(a)(2) (2016) (“A project budget for all proposed projects and activities to be funded by the grant funds identified for the State . . . and matching funds.”).

²⁴² WORKING GROUP 1A, *supra* note 10, at 40; see L.R. KIMBALL, INC., *supra* note 18, at 1 (conducting a study for the State of Oregon to examine the consolidation of PSAPs).

²⁴³ WORKING GROUP 1A, *supra* note 10, at 40; see L.R. KIMBALL, INC., *supra* note 21, at 1 (discussing changes in the telecommunication industry).

sampl[es] to draw more substantiated [findings and] conclusions on consolidation and the accompanying best practices.”²⁴⁴ Thus, the transition to NG911 services and migration to regional communications networks within the state and nationwide public safety networks must give more weight and a higher priority to consolidation of PSAPs to protect communities, citizens and business. Simply, internet protocol and broadband communication and information technology capabilities have greatly expanded PSAP capacities so that many small PSAPs make find it daunting and just too risky to stay abreast of technology and its operational impact on PSAP staffing, geography and administration.

C. Policy Urge and Support the Consolidation of PSAPs

Emergency 911 call services must be recognized as a *general welfare benefit* to request medical and other aid in a personal emergency, emergency management and threat incidents and events. This benefit was recognized by Congress when it authorized the FCC to establish 911 as the Universal Emergency Call Number for wireline and wireless services to “report[] an emergency to appropriate authorities and requesting assistance.”²⁴⁵ Currently, the level and quality of E911 services

²⁴⁴ See WORKING GROUP 1A, *supra* note 10, at 40 (conducting a study of the consolidated PSAPs to identify best practices); see MINNESOTA GOVERNOR’S WORK GROUP, *supra* note 74, at 1 (conducting a study of the Minnesota to determine numbers and kinds of PSAP); see L.R. KIMBALL, INC., *supra* note 21, at 1 (conducting a study for the State of Oregon to examine the consolidation of PSAPs); see KIMBALL-CONNECTICUT, *supra* note 74, at 1 (conducting a study for the State of Connecticut to examine the consolidation of PSAPs).

²⁴⁵ Wireless Communications and Public Safety Act of 1999, Pub. L. 106-81, 113 Stat. 1286, 1287, §3(a)(3) (October 26, 1999) (codified in scattered sections of 47 U.S.C.). The pertinent language of the Wireless Communications and Public Safety Act that establishes 911 as the national emergency call number reads as follows:

SEC. 3. UNIVERSAL EMERGENCY TELEPHONE NUMBER.

(a) ESTABLISHMENT OF UNIVERSAL EMERGENCY TELEPHONE

NUMBER.—Section 251(e) of the Communications Act of 1934 (47 U.S.C. 251(e)) is amended by adding at the end the following new paragraph:

(3) UNIVERSAL EMERGENCY TELEPHONE NUMBER.—The Commission and any agency or entity to which the Commission has delegated authority under this subsection shall designate 9–1–1 as

normally consist of voice call, call number and location information, but those E911 services are only a few of the services that are offered by NG911 systems.²⁴⁶ Actually, NG911 services provide an expanded level of services²⁴⁷ but still raise public policy concerns regarding efficiency, public costs and funding.²⁴⁸ The costs, funding and efficiency issues facing data-driven PSAPs should not be allowed to diminish the public expectations of NG911 services.²⁴⁹ Thus, federal and state governments must use research to learn more about the consolidation of PSAPs and thereafter educate local governments.

Congress must frequently update legislative policy that furthers the implementation of NG911 services and consolidation of PSAPs to meet public expectations and reduce public threats and risks. Congress must not act on the consolidation of PSAPs until the FCC and other federal agencies are given an opportunity to investigate or study a minimum level and quality of NG911 call services that must be accompanied by an NG911 funding mechanism and PSAP consolidation criteria.²⁵⁰ First, Congress should use Sections 6508 and 6509 of the Next Generation 9-1-1 Advancement Act of 2012 (NG911 Advancement Act) to begin its efforts to permit federal

the universal emergency telephone number within the United States for reporting an emergency to appropriate authorities and requesting assistance. The designation shall apply to both wireline and wireless telephone service. In making the designation, the Commission (and any such agency or entity) shall provide appropriate transition periods for areas in which 9-1-1 is not in use as an emergency telephone number on the date of enactment of the Wireless Communications and Public Safety Act of 1999.

Pub. L. 106-81, 113 Stat. 1286, 1287, (3)(a)(3) (Oct. 26, 1999) (codified at 47 U.S.C. 251(e) (2015)).

²⁴⁶ 47 U.S.C. § 615b(10) (2015) (defining “Enhanced 9-1-1 service”).

²⁴⁷ 47 U.S.C. § 1401 (13 (a), (b)) (defining NG911 to include a several kinds of emergency calls, data and information).

²⁴⁸ National 911 Program-Blue Ribbon Panel, *supra* note 38, at ES1. The 911 Authorities and public safety answering points (PSAPs) find that current funding mechanisms may not be adequate to sustain future 911 operation. With the transition to Next Generation 911 (NG911) on the horizon, PSAPs are facing hardware and software changes, equipment upgrades, network replacements, and new training requirements for 911 personnel. *Id.*

²⁴⁹ See *infra* Part VI.C and accompanying notes (explaining the need for legislative and regulatory frameworks to urge and support state and local governments wanting or needing to consolidate PSAPs).

²⁵⁰ See also H.R. 3630, 112th Cong., Title VI, at §§ 6508, 6509 (requiring the FCC and other federal agencies to study and report on the legal and statutory framework, costs and other matters affecting the implementation of NG911 services).

agencies to study the financial, technological and operational concerns of consolidating several PSAPs.²⁵¹ Findings, conclusions and recommendation from this study could be used by Congress to make a federal policy framework.

Within the federal policy framework, the FCC and other agencies would be delegated authority to create a regulatory scheme. Federal regulations would mandate or support telecommunications carriers and other 911 or communications service providers to enable state and local governments to more readily address technological challenging inhibit the consolidation PSAPs solely to provide more kinds and level of NG911 services and establish and gain access to IP-enabled communications and thereafter connect to the nationwide public safety network.²⁵² With the appropriate authority, the FCC, National Technology Information Administration (NTIA) and National Highway Traffic Safety Administration (NHTSA)²⁵³ should jointly propose workable state and local solutions regarding constraints and inhibitions on the economics, technology and public policy of consolidating PSAPs solely to provide NG911 services.²⁵⁴ These agencies would gather and analyze financial, administrative, operational, and other data on the consolidation of PSAPs to avoid lessening the public expectations of expanded NG911 services and regional and nationwide IP and broadband communications networks.²⁵⁵ Although federal agencies must develop policy

²⁵¹ See *id.* at § 6509 (discussing the framework for creating NG 9-1-1 services).

²⁵² See H.R. 3630, 112th Cong., Title VI, at § 6509 (requiring that the FCC to coordinate with National Highway Traffic Safety Administration (NHTSA) and 9-1-1 Implementation Coordination Office (ICO) to make “recommendations for the legal and statutory framework for Next Generation 9-1-1 services . . .”).

²⁵³ 911.GOV, *Federal Agencies & 911: Who's Who in Federal 911 Support*, (Feb. 26, 2016), <http://www.911.gov/911connects/federal-agencies-and-911-whos-who-in-federal-support.html> (listing and briefly explaining the federal agencies and their roles in the development of the emergency 91 call system).

²⁵⁴ See WORKING GROUP 1A, *supra* note 10, at 1 (studying actual consolidated PSAPs to learn more about the process of consolidation of PSAPs, specifically through the study of PSAPs providing E911 services).

²⁵⁵ See *generally* WORKING GROUP 1A, *supra* note 10, at 5 (discussion of a study conducted by a Task Force appointed by the FCC to study consolidated PSAPs); see MINNESOTA GOVERNOR'S WORK GROUP, *supra* note 74, at 3 (discussion of states that have studied the consolidation the PSAPs and their own needs in providing NG911 services, and, specifically, of a study for the State of Minnesota to determine numbers and kinds of PSAPs fitting for its own needs); L.R. KIMBALL, INC., *supra* note 21, at 47 (conducting a study for the State of Oregon to examine the consolidation of PSAPs); see KIMBALL-CONNECTICUT, *supra* note 74, at 5 (conducting a study for the State of Connecticut to examine the consolidation of PSAPs); See APCO INT'L, APCO Launches Project 43 to Tackle Broadband

guidance on the consolidation of PSAPs, though state and local governments must make the final decision to consolidate their PSAPs but may need to provide a federally recognized minimum quality and level of NG911 services.

This policy guidance would include consolidation strategies, practices and operations that address questions of cost-savings, efficiency, and funding to consolidate PSAPs. Such guidance is not new to E911 where the FCC had previously established a regulatory framework to implement wireless or E911 services to support state and local governments.²⁵⁶ If Congress chooses not act and requisite authority exist, the FCC must establish a regulatory approach within its delegated authority to require carriers and other communicators or 911 providers to deploy requisite communications networks, information systems and IP and broadband services to enable local governments to more readily

Implications for the PSAP, MAGNETMAIL.NET, http://www.magnetmail.net/actions/email_web_version.cfm?recipient_id=189182255&message_id=12104288&user_id=APCO&group_id=443362 (last visited Apr. 18, 2016) [hereinafter APCO-Project 43] (discussion of whether the consolidation of PSAPs is a high priority on federal or state policy agendas or objectives of private organizations. A couple of private sector projects or activities that may eventually affect federal and state policy-making necessitate the consideration of consolidating PSAPs in order to achieve a successful conclusion. Foremost, APCO has recognized the need to know more about PSAPs that will require providing and managing more calls, data, and information and utilizing and participating in coordination and interoperability to notify and support first responders approaching, managing, and controlling local and multi-jurisdictional incidents and events occurring across emergency, emergency management, and threat environments); see Donny Jackson, *New Coalition of 911 Organizations Calls for Completed Transition to Next-Gen Platform By End of 2020*, URGENT COMMUNICATIONS, (Feb 23, 2016), <http://urgentcomm.com/ng-911/new-coalition-911-organizations-calls-completed-transition-next-gen-platform-end-2020> [hereinafter Jackson_ NG911 2020 Coalition] (also recognizing that NG911 services relying on broadband and IP-enabled data will change how PSAPs operate. Equally important and inseparable, a coalition of not-for-profit organizations are focusing on the implementation of NG911 services by the end of 2020 which would require PSAPs to receive more calls, data, and information, and to provide them to first responders through IP-enabled communications and nationwide broadband public safety networks. Obviously, the nature and capacity of PSAPs will play a role in implementing NG911 services and addressing the implications of IP-enabled and broadband networks on receiving emergency calls and notifying first responders. The coalition and APCO must not make the consolidation of PSAPs and the implementation of NG911 services a chicken and egg thing).

²⁵⁶ See generally 47 C.F.R. § 20.18 (2016) (demonstrating an example of how to balance consolidation strategies, practices, and operations that address questions of cost-savings, efficiency, and funding in creating a new PSAP); *Id.* § 20.18(b) (for example, this statute is requiring commercial mobile radio service (CMSR) providers to “transmit all wireless 911 calls without respect to their call validation process to a Public Safety Answering Point. . .”).

consolidate PSAPs to provide a federally recognized minimum quality and level of NG911 services. The FCC regulatory approach must allow telecommunications carriers or other service providers to receive a reasonable market return on communications infrastructural investments. This approach allow these carriers to perform work for three or more local governments to consolidate three or more PSAPs solely to provide a federally recognized minimum NG911 services that must timely connect to a regional or state IP-enabled communications network that will connect to the nationwide public safety broadband network. This regulatory approach would permit federal grant funds to assist state and local governments to make one-time payments to these carriers and providers for providing both technology, equipment and services to implement effective NG911 services through cost-effective consolidated PSAPs.

States also need to know more about the consolidation of PSAPs and should continue to conduct comprehensive studies to prepare for the consolidation of PSAPs. With the support of federal agencies, state 911 boards and not-for-profit organizations must well educate municipal and county officials on the advantages and opportunities of using consolidated PSAPs engaged in data-driven NG911 services. This education program also explains the benefits of supporting and connecting to regional or state IP-enabled communications networks and the benefits of connecting to FirstNet's nationwide public safety broadband network.²⁵⁷ Concurrently with the PSAP Education Program, states must follow the lead of Connecticut, Minnesota and Oregon by conducting studies to examine "challenges from operational, governance, funding and technical perspectives" to consolidate PSAPs.²⁵⁸ These studies should examine a wide variety of issues,

²⁵⁷ See APCO-Project 43, *supra* note 251 (explicitly noting the impact broadband and communication technologies on the operational capacities of PSAPs by stating that: "A number of major, broadband-based developments are leading to a paradigm shift in the role of the PSAP. Implementation of a new nationwide, interoperable public safety broadband network led by the First Responder Network Authority (FirstNet) will place broadband communications into the hands of first responders. Next Generation 9-1-1 technology will enable PSAPs to utilize broadband data in ways that will transform how the public reaches 9-1-1 and how telecommunicators communicate with first responders.").

²⁵⁸ WORKING GROUP 1A, *supra* note 10, at 4; see MINNESOTA GOVERNOR'S WORK GROUP, *supra* note 74, at 1 (conducting a study for the State of Minnesota to determine numbers and kinds of PSAPs); see L.R. KIMBALL, INC., *supra* note 21, at 1 (conducting a study for the State of Oregon to examine the consolidation of PSAPs); see KIMBALL-CONNECTICUT, *supra* note 74, at 1 (conducting a study for

such as communications capability, staffing, call processing and dispatching, budget, technology, political environment, and facilities.²⁵⁹ Next, these studies should “[d]etermine[] if consolidation makes sense from a service level, political, technological, and financial perspective. . . .”²⁶⁰ Finally, these studies should include “recommendations for consolidation models, governance, funding, staffing, technology and facilities.”²⁶¹ States need data and information on PSAP consolidation to determine cost-saving, funding needs and technical efficiency of consolidated PSAPs. Each state must determine its approach to the consolidation of PSAPs in light of the eventual need for PSAPs to connect to IP-enabled communications network that can connect to FirstNet’s nationwide public safety broadband network.²⁶² States need findings and conclusions that can be used make recommendations to encourage or support county and municipal governments to plan, implement and manage the consolidation of PSAPs to provide NG911 services.²⁶³

Unequivocally, PSAP have dual roles in receiving and analyzing emergency calls and thereafter notifying and supporting first responders and other agencies by providing NG911 services. PSAPs are a voice-centric communications center that notifies and dispatches and support interoperability among first responders and other agencies as a communications center. PSAPs also receive, retrieve, analyze, and share data and use them to create information to inform and support coordination of first responders as an *information center*.²⁶⁴ PSAPs receive nonvoice and voice calls

the State of Connecticut to examine the consolidation of PSAPs).

²⁵⁹ WORKING GROUP 1A, *supra* note 10, at 23.

²⁶⁰ *Id.*

²⁶¹ *Id.*

²⁶² See MINNESOTA GOVERNOR’S WORK GROUP, *supra* note 74, at 35 (conducting a study of the Minnesota to determine numbers and kinds of PSAPs); see L.R. KIMBALL, INC., *supra* note 21, at 1 (conducting a study for the State of Oregon to examine the consolidation of PSAPs); see KIMBALL-CONNECTICUT, *supra* note 74, at 12 (conducting a study for the State of Connecticut to examine the consolidation of PSAPs).

²⁶³ See WORKING GROUP 1A, *supra* note 10, at 41 (recommending that the FCC provide policy guidance on the consolidation of PSAPs). *But see* TFOPA, *supra* note 2, at 27 (declining to recommend that the FCC develop policy or regulatory framework to further and guide the consolidation of PSAPs).

²⁶⁴ APCO-Project 43, *supra* note 251 (noting that broadband and IP-enabled networks will change the nature of PSAPs by stating that: “Other IP-based technologies, including those supported through smartphones, tablets, and mobile apps, are widely prevalent throughout the general public and are capable of sending an array of information to the PSAP. As a result, PSAPs of the future

but receive, retrieve, review and then provide data and information to first responders and other agencies. Treating much of a PSAP as an information center places emphasis on the use of information systems to provide NG911 data-driven services and manage PSAPs. The efficiency of the consolidation of PSAPs must include the PSAPs' natures as information centers to both receive data and collect data, retrieve, analyze, and distribute call and supplemental data and information.

VIII. CONCLUSION

PSAPs must transition to NG911 systems connected to an IP-enabled communications networks that can connect to FirstNet's nationwide broadband public safety network. The consolidation of PSAP should be considered concurrently with the transition to NG911 services and migration to IP-enabled communications networks and connection to the nationwide broadband network. This concurrent consolidation of PSAPs and implementation of NG911 services allow county and municipal governments to identify and separate and treat accordingly unique costs and efficiency of consolidated PSAPs and NG911 services. Specific PSAP consolidation costs are distinct from NG911 system and communications network costs. Some facilities and equipment costs are purely the result of merging two entities to create a larger, more capable entity. NG911 system and consolidated PSAP costs are not one and the same in all instances, though they may overlap when the transition to a NG911 system and consolidation of PSAPs occur concurrently. On the matter of efficiency, although consolidation costs may be additional costs, the capacities of PSAPs are adding entirely new services. These service-outputs increase opportunities to improve efficiency when they are compared to limited, if not obsolete, E911 systems. PSAPs have greater capacities to provide more 911 services, and NG911 systems can provide more emergency 911 call services. Therefore, the costs and efficiency of the consolidation of PSAPs are dynamic and require consideration of the emerging nature and needs of PSAPs that have more capacity to provide emergency 911 call services on NG911 systems.

Federal communications, technology and safety policies must address and respond to economic, public policy and technological

will be the nerve center, managing data-rich communications via broadband technology with 9-1-1 callers and first responders.”).

concerns of PSAP consolidations in emergency, emergency management, and threat environments. The ultimate objective of PSAP consolidations is to provide a general welfare benefit by providing NG911 services to protect communities, persons and property. Consolidated PSAPs must notify first responders that provide aid and assistance in rich data and information environments. This notification includes the traditional E911 call, call number and location services plus providing and sharing data and information from videos, photographs, telemetric devices, alarms and other calls. Consolidated PSAPs must collect, review and provide data and information to first responders that must respond to and need coordination and interoperability to manage real-time emergency situations, security threats and emergencies.

Federal communications, technology and traffic safety policies need to identify and set forth specific federal interests in the consolidation of PSAPs so that state and federal government can establish policy and regulatory frameworks to consolidate PSAPs in dynamic emergency, emergency management and threat environments. These interests must include NG911 services that connect to state IP-enabled communication networks that must also connect approximately 6,000 PSAPs to FirstNet's nationwide public safety broadband network. Recently, the FCC established TFOPA to study and report on an optimal NG911 technical architecture and network configuration and their impact on the consolidation of PSAP.²⁶⁵ TFOPA stated that PSAP consolidation requires a cooperative approach among federal, state and local governments.²⁶⁶ However, TFOPA did not issue a recommendation

²⁶⁵ See TFOPA, *supra* note 2, at 15–16 (stating the purpose and need for the TFOPA); see Jackson, *supra* note 3 (discussing the creation of the TFOPA by the FCC); see Toone, *supra* note 62 (discussing the progress of the TFOPA and its reluctance to address the consolidation of PSAPs).

²⁶⁶ TFOPA, *supra* note 2, at 27; Toone, *supra* note 62, at 2; see James E. Holloway et al., *Federalism in the Financing of 911 Emergency Call Services: Nature of the Federal-State Funding Arrangement to Finance Next Generation (NG) 911 Services*, 5 CASE W. RESERVE J. L. TECH. & INTERNET 113, 116–17 (2014) (discussing the need for cooperative federalism in financing the implementation of NG911 services, in that, both NG911 services and PSAP consolidations rely on intergovernmental relations that are based on cooperative federalism to establish a minimum level of NG911 services (such as voice and text messages, medical data and video) but allow states to provide more services (such as alarms, ACN, photographs and email)); see also Robert F. Rich et al., *The State Children's Health Insurance Program: An Administrative Experiment in Federalism*, 2004 U. ILL. L. REV. 107, 111 (2004) (“This new approach to cooperative federalism suggests that the federal and state levels of government both bring important resources and capacity to intergovernmental programs. . . . The federal and state

on the consolidation of PSAPs.²⁶⁷ The FCC must try again soon to identify specific federal interests and thereafter establish a regulatory approach or request Congress to consider a recommendation to support state and local governments choosing to consolidate PSAPs solely to provide NG911 services.

levels of government each have distinct competencies, and within a given policy framework, each level has its responsibilities and duties.”)

²⁶⁷ See TFOPA, *supra* note 2, at 27 (discussing TFOPA’s position on PSAP consolidation); see Toone, *supra* note 62 (discussing TFOPA’s primary recommendations).