

Rural Response: The Need for an Effective Rural FirstNet Network

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I. INTRODUCTION

Imagine: an oil spill rapidly spreading in the wilderness, and a terrorist threat to a major urban area. Both are devastating in different ways. However, what groups these phenomena together is the need for swift and comprehensive responses from multiple first responder groups, allowing for a sustained, simultaneous response to multiple concurrent events. The flaw in not having an interoperable system, which allows for different agencies to effectively communicate during a response to a catastrophe, was demonstrated during the terrorist attacks of September 11, 2001, and during Hurricane Katrina in 2005. In both cases, the lack of interoperable public-safety communications hampered rescue efforts and the overall effectiveness of public safety operations.¹ The need for a unified response from public safety officials prompted Congress to create the First Responder Network Authority (FirstNet), which will encourage greater interconnectivity between multiple first responder agencies in the event of an emergency.²

Responding to emergencies is a critical part of a first responder's job.³ Communication systems are essential for public safety officials such as police, firefighters, and paramedics to gather and share information during emergencies.⁴ In an attempt to provide first responders with adequate communications support, Congress established FirstNet with the passage of the Middle Class Tax Relief and Job Creation Act of 2012.⁵ Specifically, the Act established FirstNet as an independent authority within the Department of Commerce's National Telecommunications and Information Administration (NTIA), charged FirstNet with the establishment of a nationwide public-safety broadband network, and allocated billions of dollars for this public-safety broadband network's construction.⁶ The Act directly provided resources, including both spectrum licenses and financial appropriations, for the establishment of a nationwide, interoperable wireless broadband network specifically for first responders.⁷ The Act required the FCC to reallocate the "D Block," part of the 700 MHz band that had previously been allocated for commercial use, to FirstNet.⁸ Specifically, FirstNet's license allows them to operate between 758-769 MHz and 788-799 MHz.⁹ FirstNet was also granted a license to operate within the existing

1. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-15-407, PUBLIC-SAFETY BROADBAND NETWORK: FIRSTNET SHOULD STRENGTHEN INTERNAL CONTROLS AND EVALUATE LESSONS LEARNED 1 (2015) [hereinafter GAO-15-407].

2. See 47 U.S.C. §§ 1424, 1426 (2012).

3. See GAO-15-407, *supra* note 1, at 1.

4. See *id.*

5. See Middle Class Tax Relief and Job Creation Act of 2012, Pub L. No. 112-96, § 6204, 126 Stat. 156, 208 (2012).

6. See *id.* §§ 6201-6202, 6204, 6207, 126 Stat. at 206, 208, 215.

7. See *id.* §§ 6201, 6207, 126 Stat. at 206, 215.

8. *Id.* § 6201(a), 126 Stat. at 206.

9. GAO-15-407, *supra* note 1, at 10.

public safety broadband spectrum.¹⁰ States may opt out and deploy their own networks should the FirstNet's nationwide broadband plan be unsatisfactory to them.¹¹

FirstNet is required to charge fees that are sufficient to cover its operating expenses for each fiscal year.¹² Public safety users will be assessed these annual fees to use the public-safety broadband network, just as they would for commercial broadband networks.¹³ With FirstNet's need to become self-funding, it is probable that the focus on existing coverage areas with higher potential subscriber fees will lead to rural areas being deprioritized or abandoned because there is little to no incentive to expend the resources necessary to create the infrastructure to cover those areas. FirstNet must ensure that a private partner does not deprioritize rural network expansion. It would be prudent for the federal government, such as Congress and NTIA, to evaluate the need to commit additional funds toward rural network expansion during the initial build-out phase, as well as the possibility of providing loans or subsidies to state and local governments to enable them to have the resources to acquire the equipment which is required to access the network. It is imperative that FirstNet maintain its fiscal independence in NTIA and that it remembers to follow through on its statutory duty to ensure that rural areas receive the same adequacy of coverage as their urban counterparts. Meeting this mandate will require increased cooperation with local authorities, and a realization that, while it may not be the most economically advantageous proposition, greater use of local rural network providers is necessary to ensure that rural first responders can effectively communicate and coordinate a response to rural disasters.

This Note explores ways in which FirstNet may practically approach the need for reliable infrastructure in rural areas. Section II will look at the current structure and trends in FirstNet. Section II will show why rural areas need a reliable system for their public safety officers and why it is problematic if FirstNet delays implementation of a network in rural areas. Section II will also address why FirstNet is prioritizing urban areas with their national networks and what steps may be taken to ensure that the statutory goal of a nationwide network for first responders is reached.

Section III will provide a plan to balance FirstNet's need to be self-funding with the reality that rural areas need coverage and do not have the subscriber base or additional financial resources necessary to encourage growth from a market perspective. Section III demonstrates the need for FirstNet to prioritize, or at the least not to deprioritize, rural network expansion and equipage during the early expansion phase to meet its statutory obligations. Section III also analyzes the competing factors that determine how monetary resources are spent and how they affect the policies of FirstNet. This assessment shows how FirstNet can better work

10. Middle Class Tax Relief and Job Creation Act of 2012 § 6201, 126 Stat. at 206.

11. *See id.* § 6302, 126 Stat. at 219–20.

12. *See* 47 U.S.C. § 1428(b) (2012).

13. GAO-15-407, *supra* note 1, at 5.

with state and local governments to ensure that there is sufficient cooperation to provide rural access, and additional resources provided where available. Lastly, Section III will discuss how FirstNet should look at the costs associated with rural areas as a necessary public service that does not necessarily need to be profitable to be successful.

II. BACKGROUND

A. Statutory Background

The Middle Class Tax Relief and Job Creation Act of 2012 (the Act) established numerous responsibilities for FirstNet, most of which relate directly to developing the nationwide public-safety broadband network.¹⁴ First, FirstNet needs to “enter into agreements to use, to the maximum extent economically desirable, existing commercial, federal, state, local, and tribal infrastructure” to accomplish the overall goal of a national network.¹⁵ Second, FirstNet must consult the appropriate local or federal authority to gain information about the best ways in which to implement the network.¹⁶ Third, FirstNet must require that equipment for the public safety network be built using open, non-proprietary standards.¹⁷ Fourth, FirstNet needs to be rolled out in deployment phases, each including separate rural coverage milestones.¹⁸ FirstNet must issue Requests for Proposals (RFP) to build, operate, and maintain the network.¹⁹ RFPs should include timetables for construction of the physical network and goals for network coverage areas and service levels.²⁰

To accomplish these tasks, FirstNet is allowed to establish agreements with entities involved in the construction, management, or operation of the public safety network that allow access to the public safety network on a secondary basis for services other than public safety.²¹ This allows individual commercial customers to access the network when it is not needed for priority first responder uses.²² FirstNet can also create the technical and operational requirements for the public safety network, as well as how it should be managed and operated.²³ In establishing the infrastructure for the public safety network, FirstNet is required to include the following network components: a core network of data centers and other elements based on commercial standards that will provide connectivity between “the radio access network (RAN) and the public Internet or the

14. See Middle Class Tax Relief and Job Creation Act of 2012, Pub L. No. 112-96, § 6204, 126 Stat. 156, 208–09 (2012); see also GAO-15-407, *supra* note 1, at 5.

15. *Id.*

16. *Id.* at 2.

17. *Id.* at 5.

18. *Id.*

19. *Id.*

20. *Id.*

21. See 47 U.S.C. § 1428(a)(2)(B) (2012).

22. See *id.*

23. GAO-15-407, *supra* note 1, at 6.

Public Switched Telephone Network, or both,” and RAN “cell-site equipment, antennas, and backhaul equipment, based on commercial standards,” to support wireless devices operating on frequencies designated for public safety broadband.²⁴

First responders across thousands of local departments “rely on thousands of separate, incompatible, and often proprietary land-mobile radio (LMR) systems for their mission-critical voice communications.”²⁵ Often, these LMR systems lack interoperability, which prevents first responders from communicating with their counterparts in other agencies and jurisdictions who use differing systems.²⁶ FirstNet is “expected to support important data transmission (such as the vital signs of critically injured people and security-camera video feeds) and foster greater interoperability among public safety entities.”²⁷ Devices connected to the FirstNet network will deliver interoperability between first responders, because “they will be using the same radio frequency band nationwide, and will be required to use the same commercially available standards.”²⁸

To accomplish these goals, Congress determined that FirstNet should utilize public-private partnerships in establishing, maintaining, and operating the network.²⁹ The purpose of the partnership is to assist FirstNet in becoming self-funding after the initial expansion phase.³⁰ The FirstNet board decided that the best way to create the network necessary to meet their statutory duties is to accept only national deployment offers.³¹ One potential side effect of this approach is that it may reduce the ability of regional rural broadband providers to contribute toward the network.³² Even before FirstNet decided to take a national approach, rural lawmakers were concerned about the role that rural operators would be able to play in ensuring that rural areas had adequate network coverage and equipment to make joining the national network a practical decision.³³ Additional budgetary concerns could substantially delay development of infrastructure necessary to cover the entire country.³⁴

24. 47 U.S.C. § 1422 (2012).

25. GAO-15-407, *supra* note 1, at 1.

26. *Id.*

27. *Id.* at 2.

28. *Id.*

29. 47 U.S.C. § 1426(b)(1)(B) (2012).

30. *See* 47 U.S.C. § 1428(a) (2012).

31. *See* Donny Jackson, *FirstNet Opts for Nationwide Acquisition Approach for Final RFP*, URGENT COMM. (Oct. 2, 2015), <http://urgentcomm.com/ntiafirstnet/firstnet-opts-nationwide-acquisition-approach-final-rfp> [https://perma.cc/UJN8-LN9S].

32. *See id.*

33. *See* Monica Allevan, *Lawmakers Cite Rural, Budget Concerns in FirstNet House Subcommittee Hearing*, FIERCE WIRELESS (June 18, 2015, 10:33 AM), <http://www.fiercewireless.com/tech/story/lawmakers-cite-rural-budget-concerns-firstnet-house-subcommittee-hearing/2015-06-18> [https://perma.cc/856P-36HR].

34. *See* FIRSTNET, USE OF STATE AND LOCAL INFRASTRUCTURE, RURAL COVERAGE, “EARLY BUILDERS” AND PILOTS FAQs (2015), http://www.firstnet.gov/sites/default/files/Use%20of%20local-state-infrastructure%20FAQs%20v1_0.pdf [https://perma.cc/K6Y9-9PKB].

FirstNet received its initial \$7 billion funding from Congress³⁵ for build-out of the public safety network and the establishment of FirstNet as a part of the government.³⁶ The funding for FirstNet is designated to come from spectrum auctions, although FirstNet was able to borrow \$2 billion from the general treasury prior to the auctions being completed.³⁷ FirstNet is required to be self-funding beyond the initial \$7 billion dollars, further complicating how it needs to allocate resources to procure a sufficient revenue stream and still fulfill its statutory duty to provide service to rural areas.³⁸ FirstNet must develop a business plan to ensure adequate funding for both the upfront costs, and the ongoing costs of operating the public safety broadband network.³⁹ With cost estimates ranging from \$12–47 billion over the first ten years,⁴⁰ FirstNet faces the difficult task of balancing value added in terms of financial gain, and the need to cover under-served, but less lucrative, areas.

The national first responders core network will utilize 4G Long Term Evolution (LTE) technology to provide the umbrella backbone.⁴¹ The RAN portion of the system will be used to connect to user devices, and comprehensive RAN planning will be necessary to provide optimal coverage to the entire population.⁴² Because of the nature of a first responders network, it is imperative that there are adequate redundancies in the system to prevent an outage in the case of a major emergency.⁴³ According to the Public Accountability Office, “the network will initially support data transmissions and non-mission critical voice services, with mission-critical voice communications expected to be integrated in the coming years.”⁴⁴

Both federal and state agencies have concerns regarding the planned timeline for the development of nationwide network coverage.⁴⁵ Some of these concerns are focused on how to best facilitate communication and interagency cooperation in order to effectively share information on issues that hinder coordinated responses to emergencies.⁴⁶ Others are concerned about the need to use FirstNet to provide knowledge to rural safety workers

35. See GAO-15-407, *supra* note 1, at 10.

36. See 47 U.S.C. §§ 1424, 1426 (2012).

37. See 47 U.S.C. § 1427 (2012).

38. See 47 U.S.C. § 1428(b) (2012). See also GAO-15-407, *supra* note 1, at 10.

39. GAO-15-407, *supra* note 1, at 2.

40. *Id.* at 31.

41. See *The Network*, FIRSTNET, <http://www.firstnet.gov/network> [<https://perma.cc/N347-8L9B>] (last visited Oct. 30, 2016).

42. *Id.*

43. *Id.*

44. GAO-15-407, *supra* note 1, at 2.

45. See Colin Wood, *FirstNet Makes Progress, But Cost and Quality Concerns Remain*, GOV'T TECH. (May 18, 2016), <http://www.govtech.com/public-safety/FirstNet-Makes-Progress-But-Cost-and-Quality-Concerns-Remain.html> [<https://perma.cc/C8XS-FECW>].

46. See U.S. DEP'T OF HOMELAND SEC., NATIONAL EMERGENCY COMMUNICATIONS PLAN 13 (2014), https://www.dhs.gov/sites/default/files/publications/2014%20National%20Emergency%20ommunications%20Plan_October%2029%202014.pdf [<https://perma.cc/5U9F-54CS>].

who are less prepared to handle hazardous materials than their better-funded and trained companions in the cities.⁴⁷ Still others are afraid that, without effective management and innovation, FirstNet will be unable to meet its desired goals and will ultimately fail, impacting most those least able to adjust.⁴⁸ These concerns have the potential to add additional costs to the rollout that need to be accounted for to enable a single interoperable network.⁴⁹

B. Rural First Responders Face Unique Challenges

Because of sparse populations, rural safety workers are responsible for covering a larger area that has poorer infrastructure than urban centers, increasing the need for a reliable network to support them.⁵⁰ A lack of resources combined with long transportation times to hospitals and long intervals between dispatch and arrival lead pose a greater challenge in rural areas.⁵¹ The combination of distance traveled and communications challenges are a major contributor to why rural citizens are far more likely to die from a trauma injury than their urban counterparts.⁵² This more separated and sparser population has dissuaded many national broadband providers from being extensively involved in rural areas.⁵³ The increased cost of entry and the lower return on investment has led to a broadband network that is unreliable for rural first responders.⁵⁴ Additionally, the wide area of coverage and lack of interoperability between devices on different

47. See PIPELINE & HAZARDOUS MATERIALS SAFETY ADMIN., MARCH 13, 2014 ROUNDTABLE: EMERGENCY RESPONSE SIMULATION PROCEDURES / CONSIDERATIONS 6 (2014), http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Hazmat/Emergency_Response_Simulation_Procedures.pdf [https://perma.cc/TA7H-F5N2].

48. See Bill Schrier, *Will FirstNet Become the Next Healthcare.gov?*, GOV'T TECH. (Mar. 5, 2015), <http://www.govtech.com/public-safety/Will-FirstNet-Become-the-Next-Healthcaregov.html> [https://perma.cc/WMZ5-3L9Q].

49. See GAO-15-407, *supra* note 1, at 39.

50. See *id.* at 38.

51. See Jaclyn Cosgrove, *Rural vs. Urban: Understanding the Obstacles of Providing Emergency Care in Oklahoma*, OKLAHOMAN (Apr. 16, 2014 12:00 AM CDT), <http://newsok.com/article/3977926> [https://perma.cc/L95L-MEK6].

52. See IND. STATE DEP'T OF HEALTH, *TRAUMA IN RURAL AREAS IS A SPECIAL CONCERN 1*, http://www.in.gov/isdh/files/Trauma_in_Rural_Areas.pdf [https://perma.cc/W7AN-PP74]; see also Emily Badger, *You're More Likely to Die a Violent Death in Rural America Than in a City*, CITYLAB (Jul. 24, 2013), <http://www.citylab.com/crime/2013/07/youre-more-likely-die-violent-death-rural-america-city/6312/> [https://perma.cc/8KHB-87FH].

53. See Amy Nordrum, *Rural Broadband Access Still Lacking in U.S., Even as Remote Alaska Communities Connect*, INT'L BUS. TIMES (Feb. 18, 2015, 3:32 PM), <http://www.ibtimes.com/rural-broadband-access-still-lacking-us-even-remote-alaska-communities-connect-1820070> [https://perma.cc/FG89-WPSK].

54. See Inquiry Concerning the Deployment of Advanced Telecomms. Capability to All Ams. in a Reasonable & Timely Fashion, & Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecomms. Act of 1996, as Amended by the Broadband Data Improvement Act, *2015 Broadband Progress Report and Notice of Inquiry on Immediate Action to Accelerate Deployment*, 30 FCC Rcd 1375, paras. 5–6 (2015); IAFF, BRIEFING ON INTEROPERABILITY AND COMMUNICATIONS ISSUES AND FIRSTNET 2 (2014), http://docplayer.net/storage/25/5147065/1488012925/cwQi_DNxomXjAxkiR7B0Ow/5147065.pdf [https://perma.cc/9ELB-MRJV].

frequencies has increased the difficulty of responses to natural disasters, environmental risks, and potential rescue situations.⁵⁵ While concerns about network overload in urban areas is a large part of the push for a national first responders network,⁵⁶ the risks posed to individual rural citizens, who are most likely to be impacted by the combination of unreliable networks and increased commercial activity in rural areas, is just as valid a governmental concern.

Additionally, with the recent increases in oil and natural gas production in rural states like North Dakota, there are ever-increasing chances of oil spills or other potential ecological disasters that require a large scale emergency response to contain.⁵⁷ While oil production in the Bakken fields in North Dakota has fallen below its peak production levels of around 1.2 million barrels a day in 2015, the total production is still over a million barrels a day, up from under 200,000 in 2007.⁵⁸ More production can lead to greater risk of environmental impact, through natural risks or human carelessness.⁵⁹ Because of the increased risk of wide-ranging ecological harm potentially posed by wildfires, oil spills, hazardous waste or chemical spills, among other potential disasters, it is imperative that the final FirstNet plan ensures that there will be adequate networks in place to allow for rural first responders to effectively communicate with outside agencies to quickly coordinate responses to prevent large-scale ecological disasters.

Further complicating the coordination of rural emergency event response is the reliance of rural areas on regionally-available Federal resources, such as Coast Guard stations, military and National Guard bases, firefighting stations, and other Emergency Support Function (ESF) nodes.⁶⁰ These nontraditional, nonlocally-managed resources are critical to rural response in a severe weather event or major hazard incident, such as an earthquake or large hazardous materials spill, but they operate voice and

55. See IAFF, *supra* note 54, at 3.

56. See Brendan Sasso, *Why Police and Firefighters Struggle to Communicate in Crises*, ATLANTIC (Sept. 18, 2015), <http://www.theatlantic.com/politics/archive/2015/09/why-police-and-firefighters-struggle-to-communicate-in-crises/457443/> [https://perma.cc/KL3K-Y8YG].

57. See N. SLOPE SCI. INITIATIVE, SCENARIOS FOR ENERGY AND RESOURCE DEVELOPMENT ON THE NORTH SLOPE AND ADJACENT SEAS (2014), http://www.northslope.org/media/doc/2014/Feb/GeoAdaptive_NSSI_Scenarios_Fact_Sheet_2014.01.22_1.pdf [https://perma.cc/YP3D-Q2GL].

58. See U.S. ENERGY INFO. ADMIN., DRILLING PRODUCTIVITY REPORT FOR KEY TIGHT OIL AND SHALE GAS REGIONS 3 (2016), <https://www.eia.gov/petroleum/drilling/pdf/dpr-full.pdf> [https://perma.cc/D24K-9UNC].

59. See Nicolas Kusnetz, *North Dakota's Oil Boom Brings Environmental Damage with Economic Prosperity*, SCI. AM. (June 7, 2012), <https://www.scientificamerican.com/article/north-dakotas-oil-environmental-damage-economic-prosperity/> [https://perma.cc/N4S3-SRTA]; Emily Atkin, "It Will Never Be the Same": North Dakota's 840,000-Gallon Oil Spill One Year Later, THINKPROGRESS (Oct. 21, 2014), <http://thinkprogress.org/climate/2014/10/21/3582480/north-dakota-spill-one-year-later/> [https://perma.cc/F8MR-S54Y].

60. See FED. EMERGENCY MGMT. AGENCY, UNIT 3: OVERVIEW OF FEDERAL DISASTER ASSISTANCE 4-8, http://training.fema.gov/emiweb/downloads/is7unit_3.pdf [https://perma.cc/MMA2-W2Q8] [hereinafter FEDERAL DISASTER ASSISTANCE OVERVIEW].

data communications on frequency bands assigned to their respective primary missions, not on the LMR frequencies operated by local law enforcement and traditional first responders.⁶¹ To ensure a coherent command and response structure in rural areas, FirstNet also needs to consider how best to enable access to these critical but infrequent response forces in order to provide the necessary level of communications in rural areas. The more different organizations and first responder groups that are needed to respond to a widespread situation, the greater the potential risk of issues posed by a lack of interconnectivity among the different groups.⁶²

Interconnectivity is important because events like wildfires or toxic spills in rural areas require a wider range of response and cooperation to protect areas from major impacts to the environment and real personal property. Often, emergency response tests are dictated by urban areas that assume resources that rural responders do not have, including but not limited to human and financial capital.⁶³ This leads to an inability to properly train rural responders for emergency situations, leading to a need for either greater technology for rural areas or better interconnectivity to allow better trained responders to assist with emergency responses.⁶⁴ Finally, because of the nature of activities that take place in rural areas, it is plausible that rural areas will be at greater risk of certain types of disasters that require mass responses.⁶⁵

C. FirstNet's Prioritization of Urban Areas

Despite the risks posed from potential disasters in rural areas, FirstNet has so far prioritized urban centers for early network deployment. This is due to the potential for greater magnitude of deaths in urban areas and the need for a large, concentrated subscriber base in order to become self-funding.⁶⁶ In fact, the origins of FirstNet can be found in the uncoordinated response to 9/11 and following disasters that showed a weakness in

61. See ARLINGTON COUNTY CONFERENCE REPORT: LOCAL RESPONSE TO TERRORISM: LESSONS LEARNED FROM THE 9-11 ATTACK ON THE PENTAGON 4 (2012), http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/21/2014/04/2012-ARCO_Conf_Report.pdf [https://perma.cc/93DD-5UYG].

62. See FEDERAL DISASTER ASSISTANCE OVERVIEW, *supra* note 60, at 6–8.

63. See Diana Bryant, *Challenges of Rural Emergency Management*, HOMELAND1 (Apr. 8, 2009), <http://www.homeland1.com/disaster-preparedness/articles/480917-Challenges-of-rural-emergency-management/> [https://perma.cc/FB2K-4QA3].

64. See *id.*

65. See *Rural Emergency Preparedness and Response*, RURAL HEALTH INFO. HUB, <https://www.ruralhealthinfo.org/topics/emergency-preparedness-and-response> [https://perma.cc/E8T4-9AAK] (last visited Oct. 31, 2016) (listing increased risks of disasters in rural areas such as power plants (including nuclear), military bases and missile launch facilities, dams, agricultural chemical facilities, food production and aquifers, transportation of hazardous materials, natural resource production).

66. See Sasso, *supra* note 56; Jessie Bur, *States Feel Left Out of FirstNet Development Process*, 21ST CENTURY STATE & LOCAL (June 21, 2016, 11:43 AM), <https://www.21centurystate.com/articles/states-feel-left-out-of-firstnet-development-process/> [https://perma.cc/K82D-5BPP].

communications between first responders.⁶⁷ Even though most large cities have since been able to standardize communications between the first responders within each city, there can still be network overload issues in the wake of disasters like the Boston Marathon bombing that have harmed emergency responses.⁶⁸ While first responders may have some level of prioritization in these types of situations,⁶⁹ even on a normal weekday, their reliance on commercial networks can lead to congestion that disrupts their ability to do their job.⁷⁰ The risk of congestion provides a strong incentive to develop the first responders network in urban areas first given the increased usage in urban areas and the greater risk of large loss of life in an extreme event.⁷¹ The priority nature of FirstNet is designed to prevent the general public from using the network during an emergency, allowing first responders to use the network without the aforementioned overload issues.⁷²

Beyond the advantages in focusing on responding to multiple major emergency events in urban centers, FirstNet has a congressional mandate to be self-funding.⁷³ Fortunately, the FCC has consolidated rules in various categories so that the availability of equipment for FirstNet will be expedited, allowing FirstNet to deploy its proposed network faster so that it can collect fees sooner.⁷⁴ The total cost of building the network is estimated at somewhere between \$10–15 billion, with FirstNet paying \$6.5 billion of that sum.⁷⁵ This large gap will need to be filled by a private partner who will want to ensure that they have the greatest opportunity to maximize their investment through public-safety and critical-infrastructure customers and

67. See Stephen Lawson, *U.S. Plan for a Public-Safety Network Could Mean a Windfall for a Big Carrier*, COMPUTERWORLD (Jan. 15, 2016, 3:23 PM PT), <http://www.computerworld.com/article/3023361/mobile-wireless/us-plan-for-a-public-safety-network-could-mean-a-windfall-for-a-big-carrier.html> [https://perma.cc/FRC7-K47R].

68. See Michael B. Farrell, *Cellphone Networks Overwhelmed After Blasts in Boston*, BOSTON GLOBE (Apr. 17, 2013), <https://www.bostonglobe.com/business/2013/04/16/cellphone-networks-overwhelmed-blast-aftermath/wq7AX6AvnEemM35XTH152K/story.html> [https://perma.cc/6RVV-FW2L].

69. See *id.*

70. See Wood, *supra* note 45.

71. See *id.*

72. See *id.*

73. See 47 U.S.C. § 1428(b) (2012) (“The total amount of the fees assessed for each fiscal year pursuant to this section shall be sufficient, and shall not exceed the amount necessary, to recoup the total expenses of the First Responder Network Authority in carrying out its duties and responsibilities described under this subchapter for the fiscal year involved.”).

74. See generally Nick Kokkinos, *In Re Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012; Implementing A Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, 22 COMM.LAW CONSPECTUS 230, 230 (2014).

75. See Jim Patterson, *Reality Check: Sprint Network Overhaul, AT&T Unlimited and FirstNet*, RCR WIRELESS NEWS (Jan. 19, 2016), <http://www.rcrwireless.com/20160119/opinion/reality-check-sprint-network-overhaul-att-unlimited-and-firstnet-tag12> [https://perma.cc/25TS-WV7F].

secondary income from nonemergency users while the network is not being prioritized.⁷⁶

D. Urban First Responders Have Inherent Advantages

Rural first responders are at an inherent disadvantage in relation to their urban and suburban counterparts. Major urban centers are better able to allocate resources to ensure that they have the necessary equipment to keep up with evolving response needs.⁷⁷ This allows municipalities that have more resources to dedicate to their first responders to spend money to adapt to a new technical system.⁷⁸ Conversely, rural counties are often more limited in the amount of resources that they have to spend on implementation of new or upgraded networks and equipment.⁷⁹ This difference can be seen clearly from the fact that while 70 percent of career firefighters protect communities of 25,000 people or more, 95 percent of volunteer firefighters serve communities of fewer than 25,000.⁸⁰ This can pose an issue as agencies start to switch from a conglomeration of different frequencies that are used for first responders to the national band of frequencies reserved for public safety.⁸¹ This switch may create a situation in which rural agencies are unable to allocate the necessary funds to procure the newer equipment necessary to be interoperable on the primary FirstNet network as well as on the required backup networks.⁸² Therefore, federal and state governments need to ensure that there is adequate funding to supply rural first responders with the necessary equipment to transition into the national system and not be left behind.

Unfortunately, rural counties routinely have their interests ignored at state and federal government levels.⁸³ This often results in situations in which decisions about how to implement programs such as first responders systems are shaped by the influential urban centers without a large amount of input from rural areas.⁸⁴ Ensuring that there is adequate attentiveness to the unique needs of rural areas is necessary for the determinations about

76. See Donny Jackson, *Wireless Carriers Are Key to Successful FirstNet RFP Bid. Which Are Interested?*, URGENT COMM. (Jan. 21, 2016), [http://urgentcomm.com/blog/wireless-carriers-are-key-successful-firstnet-rfp-bid-which-are-interested?](http://urgentcomm.com/blog/wireless-carriers-are-key-successful-firstnet-rfp-bid-which-are-interested/) [<https://perma.cc/P76P-LRCF>].

77. See NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *CHARACTERIZING LOCAL EMS SYSTEMS* 1, 32–34 (2013), <https://www.nhtsa.gov/staticfiles/nti/pdf/811824.pdf> [<https://perma.cc/W3MU-SQZP>].

78. See *id.*

79. See Allevan, *supra* note 33.

80. See *Responder News: Can We Do More for America's Rural Volunteer Firefighters?*, U.S. DEP'T HOMELAND SEC. (Sept. 20, 2016), <https://www.dhs.gov/science-and-technology/news/2016/09/20/responder-news-can-we-do-more-americas-rural-volunteer> [<https://perma.cc/TP9A-S9YL>].

81. See Sasso, *supra* note 56.

82. See *Challenges for Rural 911*, 911.GOV, <http://www.911.gov/911-issues/challenges.html> [<https://perma.cc/SN8A-MS95>] (last visited Oct. 31, 2016).

83. See, e.g., Craig Anthony Arnold, *Ignoring the Rural Underclass: The Biases of Federal Housing Policy*, 2 STAN. L. & POL'Y REV. 191, 194 (1990); Allevan, *supra* note 33.

84. See Allevan, *supra* note 33.

how state plans are going to be shaped and whether the state decides to opt out of the national FirstNet program. Although this type of dynamic is not easily solved, it will be necessary for individuals who have an interest in seeing that there is an adequate response network in place to protect rural areas from disasters resulting in mass fatalities and injuries, and economic and ecological disasters, to put pressure on the decision makers to enable rural areas to be full participants in the FirstNet system.⁸⁵

Finally, rural areas are at the greatest disadvantage in relation to urban and suburban areas in that they lack sufficient infrastructure to support the level of coverage that is necessary, thus requiring extensive infrastructure investment to meet the required levels.⁸⁶ While this is part of the problem facing rural communities, it can also be part of the solution. In rural areas, the needs of public safety users will be less, and thus, there is greater opportunity for commercial carriers to sell commercial services to the general public.⁸⁷ The final RFP attempts to serve the needs of rural first responders.⁸⁸ However, the RFP still poses the risk that the bid winner will ignore or delay infrastructure deployment in rural areas.⁸⁹

To build an effective, interconnected first responders system, the government must recognize and equalize the inherent advantages enjoyed by urban first responders by protecting the interests of rural first responders. If there are significant advantages for urban and suburban areas in network deployment, the right and fair action is for FirstNet to actively promote the interests of rural communities, helping to compensate for the rural areas' historic lack of influence with telecommunications service providers. If the government does not deliberately act to ensure full development of rural first responders network capabilities, the national providers will not have sufficient incentive to develop the network in rural areas in a timely manner, if at all.

III. ANALYSIS

FirstNet must take steps to promote the timely and expansive build-out of the rural portion of the network to prevent it from being deprioritized in the completion of the system. First, during the evaluation of bids on the RFP, FirstNet must find a proposal that does not set minimal goals for rural network advancement. In doing so, FirstNet should ensure that the winning

85. See Kayla Nick-Kearney, *Lawmakers Worry FirstNet Won't Cover More Remote Areas*, FEDSCOOP (Jun. 21, 2016), <https://www.fedscoop.com/local-input-still-a-concern-for-firstnet-stakeholders/> [https://perma.cc/3KQS-K8C8].

86. See Darrell West & Jack Karsten, *Rural and Urban America Divided by Broadband Access*, BROOKINGS: TECHTANK (July 18, 2016), <https://www.brookings.edu/blog/techtank/2016/07/18/rural-and-urban-america-divided-by-broadband-access/> [https://perma.cc/6RZ5-R7F7].

87. Jackson, *supra* note 76.

88. See Donny Jackson, *FirstNet RFP Outlines Financial Penalties for Contractor, If Public-Safety Adoption Targets Are Missed*, URGENT COMM. (Jan. 15, 2016), <http://urgentcomm.com/ntiafirstnet/firstnet-rfp-outlines-financial-penalties-contractor-if-public-safety-adoption-targets-> [https://perma.cc/KQR7-JZ4W].

89. See *id.*

bid includes local and regional broadband providers in order to gain value from their expertise and existing infrastructure. Additionally, FirstNet must partner with state and local governments to use governmentally-controlled “dark fiber”⁹⁰ to provide additional backhaul⁹¹ capabilities for the network, easing the workload on the wireless portions of the network. Congress may need to modify the self-funding requirements to assist with the initial deployment of the rural network infrastructure. FirstNet must be allowed discretion to upgrade their technology as needed without creating disparities between rural and urban/suburban first responders networks.

A. FirstNet Needs to Ensure that National Providers Do Not Take Advantage of the RFP

Despite the safeguards in the final RFP designed to protect rural interests, FirstNet needs to ensure that the prime contractor⁹² does not neglect to adequately service rural responders. The RFP establishes that, if the contractor fails to reach more than 70% of its public safety adoption goal for a state or territory, it would be required to pay 100% of its maximum disincentive payment, an amount that ranges from \$124.7 million to \$178.3 million for that particular year and increases annually over a twenty-year period.⁹³ This percentage decreases to 44% of the maximum disincentive payment if 80% is reached and 15% if 90% is reached.⁹⁴ In addition to financial penalties for failure to meet public safety adoption goals, FirstNet may utilize a variety of remediation tools, including “recommending lower pricing or taking certain business functions from the contractor[,] with the contractor funding any replacement operations.”⁹⁵

FirstNet has not defined what public-safety adoption goals should be in its RFP, but instead, has allowed potential contractors, as part of their bid, to propose what they believe the appropriate public-safety adoption rate should be.⁹⁶ In evaluating the bids, FirstNet will consider the public safety

90. Dark fiber is unused fiber optic cables that have already been laid to create a fiber network to provide high speed Internet access. April Glaser & Corynne McSherry, *Neutrality Begins at Home: What U.S. Mayors Can Do Right Now to Support a Neutral Internet*, ELEC. FRONTIER FOUND. (Jun. 20, 2014), <https://www.eff.org/deeplinks/2014/06/neutrality-begins-home-what-us-mayors-can-do-right-now-support-neutral-internet> [https://perma.cc/6FTT-DEQZ].

91. Backhaul is the transportation of cell traffic from the cell tower to the core network. See *Backhaul Basics, A Definition: Network Experts Define Backhaul Networks*, RCR WIRELESS NEWS (May 13, 2014), <http://www.rcrwireless.com/20140513/network-infrastructure/backhaul-network-definitions-cellular-backhaul-definition> [https://perma.cc/ZEK7-TGCS].

92. The prime contractor is responsible to the owner of the job for the completion of a project, and often fulfills portions of its obligations through the use of job-specific subcontractors. See *Prime Contractor*, LAW DICTIONARY, <http://thelawdictionary.org/prime-contractor/> [https://perma.cc/DEC6-SM67].

93. Jackson, *supra* note 88.

94. *Id.*

95. *Id.*

96. *Id.*

adoption targets that each bidder is required to propose.⁹⁷ If national carriers like AT&T and Verizon, who potentially have the most to gain from the FirstNet system, intentionally and jointly limit their proposed public-safety adoption rates in rural areas, it is unlikely that the disincentives will trigger. Ultimately, the decision on the bids and the responsibility to choose one that promotes the interests of rural customers lies with FirstNet. If this is accomplished, it will incentivize the national provider to work with the rural first responders to acquire the equipment necessary to reach rural coverage goals.

Because the FirstNet network is designed to provide priority access to first responders in the event of an emergency, the primary source of revenue for the program is designed to be from subscription fees paid by public safety entities and secondary users.⁹⁸ To provide an incentive for private partners, the wireless provider can use the spectrum for other commercial activities when the network is not being used for public safety services.⁹⁹ This is especially tantalizing for industry leaders who already face spectrum allocation caps because usage of the FirstNet spectrum does not count against the aforementioned caps.¹⁰⁰ However, in heavily urban areas, there is a risk that the constant need for first responders to have access to the FirstNet network will sharply limit the secondary, commercial potential for the network.¹⁰¹ Rural areas, which have lower usage of emergency services and thus will take up less of the FirstNet's capacity, may have a greater opportunity for actual secondary usage and the corresponding commercial benefits.¹⁰² This increased level of potential return on investment in rural areas could promote greater network infrastructure deployment in rural areas. This, in turn, could allow for greater reliability when first responders are needed to handle a potential disaster in rural areas, potentially saving many lives and livelihoods.

B. The Final FirstNet Plan Needs to Include Local and Regional Service Providers

To adequately serve rural areas in accordance with the statutory intent and the specific provisions required in the RFP, there needs to be a mixed partnership of local rural coverage providers and larger national carriers. Currently, even America's largest national broadband providers have large gaps in service in rural areas.¹⁰³ In order to build out a network that will provide the necessary service to rural first responders in a reasonable

97. *Id.*

98. *See* 47 U.S.C. § 1428(b) (2012).

99. *See* 47 U.S.C. § 1428(a).

100. *See* Jackson, *supra* note 76.

101. *See* Donny Jackson, *Rural Carriers Interested in Partnering with FirstNet, But Urban/Suburban Opportunities Appear Limited, CCA's Berry Says*, URGENT COMM. (Jun 15, 2015), <http://urgentcomm.com/public-safety-broadbandfirstnet/rural-carriers-interested-partnering-firstnet-urbansuburban-oppportun> [<https://perma.cc/P5E2-XNEJ>].

102. *See id.*

103. *See* Patterson, *supra* note 75.

timeframe, the accepted proposal needs to include local and regional providers who have the infrastructure in place to serve the areas that the national giants have neglected.¹⁰⁴ Additionally, because rural providers are interested in improving the scope of their local coverage,¹⁰⁵ having a collection of rural providers on the winning bid should help protect the needs of rural customers.

There is already significant infrastructure in place in urban areas,¹⁰⁶ potentially allowing for a less expensive rollout within those areas by a national carrier, who is likely to be the prime contractor on a winning bid on the RFP.¹⁰⁷ The national acquisition approach caters to national broadband providers, who have so far underserved rural areas,¹⁰⁸ to promote a specific part of FirstNet's mandate. If a winning contractor is not sufficiently contractually bound, the contractor may fall back into the habit of prioritizing urban areas at the expense of rural infrastructure. This potential risk of prioritization is partly why it is necessary for FirstNet to ensure that rural areas are not forgotten by the contract winner, allowing for real expansion of the rural portion of the network.

While a coalition that includes local rural providers may form to bid on FirstNet,¹⁰⁹ FirstNet must still ensure that the approved final plan takes advantage of existing rural infrastructure while expanding the network to provide more reliable coverage for emergency situations. One potential way in which this could work is if it turns out that rural communities are the only area where network providers can collect revenue from secondary uses of the spectrum. This potential source of revenue would incentivize a coalition to invest in the rural network infrastructure.

It is important that FirstNet takes advantage of existing infrastructure in rural areas that can provide a base, if limited, for consistent network coverage in rural areas. This base can decrease expansion costs into rural areas and expedite a timelier deployment of a comprehensive network.¹¹⁰ The final agreement should be friendly enough to the participating local and regional carriers to reduce the risk of nonperformance. The agreement must ensure that if the prime contractor can set the state integration goals, it does not set them at a level that is unworkable for the smaller regional providers, while also contractually requiring them to shoulder the risk for noncompliance.

The final deal should also stipulate that rural providers will have the funding to create the necessary rural networks and will be free from repercussions if they are unable to perform because of actions taken by the

104. See Donny Jackson, *Rural Carriers Still Trying to Assess FirstNet Opportunity*, URGENT COMM. (Oct. 11, 2015), <http://urgentcomm.com/public-safety-broadbandfirstnet/rural-carriers-still-trying-assess-firstnet-opportunity> [https://perma.cc/2E9H-B4LY].

105. See *id.*

106. See West & Karsten, *supra* note 86.

107. See Jackson, *supra* note 76.

108. See West & Karsten, *supra* note 86.

109. See Jackson, *supra* note 76.

110. See FIRSTNET, *supra* note 34.

lead national carrier. This can be accomplished through contractual agreements that limit the amount of liability that national broadband providers can shift to small rural providers for failing to adequately build out the rural portions of the network. Holding the prime contractor responsible for failures that it could have prevented should incentivize the contractor to use its superior resources to assist the local providers in rural network deployment. To prevent this from becoming a further disincentive for national contractors' proposed adoption goals, FirstNet must ensure that smaller providers are held at least partially responsible if they are the primary reason for failure in a region. If rural providers can use their current resources and have assistance in expansion, it will enable a more rapid deployment of the rural parts of the network, limiting the possibility of neglect later in the contract.

As an additional incentive to using local resources, there should be a state and federal partnership to find ways to use existing dark fiber to assist with communications backhaul for rural systems.¹¹¹ This will relieve pressure on the wireless communications network and further enhance economic viability of secondary use. Rural areas have not had the consumer demand to make fiber economically viable.¹¹² As a result, there are multiple instances of existing dark fiber in rural areas potentially available for repurposing by FirstNet.¹¹³ Additionally, with the desire to grow municipal and community broadband, there has been a renewed effort by small communities to lay new dark fiber for potential use in community broadband networks in areas lacking existing infrastructure.¹¹⁴

A partnership between the federal government, state and local governments, and rural utility services who own the abandoned dark fiber is necessary to allow control of the fibers to be functionally vested in FirstNet. This would allow FirstNet to use the existing infrastructure to reduce the costs associated with the necessary buildout into rural areas. Having access to additional existing infrastructure to accomplish the necessary requirements of having sufficient reliability through data backhaul reduces the inhibitions that may be held about rural expansion. Local cooperation is essential both because local and state governments control parts¹¹⁵ of the existing fiber infrastructure and because it is the state and local governments

111. *Project Overview*, FIRSTNET, <http://www.firstnet.gov/content/project-overview> [<https://perma.cc/5DZG-MPTT>] (last visited Oct. 31, 2016); see Anton Troianovski, *Optical Delusion? Fiber Booms Again, Despite Bust*, WALL ST. J. (Apr. 3, 2012, 11:52 AM ET), <https://www.wsj.com/articles/SB10001424052702303863404577285260615058538> [<https://perma.cc/VP8P-PMF6>] (In the early 2000s, governments and some private investors paid for the installation of fiber-optic cable and other hardwiring infrastructure to expand communications access across the United States. However, Internet traffic did not grow as fast as expected and was hampered by slow deployment of "last mile" connections).

112. See Troianovski, *supra* note 111.

113. See *Project Overview*, *supra* note 111.

114. See Susan Crawford, *The Bright Future of Dark Fiber*, BACKCHANNEL (May 27, 2016), <https://backchannel.com/these-cities-have-brightened-their-future-with-dark-fiber-dc89a5d6a1d2> [<https://perma.cc/S385-3U63>].

115. See *Community Network Map*, COMMUNITY NETWORKS, <https://muninetworks.org/communitymap> [<https://perma.cc/8BAW-DBTD>] (last updated October 2015) (showing local control of dark fiber in over 115 communities).

that ultimately decide whether to join FirstNet. By having wired data backhaul, there is additional available wireless network capacity that would otherwise need to be used for data backhaul.¹¹⁶ This increases the availability and desirability of secondary uses on the network. This may create additional financial incentives for the buildout and help the service provider profit from the system while simultaneously helping FirstNet save money and be one step closer to its mandate of self-funding. Further, by encouraging rural communities to continue their current expansion of dark fiber, FirstNet can work directly with communities to establish a broadband service by ensuring that the fiber will be put to use. By partnering with rural providers and taking advantage of their existing infrastructure, and encouraging broadband expansion through dark fiber, rural network capacity should be rolled out in a more timely, cost-effective manner, allowing rural first responders to gain access to a reliable system sooner and thus, provide superior responses to events that otherwise might be more disastrous.

C. FirstNet Should Dictate that a Certain Amount of Initial Federal Funding Go to Rural Areas

FirstNet should require a certain percentage of the initial network development funds to be used to build the rural network from the start.¹¹⁷ Because FirstNet's initial funding for the network breaks down to an average of around \$125 million per state,¹¹⁸ it is important to direct those limited resources towards those areas where commercial partners are inclined to overlook. There is no firm directive for where the funds are to be allocated, giving FirstNet the capability to direct the funds to the states and areas that need it the most. Without guidance, it is likely that large corporations, or state governments that are controlled by urban centers, will set goals and funding priorities for the urban areas.¹¹⁹

The twenty-five-year duration of the contract should provide primary carriers with enough time to try to monetize the investment in the spectrum space used for the network. However, if the annual cost of operations runs around \$10–15 billion a year to operate,¹²⁰ it is possible that once the initial investment is spent, investment in lower return rural areas may be indefinitely delayed. Further, there is no guarantee that any of the smaller providers with vested interests in providing broadband access to rural areas

116. Christopher Mitchell, *Google Fiber Pauses – But No One Else Should*, COMMUNITY NETWORKS (Oct. 27, 2016), <https://muninetworks.org/node/6478> [<https://perma.cc/8ZM4-NJEF>].

117. This is despite the fact that the \$6.5 billion FirstNet is providing for initial network development is not nearly enough to complete construction of the network. See Patterson, *supra* note 75.

118. See Michael Myers, *FirstNet – A Rebuttal to FirstNet's Legal Interpretations. I Emphasize the Word "Buttal,"* MYERS MODEL (Oct. 22, 2015, 8:44 PM), <http://advancingtelecom.blogspot.com/2015/10/firstnet-rebuttal-to-firstnets-legal.html> [<https://perma.cc/N6Z6-K38F>].

119. *Id.*

120. *Id.*

will be viable in the future.¹²¹ Therefore, it is necessary that some of the initial funding goes directly to network expansion and backup reliability to enable rural first responders to have an adequate network early enough to remain technologically close to urban areas. If the initial appropriated funding runs out without significant rural expansion, there may not be sufficient motivation to complete the development of rural network capabilities.

Instead, if FirstNet allows much of the initial investment to be made primarily in urban and suburban areas, it could lead to the failure to remedy the issues facing rural responders.¹²² If FirstNet is serious about its mandate to provide a nationwide first responders network with significant rural capacity, then it needs to use some of the initial funding to ensure that there is at least a beginning of infrastructure deployment in rural areas that are at the greatest risk of harm from inadequate network coverage. These could include areas like North Dakota, which has had a significant expansion in its oil and gas production,¹²³ and similar areas that have seen increased risks of wildfires, hazardous material spills, or other potentially devastating disasters without seeing an increase in reliable network coverage. It is possible that investing early in major urban areas will prevent an increased loss of life during the initial deployment of the network.¹²⁴ However, because of the financial incentives associated with secondary uses in major population centers, a national service provider may already be incentivized to build out the network in urban areas early in the network deployment phase, potentially limiting the amount of lives that would be saved.¹²⁵

If the limited initial funds are spent on areas where the national service provider would already be likely to heavily invest its resources, it would take resources from rural areas where future spending is less certain to chase a potentially limited return.¹²⁶ If this allocation of resources subsequently limits the expansion of FirstNet in rural areas, the network will be unable to address the interconnectivity issues that face rural responders without major investments from commercial partners.¹²⁷ If rural portions of the network are underfunded, then the growing risks associated with the lack of rural network coverage will be exacerbated in the future.

121. See Jackson, *supra* note 76.

122. See generally Bryant, *supra* note 63 (rural emergency management faces four primary challenges: resource limitation, separation and remoteness, low population density, and communication).

123. See U.S. ENERGY INFO. ADMIN., *supra* note 58, at 3.

124. See Allevan, *supra* note 33.

125. See GAO-15-407, *supra* note 1, at 31.

126. See *id.* at 35 (“One study has shown that a nationwide public-safety broadband network would generally be profitable in urban areas and unprofitable in rural areas.”).

127. *Id.* at 33.

D. *The Network Needs to Be Able to Adapt with Advances in Technology*

Given the likely technological advances that will take place over the life of the contract, FirstNet must be able to adapt to such advances. The federal government is not known for being on the cutting edge of technology.¹²⁸ Currently, the network is designed to take advantage of existing 4G LTE technology.¹²⁹ The final deal should not only provide the primary contractor with the ability to update the network to take advantage of advances in wireless technology, but also provide the ability for the government to create incentives at some time in the future to update the network without the need for a future RFP. With 5G commercial wireless networks expected to be deployed in some form by 2017¹³⁰ and the FirstNet network expected to still be deploying through 2020,¹³¹ the network will likely be outdated by the time it is deployed. This potential limitation has been thrown into sharper focus with the FCC allocating spectrum in July 2016 and the surrounding uncertainty of what exactly 5G will look like in the future.¹³² Because the FirstNet contract is twenty-five years, if it is bound to current technology for the duration of that contract, by the time it would be possible to do a new RFP at the end of the contract, the network may have fallen significantly behind the pace of commercial technology.

If the network fails to, at a minimum, stay close to commercial broadband technology, it may create a situation in which rural first responders are again at a technological disadvantage. If major urban areas receive commercial upgrades to their networks first—as has been the general trend in broadband deployment—this could create a situation in which urban first responders are inclined to return to the commercial networks if they provide a superior service. If so, even if there is sufficient rural deployment of network capacity, the entire FirstNet system could come undone due to a lack of subscription fees from the urban population centers. Additionally, if the network is unable to adequately plan for technological growth across the network, the natural prioritization of urban

128. See, e.g., Ricardo Alonso-Zaldivar, *Government Wastes Billions of Dollars on Old Computers, Report Says*, PBS (May 25, 2016, 1:28 PM EST), <http://www.pbs.org/newshour/rundown/government-wastes-billions-of-dollars-on-old-computers-report-says/> [<https://perma.cc/YFU3-J76Q>]; David Fahrenthold, *Sinkhole of Bureaucracy*, WASH. POST (Mar. 22, 2014), <http://www.washingtonpost.com/sf/national/2014/03/22/sinkhole-of-bureaucracy/> [<https://perma.cc/YM4M-VHNJ>].

129. See FIRSTNET, *supra* note 41.

130. See Neal Ungerleider, *5G Wireless Is Coming . . . But What Is It, Anyway?*, FAST CO. (Oct. 26, 2015, 11:08 AM), <https://www.fastcompany.com/3051626/elasticity/5g-wireless-is-coming-but-what-is-it-anyway> [<https://perma.cc/UF25-MMWR>].

131. Joey Jackson, *When Will We See a Large-Scale FirstNet Deployment?*, RCR WIRELESS NEWS (Oct. 22, 2015), <http://www.rcrwireless.com/20151022/network-infrastructure/when-will-firstnet-we-see-a-large-scale-firstnet-deployment-tag20> [<https://perma.cc/EDX2-G8V2>].

132. See *FCC Opens Millimeter Wave Spectrum for 5G*, COOLEY LLP (July 14, 2016), <https://www.cooley.com/news/insight/2016/2016-07-14-fcc-opens-millimeter-wave-spectrum-for-5g> [<https://perma.cc/F79T-98GN>].

areas could again lead to interoperability issues if urban areas are upgraded and rural areas stay at an inferior level of technology. Ensuring that there is sufficient incentive to have FirstNet keep pace with commercial technology will help guarantee that the network maintains top-level capabilities and that first responders in rural areas who become reliant on the network for coverage will not fall behind their urban counterparts who are more likely to receive infrastructure upgrades or use advanced commercial networks that are made available.

E. The Federal Government Needs to Accept That Rural Areas May Not Be Profitable

Due to the costs associated with creating and operating a rural broadband network,¹³³ the government needs to adjust its thinking about how revenue-neutral FirstNet should be during its initial deployment. Despite Congress's self-funding requirement, it may be impossible, even with an effective private partnership, to successfully accomplish both self-funding and nationwide coverage. The federal government must understand that if national commercial wireless providers have not been able to make an extensive rural broadband network profitable in the past, it is unlikely that FirstNet will either.

Instead, the FirstNet network should be viewed as a public utility, providing a critical service for the public benefit. The rural broadband network may not be profitable, but it serves a necessary public need.¹³⁴ The government should instead focus on broadband deployment in rural and tribal areas while profits, if any, accrue to private partners. This would require Congress to modify FirstNet's self-funding requirement and replace it with a de facto subsidy for the rural portions of the network. If the government is able to spend additional funds to enable the construction of the rural sections of the network, this will reduce the cost of entry for the broadband provider and incentivize the carrier to follow through with the necessary plans for rural broadband network.

Congressional action to amend the self-funding requirement that promotes subscriber base evaluations is one path to accomplish the necessary aspects of the framework. Doing this, at least in the initial buildout phase, would enable FirstNet to receive additional federal funding for the deployment of the rural network while also requiring the urban/suburban area networks to reach the initial self-funding goals for their section. If, after total network deployment, it becomes obvious that the FirstNet network will neither be profitable to a private partner nor self-funding for FirstNet, Congress may need to reexamine the self-funding

133. See FCC, A BROADBAND NETWORK COST MODEL: A BASIS FOR PUBLIC FUNDING ESSENTIAL TO BRINGING NATIONWIDE INTEROPERABLE COMMUNICATIONS TO AMERICA'S FIRST RESPONDERS 18 (2010), <https://transition.fcc.gov/national-broadband-plan/broadband-network-cost-model-paper.pdf> [<https://perma.cc/M9MN-K472>] (showing the costs of building and upgrading rural cell sites as roughly 76% and 50% more expensive than urban sites respectively).

134. See *supra* Sections C–D.

requirement to determine if it is necessary to provide additional yearly funding for the maintenance of the rural network as a critical public utility.

If the self-funding requirement is left completely untouched, it may end up being incompatible with the mandate to create a nationwide dedicated network for first responders. If urban and suburban areas are prioritized in the initial deployment with the intent of getting significant subscription fees early, it may further undermine the effort to build out rural networks. The costs associated with rural buildout may be significant enough that if FirstNet is just barely self-funding after initial deployment in urban and suburban areas, it may not be possible to effectively build a rural network without any additional funding or waiving self-funding provisions. Treating the rural portions of the network, especially during initial deployment, as an exception to the self-funding requirements will allow rural network deployment without forcing subscription fees to immediately match the costs of building a rural network from scratch.

IV. CONCLUSION

While there are several good reasons to ensure that urban centers receive early focus for FirstNet network deployment, there needs to be a concerted effort to ensure that rural first responders are not left behind. The natural commercial prioritization of a network led by a national provider will follow the national provider's current model: prioritizing large consumer bases in urban and suburban centers while functionally forgetting about those first responders in rural areas who have the greatest need for reliable wireless access. To accomplish sufficient rural network deployment FirstNet needs to proactively negotiate to ensure that there will not be a deprioritization of rural areas by private partners. Support of rural first responders can be accomplished by ensuring that there are regional providers with an emphasis on rural coverage as part of the winning bid team, a focus of initial funds on rural infrastructure, including partnerships to acquire additional infrastructure from unused dark fiber, and a fundamental philosophical change about how the rural network is viewed. Accomplishing these goals will enable rural first responders to have reliable communications, saving lives and reducing the risk of an environmental catastrophe.

