

Before the
National Telecommunications and Information Administration
United States Department of Commerce
Washington, D.C. 20230

In the Matter of)	
)	
The National Strategy to Secure 5G Implementation Plan)	Docket No. 200521-0144
)	

COMMENTS OF ADTRAN, INC.

ADTRAN, Inc. (“ADTRAN”) takes this opportunity to address a few of the issues raised in the National Telecommunications and Information Administration (“NTIA”) request for comments to inform the development of an Implementation Plan for the National Strategy to Secure 5G.¹ As explained below, timely and proper implementation of 5G services in the United States is critical to the National Security and Economic Security of our country. ADTRAN thus offers some suggestions on steps the federal government should take to foster the rapid, robust and secure deployment of 5G.

ADTRAN, founded in 1986 and headquartered in Huntsville, Alabama, is a leading global provider of networking and communications equipment. ADTRAN’s products enable voice, data, video and Internet communications across a variety of network infrastructures. ADTRAN’s solutions are currently in use by service providers, schools and libraries, private enterprises, government organizations and millions of individual users worldwide. ADTRAN

¹ NTIA, The National Strategy to Secure 5G Implementation Plan, Docket No. 200521–0144, 85 Fed Reg 32016 (May 28, 2020) (hereafter cited as “5G Implementation Plan Notice”). The original comment filing date was extended to June 25, 2020 (85 Fed Reg 36383, June 16, 2020).

thus brings an expansive perspective to this proceeding, as well as an understanding of the importance to individuals, communities and our country of secure, robust and ubiquitous broadband services, including 5G, and what it will take to foster the deployment of such services.

In addition to NTIA's *5G Implementation Plan Notice*, the Administration has published the National Strategy to Secure 5G.² The *5G Implementation Plan Notice* seeks input on the *National Strategy*'s four lines of effort: (1) facilitating domestic 5G rollout; (2) assessing the cybersecurity risks to and identifying core security principles of 5G capabilities and infrastructure; (3) addressing risks to United States economic and national security during development and deployment of 5G infrastructure worldwide; and (4) promoting responsible global development and deployment of secure and reliable 5G infrastructure. ADTRAN agrees that the rapid deployment of robust and secure 5G services is critical, and that the federal government has an important role to play in that process.

Facilitating Rollout

The *5G Implementation Plan Notice* and the *National Strategy* set out four lines of effort in developing a 5G implementation plan. The first of these -- "facilitating domestic 5G rollout" -- is a necessary predicate to any 5G plan. Thus, it is critical that the 5G implementation plan focus on steps the federal government can take to foster robust, ubiquitous and timely 5G deployment. Much of the effort in that regard in the United States to date has focused on making additional spectrum available for 5G.³ ADTRAN applauds the Commission's efforts to make

² See The National Strategy to Secure 5G of the United States of America, March 2020, available at <https://www.whitehouse.gov/wp-content/uploads/2020/03/National-Strategy-5G-Final.pdf> (hereafter cited as "*National Strategy*").

³ See, e.g., the FCC's Facilitate America's Superiority in 5G Technology (the 5G FAST Plan), <https://www.fcc.gov/5G>.

additional low-band, mid-band and high-band spectrum available for 5G, having allocated over 5 GHz of spectrum in support of 5G.⁴ However, ADTRAN observes that while making spectrum available for 5G is necessary to facilitating 5G rollout, it is not sufficient. That is because it will also be necessary to ensure there is sufficient backhaul capacity available to connect the 5G cell sites to the network.

Simply put, without adequate fronthaul and backhaul connectivity to the network, simply deploying the hundreds of thousands of 5G cell sites -- even with sufficient spectrum to connect to end users -- will not provide 5G service. Thus, it is critical that the 5G implementation plan also address the deployment of robust, reliable, secure and low-latency backhaul capacity. And fiber optic cables are clearly the best technology to provide that fronthaul/backhaul connectivity. Fiber is fast, reliable and secure, and provides symmetric capabilities. Fiber provides almost unlimited capacity so as to be able to accommodate the expected rapid growth in 5G traffic using technologies such as multimode fiber and wavelength division multiplexing. Thus, ADTRAN urges the Department of Commerce to incorporate into the 5G implementation plan policies that will facilitate fiber deployment to support 5G networks. This is particularly important to maintain parity with and accelerate beyond the Chinese efforts to take the lead in 5G deployment, because China is investing significant capital in fiber deployment in support of 5G.⁵

The Administration's 5G Implementation Plan should incorporate several policies and principles that would serve to facilitate deployment of fiber in support of 5G fronthaul and

⁴ *Ibid.*

⁵ "Guideline to improve Internet speed, lower prices," State Council of the People's Republic of China, May 20, 2015, http://english.gov.cn/policies/latest_releases/2015/05/20/content_281475111283130.htm. See also, "China to spend \$182 billion to boost Internet by end of 2017," Reuters, May 20, 2015, <https://www.reuters.com/article/us-chinainternet-idUSKBN0O50JH20150520>.

backhaul. As an initial matter, the 5G Implementation Plan must acknowledge the important role that fiber connectivity will play in 5G deployment, and must also recognize the positive externalities of fiber deployment. A fiber network built to connect 5G base stations can also serve as a backbone to extend broadband service to businesses, residences and “anchor institutions” like schools or hospitals. Or conversely, a ubiquitous fiber network built to serve a community has the capacity readily and inexpensively to also connect to 5G cell sites and provide necessary fronthaul/backhaul service.⁶

Thus, the Administration should support various incentive and subsidy programs that will foster fiber deployment. As an example, the FCC’s Rural Development Opportunity Fund (“RDOF”) includes weighting and selection criteria that favors Gbit service.⁷ In addition, the

⁶ The service providers certainly recognize these positive externalities. *See, e.g., Fierce Telecom*, “McElfresh: AT&T has a laser like focus on expanding fiber offerings,” <https://www.fiercetelecom.com/telecom/mcelfresh-at-t-has-a-laser-like-focus-expanding-fiber-offerings>, where the CEO of AT&T Communications observed:

“McElfresh said AT&T now has multiple fiber networks that serve and connect its wireless services, enterprise customers and residential broadband subscribers.

As we drive deeper fiber penetration in our wireless expansion and as we string out more C-RAN or small cells to densify our signal throughout our key markets, we passed a ton of small businesses,” he said. “We passed a ton of houses. And what might have been thought about in the past as a consumer-based residential broadband offering and a business case and investment plan, now today is viewed as one integrated network.

One set of fiber strands that serve enterprise—dedicated and shared—residential shared, backhaul, front haul for our cellular network and even up to wholesale offerings. And it's with this integrated planning approach that we have put in place since last October that gives us a really good efficient spend on an ability to expand further our fiber footprint.”

⁷ *Rural Digital Opportunity Fund*, 35 FCC Rcd 686 (February 7, 2020) at ¶ 20. In addition, there have been legislative proposals that would favor symmetrical gigabit services in the RDOF reverse auction, which would increase the broadband subsidies flowing to fiber under that program. *See*, The Rural Broadband Acceleration Act -- HR-7022, introduced by Majority Whip James Clyburn, D-S.C., and Rep. Fred Upton, R-Mich. Similar legislation is being considered by the Senate Commerce Committee.

Administration should support efforts to ensure that the various broadband subsidy programs take into account the positive externalities of fiber deployment when determining how to disburse the subsidies.

Factoring in the positive externalities requires more than just claiming to examine the subsidy programs holistically.⁸ By way of example, a truly holistic assessment means not only looking at the FCC’s USF programs compared to one another,⁹ but also taking into account how the programs work (or could work) together. Subsidizing fiber deployment to anchor institutions such as schools, libraries or hospitals can also make it more efficient to provide broadband services to nearby homes and businesses. Likewise, as discussed above, subsidizing fiber deployment to 5G cell sites produces similar efficiencies for deployment of broadband to residences and businesses. Such positive externalities need to be factored into the government program’s determinations of how the subsidies are awarded.

<https://www.commerce.senate.gov/2020/6/wicker-requests-information-from-fcc-on-accelerating-rural-digital-opportunity-fund-phase-i-auction>.

⁸ *E.g.*, in the FCC proceeding to consider a cap on the USF programs overall, not just on each program (the High Cost Fund, the Lifeline program, the Rural Healthcare Fund and the Schools and Libraries Fund), the Commission acknowledge the need to examine the USF programs holistically. *Universal Service Contribution Methodology*, 34 FCC Rcd 4143 (May 31, 2019)(hereafter cited as “*USF Cap NPRM*”) at ¶ 1 (“While each of the constituent USF programs are capped or operating under a targeted budget, the Commission has not examined the programs holistically to determine the most efficient and responsible use of these federal funds.”; *USF Cap NPRM* at ¶ 4 (“Although the Commission has taken steps over the last decade to set caps or funding targets for each of the four programs individually, for the first time we look at the Fund and its programs holistically.”)).

⁹ *Cf.*, *USF Cap NPRM* at ¶ 22 (“Are there ways to compare effectiveness across the programs more holistically in order to measure program efficiency? How should we balance the benefits of the different programs with the costs of increased contributions by ratepayers?”).

The FCC does not do so presently. For example, in the CAF broadband subsidy auctions, the FCC awarded subsidies on the basis of a reverse auction that established the lowest subsidy level for the High Cost Fund to subsidize broadband service to homes and businesses. But it may be the case that a different set of technologies would most efficiently provide broadband service to a community if the subsidies serving anchor institutions under the Schools and Libraries and Rural Health Care programs were also taken into account, along with the High Cost Fund subsidies.¹⁰

Moreover, a holistic review of the FCC's subsidy programs should additionally take into account other government subsidy programs. Broadband subsidies are also being provided under programs under the authority of the Department of Agriculture, including the recently created ReConnect program. Health care costs, including for necessary broadband and remote healthcare services, are subsidized by various federal programs. And numerous states are subsidizing broadband deployment. A holistic assessment of the various subsidy programs should take into account all of the other programs, along with potential synergies and/or positive externalities, to ensure that the government programs maximize the benefits overall, including the ability to facilitate rapid, robust, ubiquitous and secure 5G deployment.

In addition to making the most efficient use of the subsidy programs to foster fiber deployment, ADTRAN also urges the Department of Commerce to incorporate into the 5G Implementation Plan the various efforts already underway to minimize bureaucratic red tape or regulatory disincentives for fiber deployment. This would include providing access to rights of

¹⁰ By way of example, the winner of a reverse auction focusing solely on the High Cost Fund might be a satellite service provider, but it could actually be more efficient overall to provide broadband service to a community as a whole if the subsidized fiber-based service to hospitals, schools and libraries was also "extended" to other customers via wireless broadband.

way on federal property on an accelerated basis,¹¹ allowing service providers to retire old copper plant when fiber is deployed on a streamlined basis,¹² and encouraging state and local governments to facilitate “dig once” policies and new deployment technologies such as micro-trenching. Taken together, these various actions will speed deployment of fiber optic networks, which in turn will help accelerate the deployment of 5G networks.

National Security and Economic Security

Given the importance of 5G and the services it will enable, it is essential to National Security that the deployed 5G networks be secure and trustworthy. Critical and sensitive information will be traversing the 5G networks. Utilities, transportation networks, healthcare information and financial networks, among others, will depend on 5G networks. We must ensure that our adversaries cannot gain access to this treasure trove of sensitive information through backdoors implanted in our 5G networks, or in the 5G networks of our allies.

Implementation of 5G will also be critical to the U.S. economy in a wide variety of ways. 5G will enable the capacity, low-latency and speed necessary for a robust Internet of Things, which will support a wide variety of critical services, including smart cities, autonomous vehicles, telehealth and yet-to-be imagined offerings. In addition, the United States needs to be a leader in the development and deployment of 5G so that we have the ability to export our technology to the rest of the world. Moreover, a strong and healthy American economy is also important for maintaining National Security.

¹¹ <https://www.whitehouse.gov/presidential-actions/presidential-executive-order-streamlining-expediting-requests-locate-broadband-facilities-rural-america/>.

¹² *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, 32 FCC Rcd 11128 (November 29, 2017).

While much of the work of developing 5G technologies and deploying 5G networks will fall upon American (and allies’) companies, the federal government has important roles to play, as recognized by the *National Strategy*. Our foreign adversaries have adopted industrial policies that seek to allow them to take the lead in 5G manufacturing and deployment, and the United States cannot sit idly by and cede this critical technology without grave risks to our National Security and Economic Security. The Chinese government is planning on investing hundreds of billions of dollars in 5G subsidization.¹³ And those subsidization efforts include subsidizing the construction of robust fiber optic networks, which provide essential backhaul, and thus are integral to 5G deployment.¹⁴ Particularly in light of the multiple claims of Chinese-sponsored espionage and concerns of insecure Chinese telecommunications equipment,¹⁵ the federal

¹³ Meng Jing, “China to push 5G commercialisation even as Huawei faces US-led resistance in West,” *South China Morning Post*, March 25, 2019, <https://www.scmp.com/tech/big-tech/article/3003104/china-push-5gcommercialisation-even-huawei-faces-us-led-resistance>.

¹⁴ *E.g.*, Guideline to improve Internet speed, lower prices,” State Council of the People’s Republic of China, May 20, 2015, http://english.gov.cn/policies/latest_releases/2015/05/20/content_281475111283130.htm. *See also*, “China to spend \$182 billion to boost Internet by end of 2017,” Reuters, May 20, 2015, <https://www.reuters.com/article/us-chinainternet-idUSKBN0050JH20150520>.

¹⁵ *E.g.*, Permanent Select Committee on Intelligence, U.S. House of Representatives, Investigative Report on the U.S. National Security Issues Posed by Chinese Telecommunications Companies Huawei and ZTE at iv (Oct. 8, 2012), [https://republicans-intelligence.house.gov/sites/intelligence.house.gov/files/documents/huaweizte%20investigative%20report%20\(final\).pdf](https://republicans-intelligence.house.gov/sites/intelligence.house.gov/files/documents/huaweizte%20investigative%20report%20(final).pdf); Mark L. Goldstein, Director, Physical Infrastructure Issues, U.S. Government Accountability Office, Telecommunications Networks: Addressing Potential Security Risks of Foreign-Manufactured Equipment at i, 5 (May 21, 2013), <https://www.gao.gov/assets/660/654763.pdf> (noting that “other countries – such as Australia, India, and the United Kingdom – are concerned about the emerging threats to their commercial communications networks posed by the global supply chain and have taken actions to improve their ability to address this security challenge”); Executive Order 13873, 84 Fed. Reg. 22689, Executive Order on Securing the Information and Communications technology and Services Supply Chain (May 15, 2019), <https://www.whitehouse.gov/presidential-actions/executiveorder-securing-information-communications-technology-services-supply-chain/> (Executive Order 13873).

government must ensure that attempts to create Chinese dominance of 5G does not become an avenue for even greater risks to our National Security and Economic Security.

The *5G Implementation Plan Notice* seeks comment on the factors the government should consider in developing core security principles for 5G deployment, and on the factors the government should consider in evaluating potential security gaps. As an initial matter, ADTRAN believes that there should be harmonious treatment of these national security issues across the federal government, as well as in undertakings to partner with the private sector in ensuring that 5G networks in the United States will be secure. There are efforts underway to coordinate the Executive agencies' 5G national security activities under the auspices of the Department of Commerce.¹⁶ The Federal Communications Commission is separately addressing the exclusion of equipment that presents national security risks from the Universal Service Fund subsidy program.¹⁷ In addition, the federal government is working with the private sector to address ICT supply chain security, which would include 5G. The Department of Homeland

¹⁶ The President's executive order issued in May 2019 addressed 5G communications equipment, and tasked the Department of Commerce with implementing those policies. *Securing the Information and Communications Technology and Services Supply Chain*, Executive Order 13873, 84 Fed. Reg. 22,689, (May 15, 2019), <https://www.whitehouse.gov/presidential-actions/executiveorder-securing-information-communications-technology-services-supply-chain/>.

¹⁷ *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, 34 FCC Rcd 11423 (November 26, 2019); *Public Safety and Homeland Security Bureau Announces Comment Date on the Initial Designation of Huawei Technologies Company as a Covered Company in the National Security Supply Chain Proceeding*, 35 FCC Rcd 196 (January 3, 2020); *Public Safety and Homeland Security Bureau Announces Comment Date on the Initial Designation of ZTE Corporation as a Covered Company in the National Security Supply Chain Proceeding*, 35 FCC Rcd 292 (January 3, 2020). ADTRAN observes that there are also communications subsidy programs at the Department of Agriculture which also could have supply chain security aspects. <https://www.usda.gov/reconnect>.

Security's ICT Supply Chain Risk Management (SCRM) Task Force is a public-private supply chain risk management partnership that is tasked with the critical mission of identifying and developing consensus strategies that enhance ICT Supply Chain security. The ICT SCRM Task Force's participants include 20 federal partners as well as 40 of the largest companies in the Information Technology and Communications sectors.¹⁸

ADTRAN believes that all of these various programs need to be coordinated and harmonized so as to maximize effectiveness and minimize confusion. Manufacturers and service providers should not have to navigate a maze of inconsistent federal requirements when addressing supply chain security issues. ADTRAN understands that the Administration, working through the Department of Commerce, can coordinate the supply chain issues throughout the Executive agencies, but that it cannot compel Independent agencies, such as the Federal Communications Commission, to follow its lead.¹⁹ Nevertheless, through communication and exhortation, the Department of Commerce can make a compelling case to the FCC as to why it should adopt harmonious National Security policies.

And in crafting the National Security/Supply Chain Security policies, ADTRAN urges the Department of Commerce to utilize a risk-based approach. Thus, for example, when determining whether telecommunications equipment should be banned from 5G networks (or replaced if already deployed), the agency should consider whether the equipment can modify

¹⁸ See, generally, <https://www.cisa.gov/information-and-communications-technology-ict-supply-chain-risk-management-scrm-task-force>.

¹⁹ See, e.g., the NTIA Petition for Reconsideration of the Ligado decision, <https://ecfsapi.fcc.gov/file/105221130705320/NTIA%20Petition%20for%20Reconsideration%20in%20Ligado%20Proceedings.pdf>.

digital data, not just the country of origin and the manufacturer. This is the approach Congress took in Section 889 of the Fiscal Year 2019 National Defense Authorization Act, which prohibits federal government procurement of “any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system,” but exempts from that ban equipment “that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.”²⁰ Under such a framework, supply chain decisions regarding foreign suppliers of particular concern would follow risk-based approaches that might prohibit specific suppliers based on evidence of wrongdoing, but would still rely on standards, best practices, and other procedures to shape supply chain risk management overall. Service providers or equipment manufacturers would be able to make supply-chain security decisions based on information shared between the private sector and the federal government.

A necessary corollary to excluding suspect foreign manufacturers from tainting supply chain security for 5G is ensuring that there is a robust and reliable stable of American manufacturers. The *5G Implementation Plan Notice* raises the question of “How should the U.S. Government best promote 5G vendor diversity and foster market competition?”²¹ ADTRAN believes there are several steps the Administration can take itself, or encourage independent agencies and Congress to adopt. As an initial matter, ADTRAN suggests that government funding of telecommunications equipment, through direct purchases or grant/subsidy programs, utilize “Buy American” provisions that maximize American-manufactured equipment. In

²⁰ Pub. L. No. 115-232, 132 Stat. 1636, 1917 (2018).

²¹ *5G Implementation Plan Notice*, 85 Fed Reg 32017.

addition, those “Buy American” provisions should be consistent across agencies, so that manufacturers do not have to deal with a crazy quilt of varying “Buy American” regulations. Moreover, the “Buy American” regulations should recognize that modern-day supply chain logistics dictate that an American telecommunications equipment manufacturer may acquire some components from manufacturers in other countries, but so long as the majority of the value of the product is developed and manufactured in this country (including R&D, software and firmware), then such products should be uniformly considered as manufactured here.²²

In addition, the government can help ensure a healthy domestic manufacturing base by removing unnecessary roadblocks that currently hinder American manufacturers’ efforts to compete more effectively with foreign manufacturers in international markets. ADTRAN appreciates the need for export controls to ensure that sensitive technology does not get into the wrong hands. But, ADTRAN urges the Administration to minimize the delays and paperwork created by the export control regulations.

ADTRAN also believes that in order for American manufacturers to compete on a level playing field in markets outside the United States, the federal government must ensure that robust export loan programs must be available to American companies. And those export loan programs need to be without bureaucratic delays and unnecessary paperwork. According to reports, the Chinese government has made available over \$25 billion in export loan programs for Huawei alone, along with other tax incentive programs that have supported its global

²² E.g., *U.S. Government Procurement; Country of Origin; Ethernet Switches, Routers and Network Cards; Substantial Transformation*, 84 Fed Reg 1775 (February 5, 2019), available at <https://www.federalregister.gov/documents/2019/02/05/2019-01115/notice-of-issuance-of-final-determination-concerning-certain-ethernet-switches-routers-and-network>.

expansion.²³ These Chinese subsidy programs have allowed Huawei to underprice American manufacturers competing for sales in foreign countries. Finally, ADTRAN urges the government to continue to fight IP theft of American manufacturers in order to maintain a robust American manufacturing base for telecommunications equipment manufacturers. Maintaining a diverse and robust base of American telecommunications equipment manufacturers is critical for ensuring supply chain security.

Taken together, ADTRAN believes that these various steps to foster the deployment of fiber optic networks that can support 5G backhaul and to bolster the United States telecommunications equipment manufacturing base will help our country lead the world in 5G technologies, and thereby bolster our National Security and Economic Security.

Respectfully submitted,

ADTRAN, Inc.

By: _____/s/
Stephen L. Goodman
Stephen L. Goodman, PLLC
532 North Pitt Street
Alexandria, VA 22314
(202) 607-6756
stephenlgoodman@aol.com
Counsel for ADTRAN, Inc.

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²³ E.g., <https://www.lightreading.com/asia-pacific/no-one-wants-to-talk-about-huaweis-state-subsidies/d/d-id/756697>.