

# **U.S. DEPARTMENT OF COMMERCE**

## **National Telecommunications and Information Administration**

FY 2020 Budget as Presented to Congress



March 2019

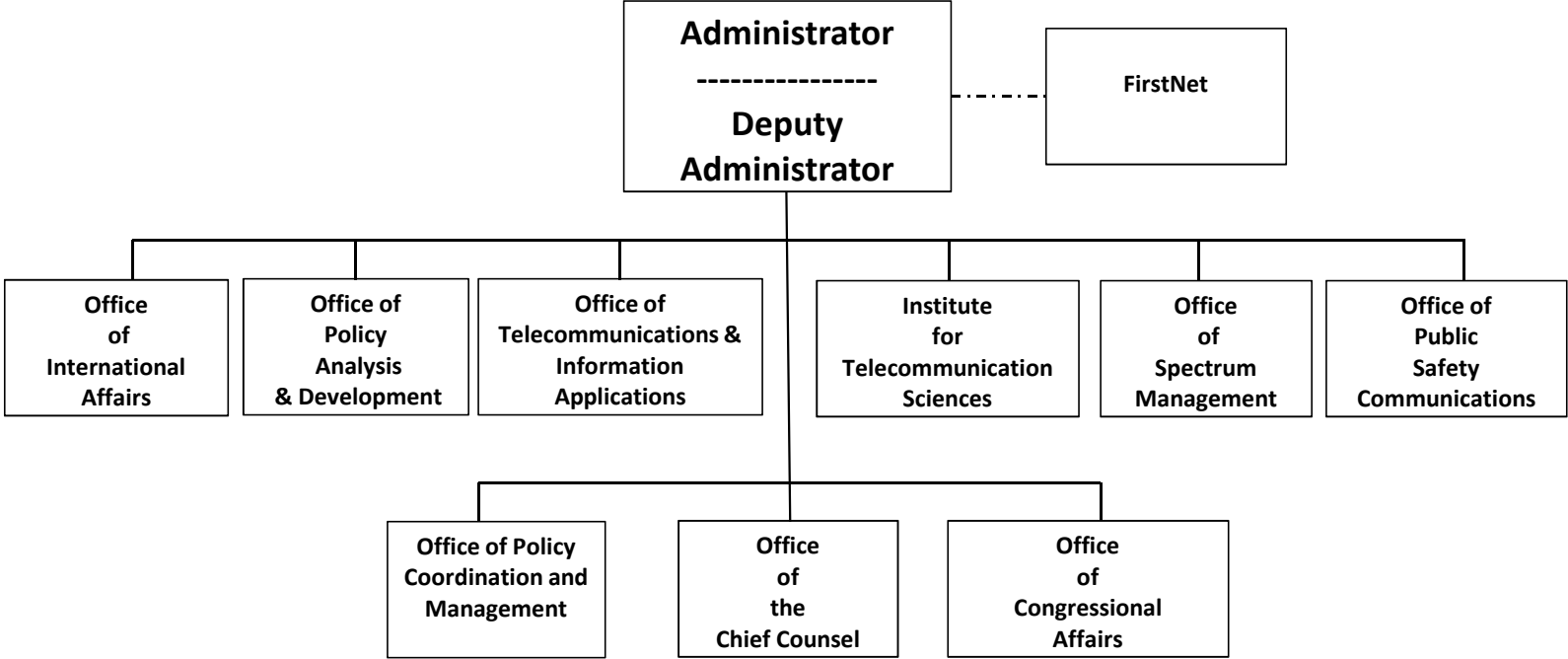


**DEPARTMENT OF COMMERCE**  
**NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION**  
**Budget Estimates, Fiscal Year 2020**  
**Congressional Submission**  
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Department of Commerce  
National Telecommunications and Information Administration



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**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Budget Estimate, Fiscal Year 2020**  
**Executive Summary**

The National Telecommunications and Information Administration's (NTIA) FY 2020 Budget Request totals \$42.44 million and 153 positions. The budget request supports the critical role advising the President on communications and information policy issues. NTIA's programs and policymaking focus on expanding the availability of spectrum for all users, managing core spectrum programs effectively and efficiently, and identifying innovative approaches to increase spectrum access and sharing opportunities. This Budget also provides the resources to ensure that the Internet remains an engine for continued economic growth, which promotes a 21<sup>st</sup> century Internet economy in rural communities, and expands broadband Internet access and adoption in America.

**Domestic and International Policies.** NTIA's policy program funding in FY 2020 totals \$10.42 million and 39 positions. NTIA's domestic and international policies work to preserve the Internet's openness and its cultural and economic potentials while advancing key U.S. interests. As the President's advisor on information and communications policy, NTIA is uniquely situated to provide a critical interface between the private sector and government decision makers to ensure policies maximize national security objectives and resources in order to develop and drive adoption of market-based, risk-based cybersecurity guidelines to improve the private sector's cybersecurity resilience while advancing the policy goals of the United States. In FY 2020, NTIA will lead the efforts to oversee, mitigate, and manage supply chain risks to our nation's telecommunications infrastructure. NTIA will drive and support the nation's efforts to promote and protect our economic and national security in the 5G environment.

NTIA coordinates Executive Branch communications policy and represents the Administration's policy to independent agencies such as the FCC and the Federal Trade Commission. NTIA policy must be positioned to meet the growing complexity of the Internet environment, as the world becomes more interconnected via rapid growth of the Internet, the globalization of information technology services and equipment, and as governance of the Internet becomes an increasingly geopolitical issue. Utilizing the multistakeholder process to reach general consensus, NTIA will be central to the Executive Branch's involvement in the Internet Governance Forum (IGF), and support mutual legal assistance treaty modernization efforts with key industries in the U.S.

**Spectrum Management.** NTIA's spectrum management program direct funding for FY 2020 totals \$7.96 million and 39 positions. The agency promotes the most efficient use of the limited spectrum resources across the Federal Government. With FY 2020 resources, NTIA will support the commercial sector's development of next generation wireless services by recommending reallocation of spectrum for commercial use and by promoting sharing between commercial and government users. Working with the Federal Communications Commission (FCC), NTIA coordinates international and domestic spectrum access requirements, identifies and reallocates spectrum bands for commercial use, updates spectrum policies, and develops long-range spectrum management plans. NTIA collaborates with the State Department to advance U.S. interests and positions related to international spectrum issues, conferences, and negotiations.

**Advanced Communications Research.** NTIA's advanced communications research program direct funding for FY 2020 totals \$8.18 million and 45 positions. Communications research will keep identifying innovative approaches to increase spectrum access and sharing opportunities. This FY 2020 request will be used to both sustain and improve resources for NTIA's Institute for Telecommunication Sciences (ITS), which provides scientific research, development, and testing on spectrum capability, spectrum sharing approaches, and spectrum-enabled technology for both Federal agencies and private industry partners.<sup>1</sup> NTIA is expanding collaborative research and development in advanced communications technologies to support commercial and government applications to enhance wireless efficiencies.

**BroadbandUSA.** NTIA's broadband program funding in FY 2020 totals \$15.61 million and 29 positions. Broadband has become integral in fueling a dynamic economy, driving commerce, enriching education, enhancing healthcare, and improving public safety. NTIA's FY 2020 budget continues to address demand by state, local, and tribal governments for technical assistance and hands-on guidance in bringing broadband to American communities across the nation. NTIA will continue to respond to the demand for technical services and broadband leadership efforts by partnering with unserved and underserved communities, so they can attract new business investments and spur economic growth. NTIA's work will improve the nation's understanding of broadband availability, particularly in rural areas, where previous data sources have not accurately reflected broadband availability. This critical work will help inform policymakers on where to more efficiently invest federal dollars on broadband infrastructure.

**Public Safety Communications (New Discretionary proposal).** NTIA will establish a new program activity to fulfill its statutory responsibilities for public safety communications. The program funding in FY 2020 totals \$0.27 million and 1 position. As communication technologies continue to evolve, our nation's 911 call centers are unable to keep pace with the technological advancements, threatening the integrity of our nation's emergency communications systems. NTIA's program will provide the technical expertise and coordination support necessary to enable our nation's 911 systems to upgrade from analog to Internet Protocol (IP)-based systems, commonly referred to as Next Generation 911 (NG911). With this new program, NTIA will provide the necessary leadership and technical support for the NG911 efforts.

**Spectrum IT Modernization (New Mandatory proposal).** To promote efficient use of the electromagnetic spectrum, the Budget proposed to authorize NTIA to negotiate leases with private entities that would expand their access to federal spectrum. This authority will complement ongoing efforts to make Federal spectrum available for commercial uses through auctions conducted by the FCC. Of the anticipated receipts from this proposal, the Budget proposes to provide up to \$50 million to NTIA, to remain available until expenses, to support the agency's efforts in the modernization of its spectrum IT systems, resulting in advanced automation tools; improved data accuracy and transparency; and spectrum efficiency evaluation tools. Improved analytical precision will enable NTIA and Federal agencies to, among other things, identify new spectrum sharing and leasing arrangements that are more attractive and valuable to commercial entities.

<sup>1</sup> Federal and Industry Partners - <https://www.its.bldrdoc.gov/publications/3181.aspx>



**Department of Commerce**  
**National Telecommunications and Information Administration**  
**FY 2020 PROGRAM INCREASES / DECREASES / TERMINATIONS**

(Dollar amounts in thousands)

(Largest to Smallest)

Increases

Page No. in CJ	Appropriation	Budget Program	Activity/Subactivity	Positions	Budget Authority
NTIA - 15	Salaries & Expenses	Salaries & Expenses	Domestic and International Policies	6	2,000
NTIA - 38	Salaries & Expenses	Salaries & Expenses	Broadband Programs	3	0
NTIA - 46	Salaries & Expenses	Salaries & Expenses	Public Safety Communications	1	270
Subtotal, Increases				10	2,270

Decreases

Page No. in CJ	Appropriation	Budget Program	Activity/Subactivity	Positions	Budget Authority
NTIA - 23	Salaries & Expenses	Salaries & Expenses	Spectrum Management	0	(558)
NTIA - 38	Salaries & Expenses	Salaries & Expenses	Broadband Program	0	(270)
Subtotal, Decreases				0	(828)

Terminations

Page No. in CJ	Appropriation	Budget Program	Title of Termination	Positions	Budget Authority
-		No Program Changes Requested		0	0
Subtotal, Terminations				0	0

**Department of Commerce  
National Telecommunications and Information Administration  
FY 2020 TRANSFER SUMMARY TABLE**

(Dollar amounts in thousands)  
(Grouped by Title of Transfer, Largest to Smallest)

				<u>Increases</u>			
Page No. in CJ	Appropriation	Budget Program	Title of Transfer	Positions	Budget Authority		
NTIA - 54	Salaries & Expenses	Salaries & Expenses	Spectrum IT Modernization (To Salaries & Expenses)	0	50,000		
NTIA - 54	Salaries & Expenses	Salaries & Expenses	Spectrum IT Modernization (From Spectrum Relocation Fund)	0	(50,000)		
Total, Transfers				0	0		

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses - Discretionary BA**  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
President's Budget, 2019	143	143	39,500	49,079
Less: Obligations from prior years				(9,579)
2020 Adjustments to base:			1,499	1,499
2020 Base	143	143	40,999	40,999
plus: 2020 Program changes	10	7	1,442	1,442
2020 Estimate	153	150	42,441	42,441

Page No. in CJ	Comparison by activity/subactivity: with totals by activity	2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base		
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
NTIA - 15	Domestic and International Policies	Pos./BA FTE/Obl.	33 31	8,200 8,550	33 33	8,200 8,887	33 33	8,423 8,423	39 37	10,423 10,423	6 4	2,000 2,000
NTIA - 23	Spectrum Management	Pos./BA FTE/Obl.	39 23	7,700 7,702	39 39	7,700 7,700	39 39	8,520 8,520	39 39	7,962 7,962	0 0	(558) (558)
NTIA - 31	Advanced Communications Research	Pos./BA FTE/Obl.	45 43	7,900 8,973	45 45	7,900 8,629	45 45	8,180 8,180	45 45	8,180 8,180	0 0	0 0
NTIA - 38	Broadband Programs	Pos./BA FTE/Obl.	26 27	15,700 7,541	26 26	15,700 23,863	26 26	15,876 15,876	29 28	15,606 15,606	3 2	(270) (270)
NTIA - 46	Public Safety Communications	Pos./BA FTE/Obl.	0 0	0 0	0 0	0 0	0 0	0 0	1 1	270 270	1 1	270 270
	<b>Total</b>	Pos./BA FTE/Obl.	143 124	39,500 32,766	143 143	39,500 49,079	143 143	40,999 40,999	153 150	42,441 42,441	10 7	1,442 1,442
	Adjustments for:											
	Recoveries			(256)								
	Unobligated balance, start of year			(2,645)	(9,579)							
	Unobligated balance transferred											
	Unobligated balance, end of year			9,579								
	Unobligated balance expiring			56								
	Financing from transfers:											
	Transfer from other accounts (-)								0			0
	Transfer to other accounts (+)											
	Appropriation		39,500	39,500	40,999	40,999	42,441	42,441			1,442	

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**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses - Mandatory BA**  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
President's Budget, 2019	0	0	0	0
Less: Obligations from prior years				0
2020 Adjustments to base:			0	0
2020 Base	0	0	0	0
plus: 2020 Program changes	0	0	50,000	50,000
2020 Estimate	0	0	50,000	50,000

		2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base					
<b>Comparison by activity/subactivity: with totals by activity</b>		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Page No. in CJ	NTIA - 54	0	0	0	0	0	50,000	0	50,000		
	Spectrum IT Modernization	0	0	0	0	0	50,000	0	50,000		
	Total	0	0	0	0	0	50,000	0	50,000		
	Adjustments for:										
	Recoveries										
	Unobligated balance, start of year										
	Unobligated balance transferred										
	Unobligated balance, end of year										
	Unobligated balance expiring										
	Financing from transfers:										
	Transfer from other accounts (-)						(50,000)		(50,000)		
	Transfer to other accounts (+)										
	Appropriation	0	0	0	0	0	0	0	0	0	0

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**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**SUMMARY OF REIMBURSABLE OBLIGATIONS**  
(Dollar amounts in thousands)

<b>Comparison by activity:</b>			2018		2019		2020		2020		Increases/Decreases		
			Actual		Enacted		Base		Estimate		from 2020 Base		
			Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
<u>Reimbursable Projects</u>													
Advanced Communications Research	Pos./BA		45	0	45	0	50	0	50	0	0	0	
	FTE/Obl.		38	12,024	45	23,037	50	15,000	50	15,000	0	0	
Other	Pos./BA		2	0	2	0	2	0	2	0	0	0	
	FTE/Obl.		0	123	2	375	2	375	2	375	0	0	
<b>Total, Reimbursable Projects</b>			Pos./BA	47	0	47	0	52	0	52	0	0	
			FTE/Obl.	38	12,147	47	23,412	52	15,375	52	15,375	0	0
<u>Spectrum Fees</u>													
Spectrum Management	Pos./BA		112	0	112	0	107	0	107	0	0	0	
	FTE/Obl.		95	34,801	112	44,015	107	40,679	107	40,679	0	0	
<b>Total, Spectrum Fees</b>			Pos./BA	112	0	112	0	107	0	107	0	0	
			FTE/Obl.	95	34,801	112	44,015	107	40,679	107	40,679	0	0
<b>Total, Reimbursable Obligations</b>			Pos./BA	159	0	159	0	159	0	159	0	0	
			FTE/Obl.	133	46,948	159	67,427	159	56,054	159	56,054	0	0

<sup>2</sup> NTIA is not changing the total number of reimbursable positions or FTEs, but given the increase in anticipated reimbursable work at the Advanced Communications Research, NTIA is right sizing the number of positions allocated between these two reimbursable programs.

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**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**SUMMARY OF FINANCING**  
(Dollar amounts in thousands)

	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
Total Obligations	79,714	116,506	97,053	148,495	51,442
Offsetting collections from:					
Federal funds	(46,448)	(66,927)	(56,054)	(56,054)	0
Non-Federal sources	(500)	(500)	0	0	0
Recoveries	(256)	0	0	0	0
Unobligated balance, start of year	(2,645)	(9,579)	0	(2,000)	0
Unobligated balance transferred	0	0	0	0	0
Unobligated balance, end of year	9,579	2,000	0	0	0
Unobligated balance expiring	56	0	0	0	0
Budget Authority	39,500	39,500	40,999	92,441	51,442
Financing:					
Transfer from other accounts (-)	0	0	0	(50,000)	(50,000)
Transfer to other accounts (+)	0	0	0	0	0
Appropriation	39,500	39,500	40,999	42,441	1,442

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**ADJUSTMENTS TO BASE**  
(Dollar amounts in thousands)

	<u>FTE</u>	<u>Amount</u>
Transfers of Estimates	0	0
Adjustment	0	0
Financing		0
<b>Other Changes:</b>		
2019 Pay raise		272
2020 Pay raise	0	0
Full-year cost in 2020 of positions financed for part-year in 2019	0	0
Change in compensable days		70
Civil Service Retirement System (CSRS)		(9)
Federal Employees Retirement System (FERS)		345
Thrift Savings Plan		3
Federal Insurance Contribution Act (FICA) - OASDI		21
Health insurance		13
Employees Compensation Fund		(1)
Travel:		
Mileage and other		9
Per diem		15
Rental payments to GSA (and Fed Protective Service)		115
Postage		2
Printing and reproduction		0
NARA Storage & Maintenance		10
Other services:		
Working Capital Fund		573
Grants		0
Other (utilities)		61
Subtotal, other changes	0	1,499
<b>Total, adjustments to base</b>	<b>0</b>	<b>1,499</b>

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Domestic and International Policies

Line Item	2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increase from 2020 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Domestic and International Policies	Pos./BA	33	8,200	33	8,200	33	8,423	39	10,423	6	2,000
	FTE/Obl	31	8,550	33	8,887	33	8,423	37	10,423	4	2,000
<b>Total</b>	Pos./BA	33	8,200	33	8,200	33	8,423	39	10,423	6	2,000
	FTE/Obl	31	8,550	33	8,887	33	8,423	37	10,423	4	2,000

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

**Activity:** Domestic and International Policies

Goal Statement

The goal of the Domestic and International Policies program is to strengthen U.S. commerce by advancing policies that protect and promote the Internet and digital commerce, foster innovation, create economic value, and enhance security both domestically and internationally.

Base Program

NTIA's strategic focus is to protect and promote an open, interoperable Internet; advocate for the free flow of information, goods, and services; promote policies that maximize national security objectives and lessen collateral consequences; reduce regulatory barriers; and strengthen the global marketplace for American digital products and services. The Internet is the greatest engine of communications and commerce the world as ever known and is vital to U.S. economic leadership, innovation, and prosperity. Through its programs, NTIA improves the domestic and international policy landscape for the Internet and digital economy, which accounts for \$1.2 trillion, or 6.5%, of the U.S. gross domestic product, and nearly six million jobs.<sup>3</sup> On behalf of the Administration, NTIA carries out its diverse programs and services, using and promoting multistakeholder approaches to lead U.S. policymakers, domestic industry, foreign governments, and international organizations in addressing Internet and digital economy policymaking, standards development, and governance issues. By advocating for market-driven policies and multistakeholder initiatives, NTIA supports online commerce, greater employment opportunities, and better quality of life for all Americans.

Statement of Operating Objectives

As the President's principal advisor on telecommunications and information policy issues, NTIA's FY 2020 operating objectives are guided by the Administration's National Security Strategy and the four vital, national interests of: 1) protecting the American people, the Homeland, and the American way of life; 2) promoting American prosperity; 3) preserving peace through strength; and 4) advancing American influence. To accomplish this, in FY 2020, NTIA will support Presidential initiatives, the White House's National Security Strategy, and the Department of Commerce's Internet and digital commerce programs as they relate to the concerns of the

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<sup>3</sup> Bureau of Economic Analysis – <https://www.bea.gov/digital-economy>

U.S. business community, the promotion of market-based solutions, and the preservation of U.S. technology innovation. NTIA's objective is to establish domestic and international policy leadership on issues concerning consumer data privacy, supply chain risk management, cybersecurity, the Internet of Things (IoT), and artificial intelligence (AI).

Domestically and internationally, U.S. industry and consumers rely significantly on the open Internet. Thus, in FY 2020, NTIA will lead the Department of Commerce's bureaus on Internet and digital commerce strategies by conducting research and providing analytical support. NTIA will continue to lead in developing codes of conduct on critical consumer data and privacy issues, with a goal of achieving 75% agreement among key stakeholders representing government, the private sector, and civil society. Further, NTIA is the Executive Branch expert on issues relating to the Domain Name System (DNS) and will support a multi-stakeholder approach to the coordination of the DNS to ensure the long-term viability of the Internet as a force for innovation and economic growth, including by providing a framework for the administration of the .edu and .us domains.

Because American businesses and governmental entities continue to be the target of cyber-attacks, in FY 2020, NTIA will convene industry to seek market-based, innovative solutions to cybersecurity challenges that require cross-sector collaboration. The goal of these activities is to improve industry-led adoption and awareness of cyber policy best practices and to examine where market incentives are imbalanced or insufficient. NTIA will accomplish the following cyber policy outcomes: (1) lead the federal government's coordination and implementation of the botnet actions, as described in the 2018 Botnet Report; (2) lead the recommendations on the Vulnerabilities Equities Process (VEP) on whether to disclose cybersecurity vulnerability information to the vendor so they will patch the vulnerability or temporarily restrict knowledge of the vulnerability so that it can be used for national security or law enforcement purposes; and (3) advise the Administration on security threats to the telecommunications infrastructure from foreign license applicants and coordinate processes related to supply chain risk management of the U.S. digital infrastructure.

In FY 2020, NTIA will represent the Administration's policies to independent agencies, including the Federal Communications Commission (FCC) and the Federal Trade Commission (FTC) with the goal of advocating for market-based, consensus-driven policies versus overly burdensome regulation. For the education and promotion of the importance of a free and open Internet, NTIA will provide training in coordination with foreign assistance efforts, such as the Telecommunications Leadership Program and the U.S. Telecommunications Training Institute.

#### Explanation and Justification

NTIA is the U.S. government leader in the strategic development, promotion, and execution of policies to support the domestic and global Internet and broader digital commerce. NTIA's Internet policy framework contributes to the efficient and equitable operation of the digital economy on a global scale and provides infrastructure for innovation and entrepreneurship to enhance American competitiveness. NTIA's domestic policy activities require it to maintain expertise and leadership on telecommunications and information policy issues and to identify the most important for Executive Branch attention. NTIA plays a critical role in representing the United States in multiple treaty-based and technical standards setting fora in order to provide leadership and advance U.S.

national economic and technology policies. Specifically, NTIA's policy activities include:

*Executive Branch Support.* In its role as advisor to the President on telecommunications and Internet issues, NTIA coordinates Executive Branch communications policy, represents the Administration's policy to independent agencies, including the FCC and the FTC, and provides technical and policy expertise on Internet infrastructure to the Executive Branch and other stakeholders. NTIA coordinates United States government (USG) domestic and international policies and positions that impact the Internet and other communications. NTIA plays an integral role in supporting the interagency legislative coordination and clearance process by reviewing Internet and digital commerce policies.

*Law Enforcement and National Security.* NTIA provides advice focusing on innovation and economic growth in policy discussions related to the protection of Americans from cyber threats. As such, in FY 2020, NTIA will take action to continue to participate in interagency discussions on topics ranging from countering online violence and radical extremism to proposals to authorize companies to "hack back" against the perpetrators of cyber-attacks. NTIA is the lead for the Department in representing its equities in interagency deliberations related to cyber operations and policy, and thus continued program support will enable it to continue to convene stakeholders from across the ecosystem to address cybersecurity challenges in a proactive, collaborative manner, including in response to new and emerging risks posed by emerging technologies.

*U.S. Telecommunications Infrastructure.* The security and resilience of the telecommunications supply chain is a priority focus for the Administration. The advancement of the Internet of Things has increased the nation's reliance on the communications infrastructure to support a vast array of daily functions. NTIA will drive and support the Administration's efforts to promote and protect our economic and national security in the fast approaching 5G environment. The agency will accomplish this through a new programmatic function to assess, mitigate and manage supply chain risks to our national telecommunications infrastructure.

*Digital Commerce Leadership.* NTIA will support the Department's leadership team by providing analytical and technical expertise on cross-cutting issues and convening senior leaders for decision making and direction on Internet policy economic competitiveness and digital commerce issues. NTIA will continue to serve as the executive secretariat for the Department's Internet Policy Task Force (IPTF), a Cross-Department group that coordinates the efforts in communications and information policy, economic analysis, intellectual property, trade, and technical standards to address the most pressing issues in the digital commerce and Internet economy.

*Multistakeholder Engagements.* To promote American prosperity, NTIA develops Internet policies designed to protect and expand Internet use and encourage further innovation and economic growth. Through its multistakeholder engagements, NTIA strengthens and expands Internet policy development to include economic and business/industry concerns and impacts.

*International Representation.* NTIA plays a critical role in developing strategy and representing the USG in international negotiations, standard setting, and diplomacy efforts. We advocate for bilateral, multistakeholder, multilateral and regional

adoption of policies that encourage an open Internet; promote market liberalization; and stimulate democratization, economic development, and promotion of communications technology interests. NTIA participates in a wide variety of international forums (some treaty-based, others producing policy guidelines and research) to ensure that they maintain a central focus on innovation and economic growth and preserve the multistakeholder approach to Internet policymaking.

*Trade Negotiations.* NTIA provides policy and technical support to the Department, United States Trade Representative (USTR), and other federal agencies to ensure that any U.S. free trade agreement[s], existing or under development, supports the Administration's position regarding communications, digital commerce services, and the free flow of information across borders. NTIA's continued participation in these efforts will contribute to preserving and/or creating jobs for Americans and rejuvenating the domestic economy. NTIA will continue to assist in trade dispute resolution processes, in coordination with the Department of Commerce's International Trade Administration and the Commercial Service, providing technological and policy advice to ascertain the merits of a given dispute, and possible remedies. NTIA will work through bilateral, regional, and international fora, such as the ITU, OECD, APEC, and CITELE to promote the rollout and uptake of broadband and advanced mobile infrastructure, services, and equipment. In particular, NTIA will increase its participation in Department of Commerce-run bilateral commercial dialogues to improve understanding with counterpart trade and economics (not just communications) ministries.

*Inter-Agency Work.* NTIA will continue to work with other agencies to develop implementation strategies for improved and continuous telecommunications and information development in key countries and regions (e.g., Africa, Central and Latin America, and the Middle East), through such foreign assistance efforts as the Telecommunications Leadership Program, and the U.S. Telecommunications Training Institute. We will work with the Office of the United States Trade Representative (USTR), other Commerce agencies, the State Department, and other federal agencies on policy approaches to telecommunications and information standards developments worldwide.

*Policy and Trends Analysis.* In order to ensure America's leadership in research, technology, invention, and innovation, NTIA identifies new research resources from the private sector, governmental organization and academia and develops new products to keep the Executive Branch, the Department, Congress, and other stakeholders apprised of fast developing Internet policy issues and trends. In FY 2020, NTIA will convene a series of open, public meetings to encourage private-sector stakeholders to develop codes of conduct and best practices related to emerging technologies, including issues impacting consumer data privacy and intellectual property. In addition, NTIA will review online copyright protection provisions and develop positions on potential changes to U.S. copyright law in partnership with the U.S. Patent and Trademark Office.

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM CHANGES FOR 2020**  
(Dollar amounts in thousands)

	2020 Base		2020 Estimate		Decrease from 2020 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Domestic and International Policies	Pos./BA	33	8,423	39	10,423	6	2,000
	FTE/Obl.	33	8,423	37	10,423	4	2,000

The FY 2020 budget proposed an increase of \$2,000,000 and 6 positions in the Domestic and International Policies. This increase will enable the agency to fund the growing efforts to oversee, mitigate, and manage supply chain risks to our nation’s telecommunications infrastructure. The advancement of the Internet of Things has increased the reliance on the communications infrastructure to support a vast array of daily functions. NTIA will drive and support the nation’s efforts to promote and protect our economic and national security in the fast approaching 5G environment.

Performance Measures:	2020	2021	2022	2023	2024
Launch best practices processes with international coordination	3	3	4	4	5
Build and roll-out processes to quickly collect and share information from industry and civil society on cyberattacks, threats, and national response activities	2	2	3	3	4



**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
PROGRAM CHANGE PERSONNEL DETAIL**

**Activity:** Domestic and International Policies  
**Program Change:** U.S. Telecommunications Infrastructure

<u>Title</u>	<u>Grade</u>	<u>Number</u>	<u>Annual Salary</u>	<u>Total Salaries</u>
Telecommunications Policy Specialist	15	6	152,760	916,560
Total		<u>6</u>		916,560
Less lapse	25.00%	<u>(2)</u>		<u>(229,140)</u>
Total full-time permanent (FTE)				687,420
2020 Pay Adjustment (0%)				<u>0</u>
<b>Total</b>				<b>687,420</b>

**Personnel Data Summary**

Full-time Equivalent Employment				
Full-time permanent		4		
Other than full-time permanent		<u>0</u>		
<b>Total</b>		<b>4</b>		
Authorized Positions:				
Full-time permanent		6		
Other than full-time permanent		<u>0</u>		
<b>Total</b>		<b>6</b>		

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
(Direct Obligations amounts in thousands)

Activity: Domestic and International Policies

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	4,337	3,803	3,869	4,556	687
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	154	53	53	53	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	4,491	3,856	3,922	4,609	687
12.1 Civilian personnel benefits	1,354	1,093	1,183	1,396	213
13 Benefits for former personnel					
21 Travel and transportation of persons	291	330	335	554	219
22 Transportation of things	1	1	1	6	5
23 Rent, communications and utilities	0	0	0	0	0
23.1 Rental payments to GSA	460	375	414	471	57
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	124	96	96	102	6
24 Printing and reproduction	11	3	3	11	8
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	140	1,108	421	856	435
25.3 Purchase of goods and services from Gov't accounts	1,354	1,772	1,795	2,100	305
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	6	2	2	2	0
25.8 Subsistence and support of persons					
26 Supplies and materials	22	38	38	62	24
31 Equipment	161	78	78	119	41
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	135	135	135	135	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
99.9 <b>Total Obligations</b>	8,550	8,887	8,423	10,423	2,000

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Spectrum Management

Line Item		2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Decrease from 2020 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Spectrum Management	Pos./BA	39	7,700	39	7,700	39	8,520	39	7,962	0	(558)
	FTE/Obl	23	7,702	39	7,700	39	8,520	39	7,962	0	(558)
<b>Total</b>	Pos./BA	39	7,700	39	7,700	39	8,520	39	7,962	0	(558)
	FTE/Obl	23	7,702	39	7,700	39	8,520	39	7,962	0	(558)

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Spectrum Management

		2018		2019		2020		2020		Increases/Decreases	
		Actual		Enacted		Base		Estimate		from 2020 Base	
<b>Comparison by activity</b>		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Spectrum Management	Pos./BA	112	0	112	0	107	0	107	0	0	0
	FTE/Obl	95	34,801	112	44,015	107	40,679	107	40,679	0	0
<b>Total</b>	Pos./BA	112	0	112	0	107	0	107	0	0	0
	FTE/Obl	95	34,801	112	44,015	107	40,679	107	40,679	0	0

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

**Activity:** Spectrum Management

Goal Statement

The Spectrum Management program ensures that electromagnetic spectrum is used efficiently and effectively to enable the federal agencies to perform their missions, while supporting the commercial sector's development of next generation wireless services, such as 5G technologies, and encouraging American leadership in space commerce.

Base Program

NTIA carries out the President's authority to assign spectrum resources to radio stations belonging to and operated by the United States.<sup>4</sup> The federal agencies rely on the radio spectrum to execute their congressionally mandated missions, ranging from national defense, homeland security and law enforcement to ensuring aeronautical and marine safety, conducting space travel and scientific research, and accurately predicting the weather. The agencies could not provide these vital government services without radio frequency assignments, which NTIA is responsible for managing. In addition to direct funding, NTIA charges agencies fees for costs incurred in conducting spectrum management, analysis, operations, and related services. NTIA also works closely with the Federal Communications Commission (FCC) to coordinate spectrum use, identify and reallocate spectrum bands to accommodate commercial wireless services, update spectrum policies, and develop long-range spectrum management plans. Making more spectrum available for licensed commercial use creates billions of dollars in spectrum auction proceeds for the U.S. Treasury, accelerating access for multitudes of unlicensed devices increases consumer welfare, and advancing next-generation technologies drives U.S. leadership and economic growth. To execute these responsibilities and minimize costs, NTIA depends on significant collaboration with interested federal agencies and key private-sector stakeholders through the Policy and Plans Steering Group, Interdepartment Radio Advisory Committee (IRAC)<sup>5</sup> and Commerce Spectrum Management Advisory Committee (CSMAC).<sup>6</sup>

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<sup>4</sup> NTIA Organization Act, as amended (47 USC 901 et. seq.)

<sup>5</sup> IRAC information - <https://www.ntia.doc.gov/page/interdepartment-radio-advisory-committee-irac>

<sup>6</sup> CSMAC information - <https://www.ntia.doc.gov/category/csmac>

### Statement of Operating Objectives

In FY 2020, NTIA will perform work in the following four key areas: 1) conduct mission essential functions to manage federal spectrum resources; 2) support the growing demand for spectrum in the commercial wireless industry; 3) lead the execution of the National Spectrum Strategy; and 4) coordinate critical international spectrum issues that impact U.S. businesses, consumers, and government agencies.

To accomplish its essential functions, NTIA will ensure that federal agencies have sufficient access to spectrum resources needed to conduct their current and future mission-critical activities. NTIA will achieve these three key outcomes: 1) certify approximately 300 spectrum-dependent systems required to support national security, emergency communications, and important federal scientific endeavors; 2) process over 100,000 radio frequency assignments to authorize federal wireless systems to operate when and where they are needed; and 3) respond during disasters to ensure continuity of critical state, territorial, local, and federal spectrum operations.

In support of growing demand for commercial wireless spectrum, NTIA will lead the efforts to find additional spectrum to support the deployment of innovative technologies that contribute billions of dollars towards America's economic prosperity and global technology leadership. Driven by the mandates in the *Spectrum Pipeline Act of 2015* and the *MOBILE NOW Act of 2018*, NTIA will: 1) complete the analyses required to determine the feasibility for accommodating new commercial wireless services in the 3100-3550 MHz band; 2) take significant steps to identify and make available an additional 255 megahertz for licensed services and unlicensed devices; 3) complete the study and generate a plan to incentivize federal agencies to evaluate opportunities to relinquish or share spectrum with commercial entities on a leased or more permanent basis; and 4) evaluate federal agency research and development plans for advancing spectrum efficiency.

NTIA will also: 1) execute the implementation plan for the National Spectrum Strategy issued in FY 2019 per the October 2018 Presidential Memorandum on "Developing a Sustainable Spectrum Strategy for America's Future"; 2) characterize the current and future spectrum usage of the federal agencies; 3) develop spectrum efficiency performance metrics for federal wireless systems to be used in the agencies' procurement decisions; and 4) facilitate innovative spectrum access techniques, including advanced sharing technologies and spectrum leasing options that enable smarter and more efficient ways to leverage the nation's valuable and finite spectrum resources.

Internationally, NTIA will lead the federal agencies at the International Telecommunication Union's World Radiocommunication Conference (WRC) to be held in the first quarter of FY 2020, the treaty-status forum that will establish radiocommunication regulations for global and regional operations, in space and on Earth. After years of collaborative preparation, NTIA will adeptly advocate for U.S. positions at the WRC that establish fair and productive spectrum access requirements for the benefit

of U.S. business, consumer, and government interests globally. Based on the outcome of the WRC, NTIA will devote the necessary resources to implement the Final Acts domestically and commence preparations to advance U.S. policy positions slated for the next WRC agenda, scheduled to be held in 2023. In other international efforts, NTIA will coordinate critical spectrum issues along the Canadian and Mexican borders, with the goal of preventing harmful interference under applicable treaties, agreements, and arrangements. NTIA will also coordinate hundreds of satellite actions with foreign governments and domestic operators to bring these systems into use and to improve the global competitiveness of the U.S. space sector.

#### Explanation and Justification

There is tremendous growth in demand for wireless spectrum by consumers, businesses, and government agencies. The federal agencies could not provide their vital government services without radio frequency assignments and without NTIA's management of these scarce spectrum resources. At the same time, our nation's economic prosperity depends on innovative technologies and commercial wireless services gaining access to more spectrum. These competing pressures require NTIA to provide a neutral, strategic focus on increasing spectrum efficiency while also maintaining a high level of service in support of national defense, homeland security, and other mandated agency operations. Below outlines the specific activities and associated challenges surrounding NTIA's spectrum management mission.

NTIA's day-to-day spectrum management operations focus on its mission essential function surrounding agency requests for radio frequency assignments and equipment certifications for federal systems including those supporting national security and emergency communications planning and exercises. These assignment and certification activities are largely labor-intensive, manual processing and evaluation tasks that require much better automated capabilities than current, antiquated information technology systems provide. The challenges are to prevent unmanageable processing backlogs and avoid negative impacts on federal agencies' missions when frequency assignments do not appear to be available based on the results of over-conservative assumptions and uninformed predictions. These can be addressed partially by prioritizing certain agency requests over others or using improved analytical precision. With anticipated receipts from leasing access to underutilized frequencies in high-demand locations, NTIA can better support the modernization of its spectrum IT systems, resulting in advanced automation and evaluation tools, improved data accuracy and transparency, and significant improvements in spectrum efficiency. With enhanced tools and analytical precision, NTIA and its federal agency customers can more rapidly identify new spectrum sharing and valuable leasing opportunities while keeping pace with the newest and most efficient technologies required by federal and non-federal spectrum users. As a result, more users can fit into less spectrum and NTIA's day-to-day operational productivity and speed of service increases by more than 50 percent within five years.

NTIA conducts spectrum engineering studies and technical analyses to make informed decisions regarding spectrum certifications, frequency assignments, spectrum sharing, interference resolution, and federal technical standards. The challenge is that current spectrum analysis capabilities are inadequate to ensure efficient and effective use of spectrum needed to accommodate the increasing demand by next generation commercial wireless services and crucial federal

missions. Initiatives to close this gap in NTIA's capabilities will be supplemented by the reinvestment of receipts from spectrum leasing into advanced engineering algorithms and state-of-the-art analysis tools.

NTIA's domestic spectrum policy activities include developing, advocating, and implementing spectrum policies that expand spectrum access and improve efficiency across the Federal Government. This involves responding to proposed spectrum legislation, Congressional inquiries, and dozens of new and ongoing FCC proceedings. NTIA also provides outreach to public and private stakeholders, including spectrum training courses and seminars for U.S. and foreign spectrum managers. To inform policymaking, NTIA will conduct its annual symposium at which a wide range of subject matter experts will discuss innovations, ideas, and issues in federal spectrum policy and management. NTIA will also continue to execute its responsibilities to ensure commercial licensees have timely access to federal spectrum bands auctioned by the FCC and that agencies spend Spectrum Relocation Fund transfers in accordance with their approved transition plans. The challenge is that the data NTIA uses to inform these policy decisions is no longer sufficient to accurately characterize the spectrum needs of the complex, high-tech new systems being deployed.

NTIA's international spectrum policy activities develop positions and promote U.S. interests in international bodies dealing with radio regulations and other spectrum issues. This includes representing federal interests at international forums such as the WRC, regional meetings, and other specialized agencies of the United Nations (*e.g.*, the International Civil Aviation Organization). NTIA is also responsible for leading all coordination and registration for federal satellite systems to provide protection of global satellite services from harmful interference and safeguard orbital slots for U.S. satellite systems. In addition, NTIA coordinates federal spectrum requirements along our national borders. NTIA's efforts on these international matters play a critical role in building confidence worldwide in U.S. spectrum management capabilities to win support for U.S. positions that augment the mission capabilities of Federal entities worldwide and in space, enable groundbreaking wireless and satellite technologies, and improve the global competitiveness of U.S. industries.



**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM CHANGES FOR 2020**  
(Dollar amounts in thousands)

	2020 Base		2020 Estimate		Decreases from 2020 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Spectrum Management	Pos./BA	39	8,520	39	7,962	0	(558)
	FTE/Obl.	39	8,520	39	7,962	0	(558)

\$558,000 is a programmatic reduction to Spectrum Management, to offset annual inflation adjustments of operational costs within NTIA.

	2020	2021	2022	2023	2024
Performance Measures:					
Spectrum Certifications Monthly Backlog (# Records)	27	30	33	35	37
Frequency Assignment Records Backlog (# Days)	4	9	14	19	24
Spectrum Sharing R&D Projects Reduced (# Projects)	6	3	3	3	3
Spectrum bands repurposing feasibility assessment (# Bands)	2	1	1	1	1

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
(Direct Obligations amounts in thousands)

Activity: Spectrum Management

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Decrease from 2020 Base
11.1 Full-time permanent (Compensation)	3,169	2,591	2,680	2,680	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	51	29	29	29	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 <b>Total personnel compensation</b>	3,220	2,620	2,709	2,709	0
12.1 Civilian personnel benefits	1,217	748	854	854	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	21	93	99	99	0
22 Transportation of things	0	5	5	5	0
23 Rent, communications and utilities	0	0	0	0	0
23.1 Rental payments to GSA	390	412	458	458	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	128	18	18	18	0
24 Printing and reproduction	16	15	15	15	0
25 Consulting and other services	0	0	0	0	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	285	1,010	1,010	1,010	0
25.3 Purchase of goods and services from Gov't accounts	2,107	2,477	3,050	2,492	(558)
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	10	0	0	0	0
25.8 Subsistence and support of persons					
26 Supplies and materials	33	47	47	47	0
31 Equipment	274	255	255	255	0
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	1	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
99.9 <b>Total Obligations</b>	7,702	7,700	8,520	7,962	(558)

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Advanced Communications Research

Line Item	2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Advanced Communications Research	Pos./BA	45	7,900	45	7,900	45	8,180	45	8,180	0	0
	FTE/Obl	43	8,973	45	8,629	45	8,180	45	8,180	0	0
<b>Total</b>	Pos./BA	45	7,900	45	7,900	45	8,180	45	8,180	0	0
	FTE/Obl	43	8,973	45	8,629	45	8,180	45	8,180	0	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Advanced Communications Research

	2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
<b>Comparison by activity</b>											
Advanced Communications Research	Pos./BA	45	0	45	0	50	0	50	0	0	0
	FTE/Obl	38	12,024	45	23,037	50	15,000	50	15,000	0	0
<b>Total</b>	Pos./BA	45	0	45	0	50	0	50	0	0	0
	FTE/Obl	38	12,024	45	23,037	50	15,000	50	15,000	0	0

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

**Activity:** Advanced Communications Research

Goal Statement

Through cutting-edge research and development, the Advanced Communications Research program advances the nation's goals to discover technologically advanced solutions to use and share spectrum more efficiently and effectively without harmful interference.

Base Programs

Institute for Telecommunication Sciences (ITS), NTIA's research facility in Boulder, Colorado, is one of the world's leading telecommunications research laboratories. ITS performs advanced communications research to inform spectrum policy and develop capabilities to solve emerging telecommunications issues. ITS also partners with federal agencies, industry, and academia to collaborate on critical research questions and technical telecommunication issues. Through its independent, unbiased technical analyses of radio spectrum, ITS serves as a trusted agent, working to balance the goals of protecting mission critical federal telecommunication systems from harmful interference while promoting commercial industries' ability to innovate and deploy advanced communication technologies. Towards these objectives, ITS researches new approaches to dynamic spectrum sharing, delivering expanded knowledge of the nature and interaction of communications equipment, systems, and services. ITS research provides critical technical input to inform policymakers and promotes the development of advanced telecommunication and information technology. ITS also provide key technical leadership on U.S. spectrum issues in domestic and international telecommunications standards bodies.

Statement of Operating Objectives

As part of ITS's core technical research and engineering activities, ITS has identified three research priority areas in FY 2020 focusing on (1) efficient spectrum access and sharing; (2) research that facilitates deployment of new technology; and (3) modernization and maintenance of research facilities and equipment.<sup>7</sup>

In an increasingly wireless world, research into reliable spectrum access and dynamic spectrum sharing is critically important

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<sup>7</sup> More detailed information on ITS's research can be found on the website at <https://www.its.blrdoc.gov/>

to the nation. NTIA's ITS research portfolio is designed to enable and improve spectrum access and sharing by continuously improving our understanding of radio frequency signals: how they behave in different operational environments; how bandwidth and coverage vary with frequency; how much usage is really occurring at different frequencies; and how different spectrum dependent systems can co-exist near each other. Radio frequency measurements of spectrum occupancy and device emissions will be a major thrust of the research program because they will provide baseline assessments of spectrum usage and sharing feasibility. To this end, real-world neighborhood-scaled spectrum monitoring testbeds will be setup to experiment with basic monitoring and enforcement tools and technology. This research further supports dynamic spectrum sharing by providing both industry and government with key insights into usage patterns, and thereby helps to identify frequencies that are good candidates for sharing.

Research that supports the deployment of new technologies is another major program effort in FY 2020. Research into the Internet of Things will provide insight into wired and wireless infrastructure capacity and limitations as the number and density of wireless devices increases. ITS provides the technical expertise to NTIA for development and negotiation of national and international standards. In particular, NTIA is known for its development of unbiased standards that are fundamental for advancing new technologies in a shared spectrum environment and globally competitive marketplace, which are vital for supporting the continuing evolution of more capable, interoperable, and cost-effective communication services. The ITS quality-of-experience research will provide perception-based tools for the assessment and end-to-end optimization of video and audio communication systems, paving the way for the implementation and standardization of future technologies. Every year, new technologies and algorithms are developed for government and commercial applications, and their effects on end-user experience must be characterized to understand their capabilities and limitations.

Maintaining the ITS research facility in Boulder, Colorado and upgrading research equipment is critical to keep up with advancing technologies and for solving complex spectrum sharing problems. The Table Mountain Field Site and Radio Quiet Zone is an 1,800 acre, open-air test location. This site is regulated by Federal and state law to prevent the transmissions of powerful signals over the site. Table Mountain is currently the only Radio Quiet Zone available for use by private industry for research and development of new spectrum-dependent technologies. The site is used by multiple Federal agencies and industry partners to perform fundamental research into the nature, interaction, and performance of communications devices, systems, and services. Other Federal Agencies are able to leverage ITS research facilities and highly capable staff through cost reimbursable agreements. Ensuring access to world class research facilities, equipment, and staff enables ITS to serve as a resource to other Federal agencies for advanced research to resolve their telecommunications issues.

#### Explanation and Justification

NTIA plans to spend \$5.1 million in direct appropriations in the area of efficient spectrum access and sharing to perform the following research activities (1) radio frequency measurements; (2) radio frequency propagation modeling; (3) electromagnetic compatibility analyses; and (4) spectrum monitoring. The radio frequency measurements program efforts will

provide the private and public sectors with modeling tools that will be used to deploy new telecommunication networks and services, and increase commercial access to shared radio bands such as 3.5 MHz and AWS-3. The spectrum monitoring future work will expand the testbed to more radio frequencies and higher fidelity, and will provide the FCC, DOD and other Federal Agencies more insight into the occupancy of the spectrum to inform planning and enforcement.

NTIA plans to spend \$1.6 million in direct appropriations on research that facilitates deployment of new technology. This includes research into the following activities: (1) Internet of Things; (2) domestic and international standards development; (3) quality of experience assessment and enhancement; and (4) spectrum-dependent system certification. The Internet of things research focus will provide information to inform policy decisions on spectrum usage and management as the number and density of wireless devices increases. The quality of experience focus area will develop software tools that can be used to maximize the end-to-end performance and efficiency of communications systems. ITS technical contributions and leadership activities in standards bodies will ensure that international standards meet the needs of U.S. industry and government, including public safety agencies. ITS will continue to act as an independent trusted agent in developing and executing testing and evaluation methods for emerging technologies. ITS will both perform certifications and develop certification procedures for other testing organizations.

NTIA plans to spend \$1.2 million in direct appropriations on the modernization and maintenance of research facilities and equipment. For the Table Mountain Field Site and Radio Quiet Zone, NTIA will continue to manage, operate, and maintain this critical, telecommunication research site. ITS has a multi-year agreement with the US Army Corps of Engineers to renovate the buildings at the site, upgrade the existing collection of dish antennas, and improve internet connectivity which will be enhanced to support larger data sets. This is a five-year effort that is being incrementally funded. Additionally, funds will be used for telecommunications equipment. Telecommunications is one of the most rapidly evolving sectors of the economy with new generations of equipment being released annually or more frequently. To keep pace with each new generation of technology, NTIA must continually procure new measurement equipment to meet the needs of greater sensitivity, increased resolution, higher frequencies and wider bandwidths.

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM CHANGES FOR 2020**  
(Dollar amounts in thousands)

	2020 Base		2020 Estimate		Increases/Decreases from 2020 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Advanced Communications Research							
	Pos./BA	45	8,180	45	8,180	0	0
	FTE/Obl.	45	8,180	45	8,180	0	0
Performance Measures:							
Number of days the field team needs to investigate interference into mission-critical communications system (# days)	2020	2021	2022	2023	2024		
	2	2	2	2	2		
Cost and Benefits:							
Direct Obligations:							
Uncapitalized	0	0	0	0	0		
Budget Authority	0	0	0	0	0		
Outlays	0	0	0	0	0		
FTE	0	0	0	0	0		
Benefits, in dollars	0	0	0	0	0		



**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**

(Direct Obligations amounts in thousands)

Activity: Advanced Communications Research

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	3,323	3,272	3,375	3,375	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	103	24	24	24	0
11.8 Special personnel services payments	0	0	0	0	0
<b>11.9 Total personnel compensation</b>	<b>3,426</b>	<b>3,296</b>	<b>3,399</b>	<b>3,399</b>	<b>0</b>
12.1 Civilian personnel benefits	1,020	953	1,088	1,088	0
13 Benefits for former personnel					
21 Travel and transportation of persons	128	106	114	114	0
22 Transportation of things	6	3	3	3	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	54	62	62	62	0
23.2 Rental payments to others					
23.3 Commun., util., and misc. charges	50	3	3	3	0
24 Printing and reproduction	4	8	8	8	0
25 Consulting and other services					
25.1 Advisory and assistance services					
25.2 Other services from non-Federal sources	460	260	260	260	0
25.3 Purchase of goods and services from Gov't accounts	2,309	1,905	1,939	1,939	0
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	40	59	59	59	0
25.8 Subsistence and support of persons					
26 Supplies and materials	134	30	30	30	0
31 Equipment	1,342	1,215	1,215	1,215	0
32 Lands and structures					
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
<b>99.9 Total Obligations</b>	<b>8,973</b>	<b>7,900</b>	<b>8,180</b>	<b>8,180</b>	<b>0</b>

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Broadband Programs

Line Item	2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Broadband Programs	Pos./BA	26	15,700	26	15,700	26	15,876	29	15,606	3	(270)
	FTE/Obl	27	7,541	26	23,863	26	15,876	28	15,606	2	(270)
<b>Total</b>	Pos./BA	26	15,700	26	15,700	26	15,876	29	15,606	3	(270)
	FTE/Obl	27	7,541	26	23,863	26	15,876	28	15,606	2	(270)

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

**Activity:** Broadband Programs

Goal Statement

The Broadband Program promotes the expansion of broadband infrastructure, access, and use across America by accelerating critical infrastructure that will help attract new jobs, promote economic growth, and encourage increased innovation.

Base Program

According to the Federal Communications Commission's 2018 Broadband Deployment Report, twenty-five million Americans still lack access to affordable, reliable, modern high-speed broadband capability, of which 19 million, or 75%, live in rural areas. NTIA's BroadbandUSA program is spearheading the Administration's efforts to use all available tools to educate, convene, and assist broadband stakeholders to improve connectivity in America, including rural homes, farms, small businesses, manufacturing sites, tribal communities, transportation systems, healthcare facilities, and educational institutions.

Without BroadbandUSA's technical resources, smaller, rural, and/or less affluent communities will fall further behind, losing industries, jobs, and population. BroadbandUSA serves communities, industry, and non-profits that want to expand broadband infrastructure and promote digital workforce skills. The needs and interests of state and local broadband leaders drive BroadbandUSA's services, which focus on supporting public-private partnerships that improve connectivity to their communities. NTIA also partners with industry, federal agencies, state and local governments, and tribal governments to reduce barriers to capital investment, to remove obstacles to broadband services, and to employ government resources more efficiently. Through these efforts, NTIA is working towards the goals of increasing economic prosperity, attracting new businesses, enhancing job growth, and improving healthcare outcomes in rural areas of America. Additionally, BroadbandUSA also leads the efforts to augment the nation's understanding of broadband availability through mapping the current state of broadband access nationwide, including identification of existing infrastructure and gaps. This mapping effort supports U.S. policymakers and government agencies with more accurate, timely, and granular data to make better informed funding decisions and to more efficiently determine the best opportunities for efficient deployment of broadband infrastructure in rural areas.

Statement of Operating Objectives

In FY 2020, BroadbandUSA will execute a number of strategies to expand broadband and will accomplish the following: 1) provide technical assistance to 145 communities; 2) hold four regional workshops with at least 250 attendees; and 3) host 10 monthly broadband webinars with an average of 200 attendees. These activities will provide the foundation for state and local governments to

attract broadband infrastructure investments, leading to new jobs, better service delivery, and creation of innovative technologies benefiting hospitals, schools, and students.

BroadbandUSA will also lead national connectivity efforts in partnership with federal state and local governments, including co-leading the American Broadband Initiative (ABI). The ABI focuses on three key workstreams:

- 1) *Streamline federal permitting* - processes to make it easier for Service Providers to access federal assets and rights-of-way, reducing the regulatory burden and expediting the commercial build out of broadband networks;
- 2) *Leverage federal assets* - such as tower facilities, buildings and land to lower the cost of broadband buildouts and encourage private sector companies to expand telecommunications infrastructure, especially in rural America; and
- 3) *Improve the effectiveness of federal funding* - for broadband to better target areas of need, improve consistency, and provide incentives for State/local policies and programs to better leverage federal dollars.

In FY 2020, BroadbandUSA will accomplish the following milestones as it relates to our ABI work: 1) develop recommendations and work plan in coordination with Department of Interior, Department of Defense, Department of Transportation, Office of Management and Budget, and General Services Administrations, to streamline the process for considering applications for wireless facilities deployment as mandated under the *MOBILE NOW Act of 2018*; 2) begin to outline a report to Congress on the status of the ABI members' implementation of the recommended actions and process improvements; 3) develop one-stop for broadband permitting information on BroadbandUSA website to improve transparency; and 4) host eight monthly meetings and an annual summit for State Broadband Leaders with participation from 25 states.

BroadbandUSA will improve the nation's understanding of broadband availability by implementing its broadband availability data mapping initiative. By FY 2020, BroadbandUSA will have operationalized the national broadband availability map and will transition to efforts to improve its capabilities and expand the data sets it may utilize. In FY 2020, NTIA will accomplish the following items: 1) update geographic information systems (GIS) and geo-analytical systems, deployed in FY 2019, necessary to support the base program; 2) integrate, visualize, and analyze broadband availability data from additional states; 3) integrate, visualize, and analyze broadband availability data from broadband providers; 4) integrate the most recent FCC Form 477 data; and 5) integrate updated broadband planning data from other Federal agencies. These important improvements will improve BroadbandUSA's data collection and analytic capabilities to better support policymaking and investment decisions. Without these improvements, the U.S. will lack the ability to compare updated federal and non-federal data sets to identify regions with insufficient service, better validate broadband availability data, and produce reports and analyses that could be used for investment and decision-making.

Finally, NTIA will monitor and close-out the three outstanding broadband grants from the Broadband Technology Opportunities Program and the Warning, Alert and Response Network program and will accomplish two major actions: 1) complete project implementation activities by June 30, 2020 and 2) complete 50 percent of close out activities for these remaining grants by end of the fiscal year.

### Explanation and Justification

BroadbandUSA's technical assistance will support the expansion of broadband access and will assist stakeholders seeking to expand connectivity through technical assistance, convening and educating to meet their goals. BroadbandUSA's work will prepare stakeholders with technical, solution-neutral guidance and tools that help them engage in more effective and persuasive discussions with broadband partners and providers. BroadbandUSA staff will continue to lead workshops and events for state and local governments to facilitate new public-private partnerships, explore a variety of infrastructure and inclusion funding opportunities, provide fresh perspectives for digital inclusion, and foster innovation for connectivity and use for communities. NTIA anticipates continued and increasing demand for engagement requests from communities for services in the future.

NTIA will engage with stakeholders within industry, state, regional, and local officials to further common goals of increasing broadband access, particularly in rural areas. BroadbandUSA will work closely with the organizations that represent officials at all levels of government to expand our impact by helping remove barriers to deployment and facilitate and develop information, including webinars, articles and guides to increase knowledge about broadband. For example, BroadbandUSA has significantly expanded our impact through relationships with state broadband experts through the State Broadband Leaders Network (SBLN), organizing a forum for collaboration and partnership on broadband policy and best practices. Since FY 2017, BroadbandUSA has facilitated 20 monthly meetings, two annual meetings and increased participation from 20 states to 34 with level funding. The challenge is that NTIA is the only federal agency bringing a diverse set of state broadband policymakers together. It is also important for BroadbandUSA to continue its American Broadband Initiative leaderships to ensure continued coordination across federal government on connectivity and use challenges.

NTIA will establish a broadband mapping platform to integrate new datasets, improve technical capabilities, and apply user feedback to improve the visualization, analytical, and other features of the map. Additionally, BroadbandUSA will collect similar feedback during FY 2020 to inform future enhancements and improvements to the map in later fiscal years. BroadbandUSA must keep its mapping system up to date in order to ensure that it meets users' performance expectations, complies with Federal information security requirements, and scales to handle additional data sets and user requirements. In order for the map to provide input to planning and funding decisions, BroadbandUSA must ensure that the system incorporates the latest FCC Form 477 dataset, most recent broadband availability data made available by the states and participating service providers, and the most up-to-date demographic and economic data from other Federal agencies that is incorporated into the tool. NTIA will also expand the map to include additional data on broadband availability from additional and participating states and service providers. New data sets will ensure that the map offers a granular and comprehensive understanding of broadband availability, in the areas where data is available. Collectively,

these activities will provide the information necessary to inform and better coordinate Federal programs that fund broadband infrastructure and expand rural broadband deployments.

In addition, BroadbandUSA will leverage this funding to incorporate additional analyses and data visualizations into the map, based on feedback from users. BroadbandUSA also plans to license third-party data sets that inform broadband planning and the analysis of broadband availability and incorporate that data into the platform. Further, BroadbandUSA intends to integrate the map with its broadband Technical Assistance program and will incorporate features that automate certain Technical Assistance activities to improve the scalability of the BroadbandUSA Technical Assistance program.

NTIA will continue to provide grant oversight to actively monitor broadband grants awarded in prior years to prevent waste, fraud, and abuse of the public funds; ensure that recipients accomplish program goals; share best practices; and oversee recipients' ongoing activities to fulfill the terms of their grants through the federal-interest period. With approximately \$60 million in remaining grant funds for active awards, this work continues to be a prudent investment to protect taxpayer funds.

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
PROGRAM CHANGES FOR 2020  
(Dollar amounts in thousands)**

		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Broadband Programs	Pos./BA	26	15,876	29	15,606	3	(270)
	FTE/Obl.	26	15,876	28	15,606	2	(270)

This mapping effort supports U.S. policymakers and government agencies with more accurate, timely, and granular data to make better informed funding decisions and to more efficiently determine the best opportunities for efficient deployment of broadband infrastructure in rural areas. In FY 2020 Budget, NTIA is proposing to increase the broadband program by 3 staff positions to bring on geographic information systems (GIS) subject matter experts onto the project to support the GIS cloud-based platform and integration of third-party datasets. The reduction in \$270,000 is to support NTIA’s work in creating a new public safety communications program within our non-mandatory, appropriated salaries and expense account.

	2020	2021	2022	2023	2024
Performance Measures:					
No change in performance measures					

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
PROGRAM CHANGE PERSONNEL DETAIL**

**Activity:** Broadband Programs  
**Program Change:** Increase 3 FTEs

<u>Title</u>	<u>Grade</u>	<u>Number</u>	<u>Annual Salary</u>	<u>Total Salaries</u>
Telecommunications Policy Specialist	15	1	134,789	134,789
Telecommunications Policy Specialist	14	2	114,590	229,180
Total		<u>3</u>		<u>363,969</u>
Less lapse	25.00%	<u>(1)</u>		<u>(90,992)</u>
Total full-time permanent (FTE)		<u>2</u>		<u>272,977</u>
2020 Pay Adjustment (0.00%)				0
<b>Total</b>		<u>2</u>		<u>272,977</u>

**Personnel Data Summary**

Full-time Equivalent Employment  
 Full-time permanent  
 Other than full-time permanent  
**Total**

2
<u>0</u>
2

Authorized Positions:

Full-time permanent  
 Other than full-time permanent  
**Total**

3
<u>0</u>
3



**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**

(Direct Obligations amounts in thousands)

Activity: Broadband Programs

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	3,616	4,735	4,787	5,060	273
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	76	63	63	63	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	3,692	4,798	4,850	5,123	273
12.1 Civilian personnel benefits	1,181	1,295	1,364	1,449	85
13 Benefits for former personnel					
21 Travel and transportation of persons	89	156	161	161	0
22 Transportation of things	3	6	6	6	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	402	527	557	557	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	124	20	20	20	0
24 Printing and reproduction	34	39	39	39	0
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	346	15,708	7,545	6,917	(628)
25.3 Purchase of goods and services from Gov't accounts	1,466	1,124	1,144	1,144	0
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	5	0	0	0	0
25.8 Subsistence and support of persons					
26 Supplies and materials	22	63	63	63	0
31 Equipment	177	127	127	127	0
32 Lands and structures					
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
99.9 <b>Total Obligations</b>	7,541	23,863	15,876	15,606	(270)

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Public Safety Communications

Line Item		2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increase from 2020 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Public Safety Communications	Pos./BA	0	0	0	0	0	0	1	270	1	270
	FTE/Obl	0	0	0	0	0	0	1	270	1	270
<b>Total</b>	Pos./BA	0	0	0	0	0	0	1	270	1	270
	FTE/Obl	0	0	0	0	0	0	1	270	1	270

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

**Activity:** Public Safety Communications

Goal Statement

NTIA's public safety communications program will provide the critical leadership and support for the coordination, interoperability, transition, and technical resources for our nation's public safety agencies in their adoption and implementation of advanced communications technologies.

Base Program

NTIA will establish a new program activity to fulfill its statutory responsibilities for public safety communications. NTIA proposes to allocate existing resources to establish this program.

NTIA's public safety communications program will serve the nation's emergency communications needs that are not currently funded through NTIA's mandatory accounts and that meet NTIA's statutory responsibilities.<sup>8</sup> NTIA is uniquely situated to support public safety agencies in their efforts to adopt and implement advanced communication technologies given NTIA's technical spectrum and public safety expertise.

For more than 50 years, 911 systems have served the needs of the public in emergencies. As communication technologies have evolved to include wireless phones, text and picture messaging, video chat, social media, and Voice over Internet Protocol (VoIP) devices, the 911 systems have not kept pace and are unable to accept information from these new communication methods. The future success of 911 in serving the public's needs will only be possible when our 911 call centers have transitioned from analog to an Internet Protocol (IP)-based 911 systems, commonly referred to as Next Generation 911 or NG911. The GAO's January 2018 report to Congress, GAO-18-252, recommended that the federal government could strength efforts to assist states. Specifically, the GAO stated that *"[w]hile deploying and operating 911 is the responsibility of entities at the state and local level, federal agencies – including NHTSA (National Highway Transportation and Safety Administration), NTIA, FCC (the Federal Communications*

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<sup>8</sup> 47 U.S.C. § 902(b)(2), 47 U.S.C. § 942, 47 U.S.C. § 1413

*Commission), and DHS (U.S. Department of Homeland Security) – have responsibilities to support NG911 implementation, including through facilitating coordination activities among 911 stakeholders and administering federal grants.”<sup>9</sup>*

Title VI, Subtitle E, of the Middle Class Tax Relief and Job Creation Act of 2012, also referred to as the Next Generation 911 Advancement Act of 2012 (Act), re-established the 911 Implementation Coordination Office (ICO) between NTIA and NHTSA. The ICO is responsible with 1) facilitating coordination and communication on 911, E911 and NG911 services; 2) submitting, or consulting on, a number of reports to Congress; and 3) administering \$115 million in 911, E911 and NG911 implementation grants. The Act, however, only provides funding for the grant program with a five percent cap on the administrative expenses of the agencies to administer the grants. NTIA has no funding available to cover its other statutory responsibilities required in the Act. As a result, NTIA has not been able to fulfill its joint responsibilities in carrying out ICO’s non-grant NG 911 activities.

NTIA is also responsible for providing financial assistance to the almost 1,000 public safety agencies that will be required to transition their mission-critical, land mobile communication operations to new spectrum bands. Specifically, section 6103 of the Middle Class Tax Relief and Job Creation Act, 47 U.S.C. § 1413, requires the Federal Communications Commission (FCC) to reallocate and auction the spectrum in the 470-512 megahertz band, referred to as T-Band spectrum, no later than February 21, 2021. NTIA is then required to make grants from spectrum auction proceeds to relocate these operations. The public safety agencies located in the T-Band are responsible for providing emergency services to more than 90 million people in the United States and represent the 11 largest urban areas: Boston, Massachusetts; Chicago, Illinois; Dallas/Fort Worth, Texas; Houston, Texas; Los Angeles, California; Miami, Florida; New York City, New York/Northern New Jersey, New Jersey; Philadelphia, Pennsylvania; Pittsburgh, Pennsylvania; San Francisco/Oakland, California; and Washington, D.C./Virginia/Maryland. While grant and administrative costs for the grants will come from the spectrum auction proceeds, no funding has been made available to NTIA to perform activities necessary to plan and implement the new grant program.

#### Statement of Operating Objectives

NTIA envisions supporting the communication needs of public safety personnel at all levels of government with their NG911 activities and T-Band spectrum transition issues. NTIA will serve as a federal-level coordinator and clearinghouse on NG911 activities for other federal agencies, states, territories and local governments, public safety personnel at all levels of government, and commercial carriers and equipment manufacturers. Further, NTIA will engage other agencies to advance regulatory, financial, and policy priorities to advance nationwide NG911 deployment.

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<sup>9</sup> <https://www.gao.gov/assets/690/689855.pdf>

In FY 2020, NTIA will focus on key policy areas in NG911 activities:

- NG911 Utilization Roadmap: NTIA will develop a roadmap to eliminating identified adoption barriers through policy advocacy, training, grant program prioritization, and SDO representation.
- Perform ICO activities such as facilitating and coordinating with 911 stakeholders.
- Responding to 911 community requests and inquiries.

NTIA's activities will support the efforts of federal, state, local, and tribal public safety agencies to utilize cutting-edge NG911 technologies that can help save lives. For these agencies, the transition to NG911 will be complex and challenging. NTIA will provide agencies at all levels the information, training, planning, technical certainty, and advocacy needed to help them leverage NG911 for first responders and those they serve. These activities also directly respond to the GAO recommendations in GAO-18-252 on how federal agencies, including NTIA, should be supporting the state and local NG911 efforts.<sup>10</sup>

NTIA will start the necessary planning activities for execution of its T-Band grant responsibilities including receiving stakeholder input on the T-Band relocation and the development of NTIA's grant program. By defining NTIA's T-Band Relocation Grant Program operating objectives, it will enable NTIA to identify what will be allowable relocation costs, to engage stakeholders to identify key issues the grant program will address, and to develop its grant program in a way that targets the funds available in the most beneficial manner for first responders. In FY 2020, NTIA will focus on three key policy areas in T-Band spectrum activities:

- T-Band Relocation Cost Estimates: NTIA will engage T-Band incumbents, technical experts, and vendors to create validated costs estimates associated with T-Band relocation.
- T-Band Relocation Grant Program Stakeholder Input: NTIA will hold informational programs to gather input from stakeholders on the potential T-Band grant program parameters, including allowable costs, grant award conditions, and the period of performance.
- T-Band Relocation Grant Program Roadmap: Utilizing stakeholder input, NTIA will develop a roadmap for the T-Band Relocation Grant Program that will include stakeholder education and information gathering, early development of the Notice of Funding Opportunity, and award and post-award activities.

The T-Band transition as required by Congress has created significant technical, financial, and policy concerns among the incumbent jurisdictions. As they embark upon a complex, challenging relocation process, NTIA will provide direct access to federal data on the transition, reliable information about necessary funding, and an accessible procedural path to the T-Band relocation. This will help ensure that the T-Band relocation is accomplished in an efficient, effective manner so that the emergency services are not negatively impacted by the relocation process.

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<sup>10</sup> Ibid.

Explanation and Justification

NTIA will allocate one (1) position within its existing FY 2020 Budget Request to support these NG911 and T-Band relocation issues. NTIA will perform a strategic assessment of progress in nationwide NG 911 deployment, develop a strategic roadmap for continued progress with program metrics for future years, respond to inquiries and requests for assistance from the 911 community, and help develop policy recommendations for the Executive branch and Congress on NG 911 matters. The funding will begin the essential activities to develop a new grant program for the T-Band relocation.

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM CHANGES FOR 2020**  
(Dollar amounts in thousands)

		2020 Base		2020 Estimate		Increase from 2020 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Public Safety Communications	Pos./BA	0	0	1	270	1	270
	FTE/Obl.	0	0	1	270	1	270

The creation of the new public safety communications program will support the NG911 coordination and support activities and T-Band spectrum planning activities. With the creation of this new PPA, NTIA will perform a strategic assessment of progress in nationwide NG 911 deployment, develop a strategic roadmap for continued progress with program metrics for future years, respond to inquiries and requests for assistance from the 911 community, and help develop policy recommendations for the Executive branch and Congress on NG 911 matters. The funding will begin the essential activities to develop a new grant program for the T-Band relocation.

Performance Measures:	2020	2021	2022	2023	2024
NG911 Stakeholder Engagements	2	2	2	2	2
NG911 Roadmap Development and Milestone Execution	1	2	3	5	7
T-Band Planning - cost estimate	1	0	0	0	0
T-Band Planning Stakeholder Engagements	2	4	6	8	10

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
PROGRAM CHANGE PERSONNEL DETAIL**

**Activity:** Public Safety Communications  
**Program Change:** New Program with 1 Position

<u>Title</u>	<u>Grade</u>	<u>Number</u>	<u>Annual Salary</u>	<u>Total Salaries</u>
Communications Program Specialist	14	1	122,230	122,230
Total		1		122,230
Less lapse	25.00%	(0)		(30,558)
Total full-time permanent (FTE)		1		91,673
2020 Pay Adjustment (0.0%)		0		0
<b>Total</b>		1		91,673

**Personnel Data Summary**

Full-time Equivalent Employment				
Full-time permanent		1		
Other than full-time permanent		0		
<b>Total</b>		1		
Authorized Positions:				
Full-time permanent		1		
Other than full-time permanent		0		
<b>Total</b>		1		



**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
(Direct Obligations amounts in thousands)

Activity: Public Safety Communications

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	0	0	0	92	92
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	0	0	0	92	92
12.1 Civilian personnel benefits	0	0	0	28	28
13 Benefits for former personnel					
21 Travel and transportation of persons	0	0	0	5	5
22 Transportation of things	0	0	0	1	1
23 Rent, communications and utilities					
23.1 Rental payments to GSA	0	0	0	7	7
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	0	0	0	2	2
24 Printing and reproduction	0	0	0	1	1
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	0	0	0	44	44
25.3 Purchase of goods and services from Gov't accounts	0	0	0	73	73
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	0	0	0	9	9
25.8 Subsistence and support of persons					
26 Supplies and materials	0	0	0	1	1
31 Equipment	0	0	0	7	7
32 Lands and structures					
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
99.9 <b>Total Obligations</b>	0	0	0	270	270

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses - Mandatory BA**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Spectrum IT Modernization (New Mandatory Program)

Line Item		2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increase from 2020 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Spectrum IT Modernization	Pos./BA	0	0	0	0	0	0	0	50,000	0	50,000
	FTE/Obl	0	0	0	0	0	0	0	50,000	0	50,000
<b>Total</b>	Pos./BA	0	0	0	0	0	0	0	50,000	0	50,000
	FTE/Obl	0	0	0	0	0	0	0	50,000	0	50,000

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
JUSTIFICATION OF PROGRAM AND PERFORMANCE**

**Activity:** Spectrum IT Modernization – Mandatory program

**Goal Statement**

NTIA's spectrum IT management program will enable automation and the technical foundation to transform NTIA's ability to manage federal spectrum more efficiently and effectively and to spur commercial wireless innovation and economic growth.

**Base Program**

No base program exists for Spectrum IT Modernization.

To promote efficient use of the electromagnetic spectrum, the Budget proposes to authorize NTIA to negotiate leases with private entities that would expand their access to federal spectrum. This authority will complement ongoing efforts to make Federal spectrum available for commercial uses through auctions conducted by the Federal Communications Commission. Of the anticipated auction receipts, the Budget proposes to provide up to \$50 million, to remain available until expended, to support NTIA's efforts in the modernization of its spectrum IT systems. The results of these modernization efforts would provide advanced automation tools; improved data accuracy and transparency; and spectrum efficiency evaluation tools.

**Statement of Operating Objectives**

The advancements in spectrum-sharing technologies are outpacing NTIA's existing spectrum management system capabilities. Current spectrum IT systems are quickly becoming inadequate to successfully execute Commerce's Primary Mission Essential Function to ensure the continuity of operations of Federal radio communications systems and manage Federal use of the radio frequency spectrum. These systems were originally designed in 1986 to move its frequency assignment data from rolodex cards into an electronic table. Although several spectrum applications have been developed since the original table, all of NTIA's systems and data are disconnected, requiring NTIA to copy and redistribute data into four or five different systems to be usable. With the growing need for spectrum to meet national security operations and commercial wireless services, NTIA needs to invest in its spectrum management IT infrastructure.

With this funding, NTIA will develop, modernize, and enhance a full suite of IT technical tools and reengineered business processes to significantly accelerate processing times authorizing spectrum use for critical government operations. This investment will result in the following capabilities:

- Spectrum management enterprise architecture;
- Advanced engineering algorithms and modernized automated analysis tools;
- Improved data accuracy and transparency;
- Spectrum usage measurement program; and
- Spectrum efficiency evaluation tools to promote the best possible and most efficient use of spectrum across the Federal Government.

Improved analytical precision will enable NTIA and Federal agency staff to identify new spectrum sharing arrangements that are more attractive and valuable to commercial entities. Moreover, industry will have more accurate, transparent data regarding the federal spectrum usage footprint, enabling wireless bidders to better prepare for spectrum auctions and reduce investment risks, thus potentially yielding higher auction bids and higher revenue opportunities for the U.S. government.

#### **Explanation and Justification**

This initiative will help NTIA meet its growing statutory and operational obligations and will reduce processing times of frequency assignments by 50% within 5 years of implementation. Greater analytical precision will accelerate the identification, transition and sharing of spectrum. Improving commercial access to more wireless spectrum enables services such as 5G. Improved technical tools will significantly improve interagency coordination and efficiency, potentially reducing resources required across the Executive Branch.

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses - Mandatory BA**  
**PROGRAM CHANGES FOR 2020**  
 (Dollar amounts in thousands)

		2020 Base		2020 Estimate		Increases from 2020 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
Spectrum IT Modernization	Pos./BA	0	0	0	50,000	0	50,000
	FTE/Obl.	0	0	0	50,000	0	50,000

To promote efficient use of the electromagnetic spectrum, the FY 2020 Budget proposes to authorize NTIA to negotiate leases with private entities that would expand their access to federal spectrum. This authority will complement ongoing efforts to make Federal spectrum available for commercial uses through auctions conducted by the Federal Communications Commission. Of the anticipated receipts from this proposal, the Budget proposes to provide up to \$50 million, to remain available until expended, to NTIA to support the agency's efforts in the modernization of its spectrum IT systems, resulting in advanced automation tools; improved data accuracy and transparency; and spectrum efficiency evaluation tools.

	2020	2021	2022	2023	2024
Performance Measures:					
Develop major acquisition package & solicit vendors	1	0	0	0	0
Enter into each period of support services for IT modernization	0	1	1	1	1

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses - Mandatory BA**  
**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
 (Direct Obligations amounts in thousands)

Activity: Spectrum IT Modernization

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increase from 2020 Base
11.1 Full-time permanent (Compensation)	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel					
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	0	0	0	50,000	50,000
25.3 Purchase of goods and services from Gov't accounts	0	0	0	0	0
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons					
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
99.9 <b>Total Obligations</b>	0	0	0	50,000	50,000

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses - Discretionary BA**  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
(Dollar amounts in thousands)

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	14,445	14,401	14,711	15,763	1,052
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	384	169	169	169	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 <b>Total personnel compensation</b>	<b>14,829</b>	<b>14,570</b>	<b>14,880</b>	<b>15,932</b>	<b>1,052</b>
12.1 Civilian personnel benefits	4,772	4,089	4,489	4,815	326
13 Benefits for former personnel					
21 Travel and transportation of persons	529	685	709	933	224
22 Transportation of things	10	15	15	21	6
23 Rent, communications and utilities					
23.1 Rental payments to GSA	1,306	1,376	1,491	1,555	64
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	426	137	137	145	8
24 Printing and reproduction	65	65	65	74	9
25 Consulting and other services					
25.1 Advisory and assistance services					
25.2 Other services from non-Federal sources	1,231	18,086	9,236	9,087	(149)
25.3 Purchase of goods and services from Gov't accounts	7,236	7,278	7,928	7,748	(180)
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	61	61	61	70	9
25.8 Subsistence and support of persons					
26 Supplies and materials	211	178	178	203	25
31 Equipment	1,954	1,675	1,675	1,723	48
32 Lands and structures					

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
33 Investments and loans					
41 Grants, subsidies and contributions	136	135	135	135	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
<b>99.9 Total Obligations</b>	<b>32,766</b>	<b>48,350</b>	<b>40,999</b>	<b>42,441</b>	<b>1,442</b>
Less prior year recoveries					
Less prior year unobligated balance	(2,645)				
<b>Total Budget Authority</b>	<b>30,121</b>	<b>48,350</b>	<b>40,999</b>	<b>42,441</b>	<b>1,442</b>
<b>Personnel Data</b>					
<b>Full-Time equivalent Employment:</b>					
Full-time permanent	124	143	143	150	7
Other than full-time permanent	0	0	0	0	0
<b>Total</b>	<b>124</b>	<b>143</b>	<b>143</b>	<b>150</b>	<b>7</b>
<b>Authorized Positions:</b>					
Full-time permanent	143	143	143	153	10
Other than full-time permanent	0	0	0	0	0
<b>Total</b>	<b>143</b>	<b>143</b>	<b>143</b>	<b>153</b>	<b>10</b>



**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses - Mandatory BA**  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
(Dollar amounts in thousands)

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increase from 2020 Base
11.1 Full-time permanent (Compensation)	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 <b>Total personnel compensation</b>	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25 Consulting and other services					
25.1 Advisory and assistance services					
25.2 Other services from non-Federal sources	0	0	0	50,000	50,000
25.3 Purchase of goods and services from Gov't accounts	0	0	0	0	0
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons					
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures					
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increase from 2020 Base
44 Refunds					
<b>99.9 Total Obligations</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50,000</b>	<b>50,000</b>
Less prior year recoveries					
Less prior year unobligated balance	0				
<b>Total Budget Authority</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50,000</b>	<b>50,000</b>
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**Domestic and International Policies**  
**SELECT ACTIVITIES BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: Domestic and International Policies

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	4,337	3,803	3,869	4,556	687
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	154	53	53	53	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	4,491	3,856	3,922	4,609	687
12.1 Civilian personnel benefits	1,354	1,093	1,183	1,396	213
13 Benefits for former personnel					
21 Travel and transportation of persons	291	330	335	554	219
22 Transportation of things	1	1	1	6	5
23 Rent, communications and utilities					
23.1 Rental payments to GSA	460	375	414	471	57
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	124	96	96	102	6
24 Printing and reproduction	11	3	3	11	8
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	140	1,108	421	856	435
25.3 Purchase of goods and services from Gov't accounts	1,354	1,772	1,795	2,100	305
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	6	2	2	2	0
25.8 Subsistence and support of persons					
26 Supplies and materials	22	38	38	62	24
31 Equipment	161	78	78	119	41

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	135	135	135	135	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
<b>99.9 Total Obligations</b>	<b>8,550</b>	<b>8,887</b>	<b>8,423</b>	<b>10,423</b>	<b>2,000</b>
Less prior year recoveries					
Less prior year unobligated balance	0				
<b>Total Budget Authority</b>	<b>8,550</b>	<b>8,887</b>	<b>8,423</b>	<b>10,423</b>	<b>2,000</b>
<b>Personnel Data</b>					
<b>Full-Time equivalent Employment:</b>					
Full-time permanent	31	33	33	37	4
Other than full-time permanent	0	0	0	0	0
<b>Total</b>	<b>31</b>	<b>33</b>	<b>33</b>	<b>37</b>	<b>4</b>
<b>Authorized Positions:</b>					
Full-time permanent	33	33	33	39	6
Other than full-time permanent	0	0	0	0	0
<b>Total</b>	<b>33</b>	<b>33</b>	<b>33</b>	<b>39</b>	<b>6</b>

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**Spectrum Management**  
**SELECT ACTIVITIES BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: Spectrum Management

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	3,169	2,591	2,680	2,680	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	51	29	29	29	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	3,220	2,620	2,709	2,709	0
12.1 Civilian personnel benefits	1,217	748	854	854	0
13 Benefits for former personnel					
21 Travel and transportation of persons	21	93	99	99	0
22 Transportation of things	0	5	5	5	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	390	412	458	458	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	128	18	18	18	0
24 Printing and reproduction	16	15	15	15	0
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	285	1,010	1,010	1,010	0
25.3 Purchase of goods and services from Gov't accounts	2,107	2,477	3,050	2,492	(558)
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	10	0	0	0	0
25.8 Subsistence and support of persons					
26 Supplies and materials	33	47	47	47	0
31 Equipment	274	255	255	255	0

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	1	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
<b>99.9 Total Obligations</b>	<b>7,702</b>	<b>7,700</b>	<b>8,520</b>	<b>7,962</b>	<b>(558)</b>
Less prior year recoveries					
Less prior year unobligated balance	0				
<b>Total Budget Authority</b>	<b>7,702</b>	<b>7,700</b>	<b>8,520</b>	<b>7,962</b>	<b>(558)</b>
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	23	39	39	39	0
Other than full-time permanent	0	0	0	0	0
Total	23	39	39	39	0
Authorized Positions:					
Full-time permanent	39	39	39	39	0
Other than full-time permanent	0	0	0	0	0
Total	39	39	39	39	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**Advanced Communications Research**  
**SELECT ACTIVITIES BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: Advanced Communications Research

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	3,323	3,272	3,375	3,375	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	103	24	24	24	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	3,426	3,296	3,399	3,399	0
12.1 Civilian personnel benefits	1,020	953	1,088	1,088	0
13 Benefits for former personnel					
21 Travel and transportation of persons	128	106	114	114	0
22 Transportation of things	6	3	3	3	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	54	62	62	62	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	50	3	3	3	0
24 Printing and reproduction	4	8	8	8	0
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	460	260	260	260	0
25.3 Purchase of goods and services from Gov't accounts	2,309	1,905	1,939	1,939	0
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	40	59	59	59	0
25.8 Subsistence and support of persons					

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
26 Supplies and materials	134	30	30	30	0
31 Equipment	1,342	1,215	1,215	1,215	0
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
<b>99.9 Total Obligations</b>	<b>8,973</b>	<b>7,900</b>	<b>8,180</b>	<b>8,180</b>	<b>0</b>
Less prior year recoveries					
Less prior year unobligated balance	0				
<b>Total Budget Authority</b>	<b>8,973</b>	<b>7,900</b>	<b>8,180</b>	<b>8,180</b>	<b>0</b>
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	43	45	45	45	0
Other than full-time permanent	0	0	0	0	0
Total	43	45	45	45	0
Authorized Positions:					
Full-time permanent	45	45	45	45	0
Other than full-time permanent	0	0	0	0	0
Total	45	45	45	45	0



**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**Broadband Programs**  
**SELECT ACTIVITIES BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: Broadband Programs

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	3,616	4,735	4,787	5,060	273
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	76	63	63	63	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	<b>3,692</b>	<b>4,798</b>	<b>4,850</b>	<b>5,123</b>	<b>273</b>
12.1 Civilian personnel benefits	1,181	1,295	1,364	1,449	85
13 Benefits for former personnel					
21 Travel and transportation of persons	89	156	161	161	0
22 Transportation of things	3	6	6	6	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	402	527	557	557	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	124	20	20	20	0
24 Printing and reproduction	34	39	39	39	0
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	346	15,708	7,545	6,917	(628)
25.3 Purchase of goods and services from Gov't accounts	1,466	1,124	1,144	1,144	0
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	5	0	0	0	0
25.8 Subsistence and support of persons					
26 Supplies and materials	22	63	63	63	0

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
31 Equipment	177	127	127	127	0
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
<b>99.9 Total Obligations</b>	<b>7,541</b>	<b>23,863</b>	<b>15,876</b>	<b>15,606</b>	<b>(270)</b>
Less prior year recoveries					
Less prior year unobligated balance	0				
<b>Total Budget Authority</b>	<b>7,541</b>	<b>23,863</b>	<b>15,876</b>	<b>15,606</b>	<b>(270)</b>
<b>Personnel Data</b>					
<b>Full-Time equivalent Employment:</b>					
Full-time permanent	27	26	26	28	2
Other than full-time permanent	0	0	0	0	0
Total	27	26	26	28	2
<b>Authorized Positions:</b>					
Full-time permanent	26	26	26	29	3
Other than full-time permanent	0	0	0	0	0
Total	26	26	26	29	3

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**Public Safety Communications**  
**SELECT ACTIVITIES BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: Public Safety Communications

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increase from 2020 Base
11.1 Full-time permanent (Compensation)	0	0	0	92	92
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	0	0	0	92	92
12.1 Civilian personnel benefits	0	0	0	28	28
13 Benefits for former personnel					
21 Travel and transportation of persons	0	0	0	5	5
22 Transportation of things	0	0	0	1	1
23 Rent, communications and utilities					
23.1 Rental payments to GSA	0	0	0	7	7
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	0	0	0	2	2
24 Printing and reproduction	0	0	0	1	1
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	0	0	0	44	44
25.3 Purchase of goods and services from Gov't accounts	0	0	0	73	73
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	0	0	0	9	9
25.8 Subsistence and support of persons					
26 Supplies and materials	0	0	0	1	1
31 Equipment	0	0	0	7	7

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increase from 2020 Base
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
<b>99.9 Total Obligations</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>270</b>	<b>270</b>
Less prior year recoveries					
Less prior year unobligated balance	0				
<b>Total Budget Authority</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>270</b>	<b>270</b>
<b>Personnel Data</b>					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	1	1
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	1	1
Authorized Positions:					
Full-time permanent	0	0	0	1	1
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	1	1

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses - Mandatory BA**  
**Spectrum IT Modernization**  
**SELECT ACTIVITIES BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: Spectrum IT Modernization

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increase from 2020 Base
11.1 Full-time permanent (Compensation)	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel					
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	0	0	0	50,000	50,000
25.3 Purchase of goods and services from Gov't accounts	0	0	0	0	0
25.4 Operation of GOCOs					
25.5 Research and development contracts					
25.6 Medical care					
25.7 Operation & maintenance of equipment	0	0	0	0	0
25.8 Subsistence and support of persons					
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures					

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increase from 2020 Base
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
99.9 <b>Total Obligations</b>	<u>0</u>	<u>0</u>	<u>0</u>	<u>50,000</u>	<u>50,000</u>
Less prior year recoveries					
Less prior year unobligated balance	0				
Total Budget Authority	<u>0</u>	<u>0</u>	<u>0</u>	<u>50,000</u>	<u>50,000</u>
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**JUSTIFICATION OF PROPOSED LANGUAGE CHANGES**

FY 2020

Lease Shared Secondary Access Rights:

To promote efficient use of the electromagnetic spectrum, the Administration proposes, when technically and operationally feasible, to require the leasing of secondary access rights to federal spectrum. Under this proposal, the National Telecommunications and Information Administration (NTIA) would be granted authority to lease access to federal spectrum for commercial use, on a non-interference basis, with federal primary users. Working with other federal agencies, NTIA would negotiate sharing arrangements on behalf of the federal government and would seek to increase the efficiency of spectrum, when possible, without causing harmful interference to federal users authorized to operate in the negotiated bands. In addition to federal spectrum auctions, leases will provide another option for maximizing the economic value of this scarce spectrum resource. Significant resources will be required by NTIA and other federal agencies to negotiate and manage these spectrum leases, and therefore the proposal is conservatively estimated to generate approximately \$600 million in net deficit reduction for taxpayers. Of the anticipated receipts from this proposal, the Budget proposes to provide up to \$50 million, to remain available until expended, to NTIA to support the agency's efforts in the modernization of its spectrum IT systems, resulting in advanced automation tools; improved data accuracy and transparency; and spectrum efficiency evaluation tools. Improved analytical precision will enable NTIA and Federal agencies to, among other things, identify new spectrum sharing and leasing arrangements that are more attractive and valuable to commercial entities.

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**APPROPRIATION LANGUAGE AND CODE CITATION**

FY 2020

For necessary expenses, as provided for by law, of the National Telecommunications and Information Administration (NTIA), \$42,441,000 to remain available until September 30, 2021: Provided, that notwithstanding 31 U.S.C. 1535(d), the Secretary of Commerce shall charge Federal agencies for costs incurred in spectrum management, analysis and operations, and related services and such fees shall be retained and used as offsetting collections for costs of such spectrum services, to remain available until expended: Provided further, that the Secretary of Commerce is authorized to retain and use as offsetting collections all funds transferred, or previously transferred, from other Government agencies for all costs incurred in telecommunications research, engineering, and related activities by the Institute for Telecommunication Sciences of NTIA, in furtherance of its assigned functions under this paragraph, and such funds received from other Government agencies shall remain available until expended.

15 U.S.C. § 1512  
15 U.S.C. § 1532  
47 U.S.C. § 305  
47 U.S.C. § 606  
47 U.S.C. § 901, et seq.  
47 U.S.C. § 1304  
47 U.S.C. § 1305  
47 U.S.C. § 1413

15 U.S.C. § 1512 authorizes the Secretary of Commerce to foster, promote and develop foreign and domestic commerce.

15 U.S.C. § 1532 authorizes the Secretary of Commerce to conduct research and analysis in all telecommunications sciences; to investigate the transmission of radio waves and electromagnetic radiation; and to compile, evaluate, publish, and distribute related information.



47 U.S.C. § 305 authorizes the President to assign frequencies to radio stations or classes of radio stations belonging to and operated by the United States. Originally delegated to the Department of Commerce by Executive Order 12046, as later codified in the National Telecommunications and Information Administration Organization Act, 47 U.S.C. § 901, et seq.

47 U.S.C. § 606 and associated Executive Orders authorize the President to perform certain telecommunications emergency functions essential to security and the national defense.

47 U.S.C. § 901, et seq. authorizes NTIA to perform the Secretary's communications and information functions, among other things.

47 U.S.C. § 1304 authorizes the Secretary of Commerce to establish and administer a grant program for the development and implementation of statewide initiatives to identify and track the availability and adoption of broadband services within each State.

47 U.S.C. § 1305 authorizes the Assistant Secretary of Commerce for Communications and Information to establish and administer a national broadband service development and expansion grant program and to develop and maintain a comprehensive nationwide inventory map of existing broadband service capability and availability in the United States.

47 U.S.C. § 1413 authorizes NTIA to make grants to eligible public safety agencies to cover their costs to relocate from the 470-512 MHz band ("T-Band Spectrum").

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**ADVISORY AND ASSISTANCE SERVICES**

	2018 Actuals	2019 Enacted	2020 Estimate
Consulting services	0	0	0
Management and professional services	0	0	0
Special studies and analyses	0	0	0
Management and support services for research and development	60	60	60
Total	60	60	60

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Salaries and Expenses**  
**PERIODICALS, PAMPHLETS AND AUDIOVISUAL PRODUCTS**

	2017 Actuals	2018 Actuals	2019 Enacted	2020 Estimate
Periodicals	0	0	0	0
Pamphlets	8	8	8	8
Audiovisuals	0	0	0	0
Total	8	8	8	8

**Department of Commerce  
National Telecommunications and Information Administration  
Salaries and Expenses  
AVERAGE GRADE AND SALARIES**

	2018 Actual	2019 Enacted	2020 Estimate
Average ES Salary	183,108	185,381	185,381
Average GS/GM Grade	13	13	13
Average GS/GM Salary	126,380	127,358	127,358

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Telecommunications Facilities, Planning, and Construction**  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
President's Budget, 2019	0	0	0	855
2020 Adjustments to base:	0	0	0	0
2020 Base	0	0	0	0
plus: 2020 Program changes	0	0	0	0
2020 Estimate	0	0	0	0

		2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increase/Decrease from 2020 Base	
<b>Comparison by activity/subactivity: with totals by activity</b>		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Public Telecommunications Facilities, Planning, and Construction	Pos./BA	0	0	0	0	0	0	0	0	0	0
Grants	FTE/Obl.	0	0	0	0	0	0	0	0	0	0
Public Telecommunications Facilities, Planning, and Construction	Pos./BA	0	0	0	0	0	0	0	0	0	0
Program Management	FTE/Obl.	0	149	0	855	0	0	0	0	0	0
<b>Total</b>	Pos./BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl.	0	149	0	855	0	0	0	0	0	0
Adjustments for:											
Recoveries			(152)								
Unobligated balance, start of year			(852)		(855)						
Unobligated balance transferred											
Unobligated balance, end of year			855								
Unobligated balance expiring											
Financing from transfers:											
Transfer from other accounts (-)											
Transfer to other accounts (+)											
Appropriation			0		0		0		0		0

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**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Telecommunications Facilities, Planning, and Construction**  
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**  
(Dollar amounts in thousands)

Activity: Public Telecommunications Facilities, Planning, and Construction

The Public Telecommunications Facilities, Planning, and Construction program was discontinued in FY 2011.

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Telecommunications Facilities, Planning, and Construction**  
**APPROPRIATION LANGUAGE AND CODE CITATION**

For the administration of prior-year grants, recoveries and unobligated balances of funds previously appropriated are available for the administration of all open grants until their expiration. (Public Law 115-31)

47 U.S.C. § 391 authorizes the Secretary of Commerce to provide grant funds for the planning and construction of public telecommunications facilities by eligible entities.

47 U.S.C. § 392 sets forth the application requirements to be submitted to the Secretary of Commerce by eligible entities to request funds for the construction of public telecommunications facilities

47 U.S.C. § 902(b)(3) assigned to NTIA the administration of the Public Telecommunications Facilities Program.



**Department of Commerce  
National Telecommunications and Information Administration  
Information Infrastructure Grants  
SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
President's Budget, 2019	0	0	0	147
2020 Adjustments to base:	0	0	0	0
2020 Base	0	0	0	0
plus: 2020 Program changes	0	0	0	0
2020 Estimate	0	0	0	0

		2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increase/Decrease from 2020 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount
<b>Comparison by activity/subactivity: with totals by activity</b>							
Technology Opportunities Program Grants	Pos./BA	0	0	0	0	0	0
	FTE/Obl.	0	0	0	0	0	0
Technology Opportunities Program Program Management	Pos./BA	0	0	0	0	0	0
	FTE/Obl.	0	66	0	147	0	0
Total	Pos./BA	0	0	0	0	0	0
	FTE/Obl.	0	66	0	147	0	0
Adjustments for:							
Recoveries							
	Unobligated balance, start of year		(213)		(147)		
	Unobligated balance transferred						
	Unobligated balance, end of year		147				
	Unobligated balance expiring						
Financing from transfers:							
	Transfer from other accounts (-)						
	Transfer to other accounts (+)						
Appropriation		0	0	0	0	0	0

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**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Information Infrastructure Grants**  
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**  
(Dollar amounts in thousands)

**Activity:** Information Infrastructure Grants

The Technology Opportunities Program was discontinued in FY 2005.

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**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Safety Trust Fund**  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
President's Budget, 2019	0	6	0	7,795
2020 Adjustments to base:	0	0	0	0
2020 Base	0	6	0	8,131
plus: 2020 Program changes	0	0	0	0
2020 Estimate	0	6	0	8,131

		2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base	
<b>Comparison by activity/subactivity: with totals by activity</b>		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Public Safety Trust Fund		Pos./BA	0	0	0	0	0	0	0	0	0
		FTE/Obl.	0	54,268	0	2,000	0	2,000	0	2,000	0
FirstNet - Administration		Pos./BA	0	0	0	0	0	0	0	0	0
		FTE/Obl.	34	8,583	0	250	0	500	0	500	0
NTIA - Program Administration & Implementation		Pos./BA	0	0	0	0	0	0	0	0	0
		FTE/Obl.	10	1,702	5	5,080	5	5,088	5	5,088	0
NTIA - Next Generation 911		Pos./BA	0	0	0	0	0	0	0	0	0
		FTE/Obl.	1	333	1	465	1	543	1	543	0
<b>Total</b>		Pos./BA	0	0	0	0	0	0	0	0	0
		FTE/Obl.	45	64,886	6	7,795	6	8,131	6	8,131	0
Adjustments for:											
Recoveries			(2,555)								
Unobligated balance, start of year			(84,438)		(45,107)						
Unobligated balance transferred											
Unobligated balance, end of year			45,107		37,312						
Unobligated balance expiring											
Financing from transfers:											
Transfer from other accounts (-)											
Transfer to other accounts (+)											
Appropriation			0	0	0	0	0	0	0	0	0

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**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Safety Trust Fund**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: Public Safety Trust Fund

Line Item		2018		2019		2020		2020		Increases/Decreases	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Public Safety Trust Fund	Pos./BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl	0	54,268	0	2,000	0	2,000	0	2,000	0	0
<b>Total</b>	Pos./BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl	0	54,268	0	2,000	0	2,000	0	2,000	0	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Safety Trust Fund**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: FirstNet - Administration

Line Item	2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base	
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
FirstNet - Administration										
	Pos./BA	0	0	0	0	0	0	0	0	0
	FTE/Obl	34	8,583	0	250	0	500	0	500	0
<b>Total</b>										
	Pos./BA	0	0	0	0	0	0	0	0	0
	FTE/Obl	34	8,583	0	250	0	500	0	500	0



**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Safety Trust Fund**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: NTIA - Program Administration & Implementation

Line Item	2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base	
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NTIA - Program Administration and Implementation	Pos./BA	0	0	0	0	0	0	0	0	0
	FTE/Obl	10	1,702	5	5,080	5	5,088	5	5,088	0
<b>Total</b>	Pos./BA	0	0	0	0	0	0	0	0	0
	FTE/Obl	10	1,702	5	5,080	5	5,088	5	5,088	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Safety Trust Fund**  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar amounts in thousands)

Activity: NTIA - Next Generation 911

Line Item		2018 Actual		2019 Enacted		2020 Base		2020 Estimate		Increases/Decreases from 2020 Base	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NTIA - Next Generation E-911	Pos./BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl	1	333	1	465	1	543	1	543	0	0
<b>Total</b>	Pos./BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl	1	333	1	465	1	543	1	543	0	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Public Safety Trust Fund**  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: Public Safety Trust Fund

<b>Object Class</b>	2018 Actual	2019 Enacted	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
11.1 Full-time permanent (Compensation)	4,769	472	890	890	0
11.3 Other than full-time permanent				0	0
11.5 Other personnel compensation	250			0	0
11.8 Special personnel services payments					
11.9 <b>Total personnel compensation</b>	5,019	472	890	890	0
12.1 Civilian personnel benefits	1,619	184	267	267	0
13 Benefits for former personnel					
21 Travel and transportation of persons	103	40	65	65	0
22 Transportation of things	1	1	1	1	0
23 Rent, communications and utilities					
23.1 Rental payments to GSA	317	190	190	190	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., and misc. charges	120	120	120	120	0
24 Printing and reproduction	17	17	17	17	0
25 Consulting and other services					
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services from non-Federal sources	834	2,010	3,464	3,464	0
25.3 Purchase of goods and services from Gov't accounts	2,184	2,744	1,100	1,100	0
25.4 Operation of GOCOs	0	0	0	0	
25.5 Research and development contracts	0	0	0	0	
25.6 Medical care	0	0	0	0	
25.7 Operation & maintenance of equipment	5	5	5	5	0
25.8 Subsistence and support of persons	0	0	0	0	
26 Supplies and materials	16	12	12	12	0
31 Equipment	383			0	0

Exhibit 16

<b>Object Class</b>	2018 Actual	2019 President's Budget	2020 Base	2020 Estimate	Increases/Decreases from 2020 Base
32 Lands and structures					0
33 Investments and loans					
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities					
43 Interest and dividends					
44 Refunds					
94 Expenditure Transfer	54,268	2,000	2,000	2,000	0
<b>99.9 Total Obligations</b>	<b>64,886</b>	<b>7,795</b>	<b>8,131</b>	<b>8,131</b>	<b>0</b>
Less prior year recoveries					
Less prior year unobligated balance	(84,438)	(45,107)			
<b>Total Budget Authority</b>	<b>0</b>	<b>0</b>	<b>8,131</b>	<b>8,131</b>	<b>0</b>
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	102	6	6	6	0
Other than full-time permanent	0	0	0	0	0
Total	102	6	6	6	0
Authorized Positions:					
Full-time permanent	102	6	6	6	0
Other than full-time permanent	0	0	0	0	0
Total	102	6	6	6	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**State and Local Implementation Fund**  
**SUMMARY OF REIMBURSABLE OBLIGATIONS**  
(Dollar amounts in thousands)

<b>Comparison by activity:</b>			2018		2019		2020		2020		Increases/Decreases	
			Actual		Enacted		Base		Estimate		from 2020 Base	
<b>State and Local Implementation Fund</b>			Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
<u>Reimbursable Projects</u>												
State and Local Implementation Grant	Pos./BA		0	0	0	0	0	0	0	0	0	0
Fund Administration	FTE/Obl.		4	15,026	5	23,791	5	2,485	5	2,485	0	0
<b>Total, Reimbursable Projects</b>												
	Pos./BA		0	0	0	0	0	0	0	0	0	0
	FTE/Obl.		4	15,026	5	23,791	5	2,485	5	2,485	0	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**Network Construction Fund**  
**SUMMARY OF REIMBURSABLE OBLIGATIONS**  
(Dollar amounts in thousands)

<b>Comparison by activity:</b>		2018		2019		2020		2020		Increases/Decreases	
		Actual		Enacted		Base		Estimate		from 2020 Base	
<b>Network Construction Fund</b>		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
<u>Reimbursable Projects</u>											
First Responder Network Authority	Pos./BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl.	179	6,229,672	0	40,329	0	4,000	0	4,000	0	0
NTIA Opt-Out	Pos./BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl.	0	625	0	0	0	0	0	0	0	0
<hr/>											
<b>Total, Reimbursable Projects</b>		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
	Pos./BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl.	179	6,230,297	0	40,329	0	4,000	0	4,000	0	0

**Department of Commerce**  
**National Telecommunications and Information Administration**  
**First Responder Network Authority**  
**SUMMARY OF REIMBURSABLE OBLIGATIONS**  
(Dollar amounts in thousands)

<b>Comparison by activity:</b>			2018		2019		2020		2020		Increases/Decreases	
			Actual		Enacted		Base		Estimate		from 2020 Base	
<b>First Responder Network Authority</b>			Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
<u>Reimbursable Projects</u>												
	First Responder Network Authority	Pos./BA	0	0	0	0	0	0	0	0	0	0
		FTE/Obl.	0	0	260	359,783	258	120,000	258	120,000	0	0
<b>Total, Reimbursable Projects</b>												
		Pos./BA	0	0	0	0	0	0	0	0	0	0
		FTE/Obl.	0	0	260	359,783	258	120,000	258	120,000	0	0

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**U.S. Department of Commerce  
National Telecommunications and Information Administration  
ANNUAL PERFORMANCE PLAN AND REPORT (APPR)**

**FY 2018 – FY 2022: Strategic Goals and Objectives**

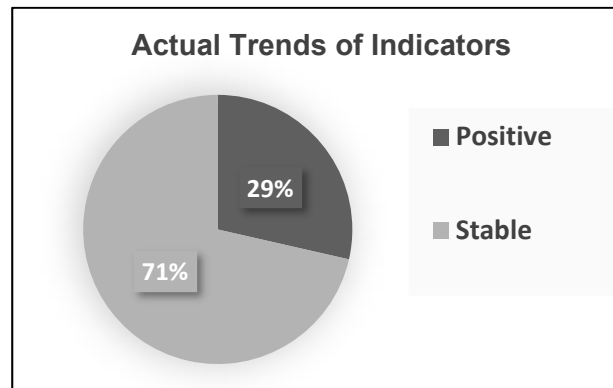
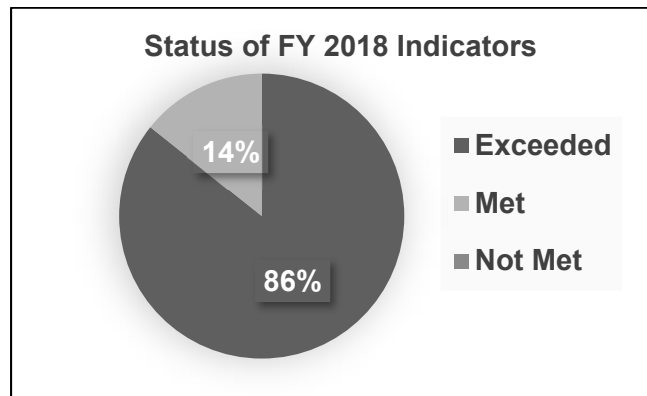
NTIA’s policies and programs work to support the following Department of Commerce’s Strategic Goals and Strategic Objectives from the FY 2018 – FY 2022 Strategic Plan.

- Strategic Goal 1: Accelerate American Leadership
  - Strategic Objective 1.1: Expand Commercial Space Activities
  - Strategic Objective 1.2: Advance Innovation
  - Strategic Objective 1.3: Strengthen Intellectual Property Protection

- Strategic Goal 2: Enhance Job Creation
  - Strategic Objective 2.2: Reduce and Streamline Regulations
  - Strategic Objective 2.3: Strengthen Domestic Commerce and U.S. Industrial Base

- Strategic Goal 3: Strengthen U.S. Economic and National Security
  - Strategic Objective 3.2: Enhance the Nation’s Cybersecurity
  - Strategic Objective 3.4: Deploy Public Safety Broadband

**Performance Indicator Information**



Summary of Indicator Performance

- There were seven indicators for NTIA’s programs.
- Of the seven indicators, six (86%) exceeded their targets and one (14%) met its target; and
- Of the seven indicators, two (29%) had positive trends and five (71%) had stable trends.

**Summary of FY 2018 Indicator Performance**

<b>Indicator Name</b>	<b>Target</b>	<b>Actual</b>	<b>Status</b>	<b>Trend</b>
Percentage of NTIA positions substantially adopted or successful at international meetings	75%	91%	Exceeded	Stable
In coordination with DOC operating units, conduct outreach activities with government, industry, and multistakeholders groups to identify and address privacy and global free flow of information issues	6 public forums and proceedings	11	Exceeded	Positive
Communities to which NTIA provides technical assistance	145 unique communities	217	Exceeded	Stable
Number of times research publications are downloaded annually	7,000	7553	Exceeded	Stable
Successfully completed deliverables under reimbursable agreements (on time, on budget, and accepted)	95%	100%	Exceeded	Stable
Create a pipeline of spectrum for mission-critical government services and commercial providers	Meet 66% of annual milestones	75%	Exceeded	Positive
Deploy, operate, and maintain a nationwide public safety broadband network	Stagger deployment of FirstNet core network and nationwide functions. Initiate Band 14 RAN build-out for Opt-In states	Completed	Met	Stable

### **Tracking Progress on Strategic Objectives**

1. Promote acceptance of U.S. positions and proposals internationally by representing U.S. interests at treaty-making conferences, regional communications conferences and meetings, bilateral and multilateral meetings, and multi-stakeholder meetings and conferences.
2. Partner with stakeholders from industry, consumer groups, government, academia, and technical community to work towards crafting a consensus on privacy and global free flow of information issues.
3. Provide broadband technical assistance to unserved and underserved communities to attract new business investments and spur economic growth.
4. Develop telecommunications engineering research publications, software programs, and data sets that are used by engineers and scientists associated with industry, other government agencies, standards development organizations, and academia for technical data and information to support efficient and effective management of spectrum and innovative use of new technologies.
5. Perform research on cost-reimbursable basis for other federal agencies under interagency agreements (IAAs) and for private entities under cooperation and research development agreements (CRADAs). As a proxy for customer satisfaction with research performed under an aggregate of unique agreements, the laboratory tracks three success parameters – on time, on budget, and accepted – for each deliverable under all agreements.
6. Create and institutionalize enduring processes that foster full, efficient, and effective use of radio spectrum and result in a pipeline that provides sufficient spectrum access opportunities to meet the increasing needs of the Federal Government, State and Local entities providing mission critical services, as well as commercial wireless services.
7. Deploy, operate, and maintain a nationwide public safety broadband (NPSBN) – continue oversight of the NPSBN buildout and drive innovation and seek technologies to advance public safety communications.

**Detailed Indicator Plans and Performance**

**Current / Recurring Indicators**

<b>Indicator</b>	<b>Percentage of NTIA positions substantially adopted or successful at international meetings</b>							
Category	Supporting							
Type	Intermediate Outcome							
Description	Promote acceptance of U.S. positions and proposals internationally by representing U.S. interests at treaty-making conferences, regional communications conferences and meetings, bilateral and multilateral meetings, and multi-stakeholder meetings and conferences. This measure tracks the number of accepted U.S. technical and policy positions and proposals to international treaty-making conferences, bilateral and multi-lateral meetings, multi-stakeholder meetings, and regional communications conferences and meetings.							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target	75% of NTIA positions substantially adopted/successful at international meetings	75% of NTIA positions substantially adopted/successful at international meetings	75% of NTIA positions substantially adopted/successful at international meetings	75% of NTIA positions substantially adopted/successful at international meetings	75% of NTIA positions substantially adopted/successful at international meetings	75% of NTIA positions substantially adopted/successful at international meetings	75% of NTIA positions substantially adopted/successful at international meetings	75% of NTIA positions substantially adopted/successful at international meetings
Actual	80%	95%	95%	95%	95%	91%		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Stable							
Explanation (if not met in 2018)	None.							
Actions to be taken to correct not meeting target	None.							

<b>Indicator</b>	<b>Percentage of NTIA positions substantially adopted or successful at international meetings</b>
Adjustments to targets	
Notes	None.
Information Gaps	None.

<b>Indicator</b>	<b>In coordination with DOC operating units, conduct outreach activities with government, industry, and multistakeholder groups to identify and address privacy and global free flow of information issues</b>							
Category	Supporting (Non-Strategic Plan)							
Type	Intermediate Outcome							
Description	Partner with stakeholders from industry, consumer groups, government, academia, and technical community to work towards crafting a consensus on privacy and global free flow of information issues. NTIA will seek public input and comments to lay the groundwork for these challenges. NTIA's role is not to substitute its judgment for the views of stakeholders, but rather will ensure the process is open, transparent, and consensus-based							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target		6 public forums and proceedings	6 public forums and proceedings	6 public forums and proceedings	6 public forums and proceedings	6 public forums and proceedings	6 public forums and proceedings	6 public forums and proceedings
Actual		9	10	10	7	11		
Status			Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Positive							
Explanation (if not met in 2018)	None.							
Actions to be taken to correct not meeting target	None.							
Adjustments to targets								
Notes	None.							
Information Gaps	None.							

<b>Indicator</b>	<b>Communities to which NTIA provides technical assistance</b>							
Category	Key							
Type	Output							
Description	Provide broadband technical assistance to unserved and underserved communities to attract new business investments and spur economic growth. Various communities that were unable to receive NTIA assistance during the BTOP grant period can now take advantage of NTIA's technical expertise during NTIA's subsequent outreach program, thereby leveraging the expansion of broadband. This performance metric measures the additional communities that NTIA will assist.							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target			175 communities	250 communities	250 communities	145 unique communities	170 unique communities	193 unique communities
Actual			337	449	400	217		
Status			Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Stable							
Explanation (if not met in 2018)	None.							
Actions to be taken to correct not meeting target	Collection of data							
Adjustments to targets	In FY 2018, NTIA started to measure "unique" communities, in order to ensure that the reported numbers do not double count communities that seek out help more than once							
Notes								
Information Gaps								

<b>Indicator</b>	<b>Number of times research publication are downloaded annually</b>
Category	Supporting (Non-Strategic Plan)
Type	Output

<b>Indicator</b>	<b>Number of times research publication are downloaded annually</b>							
Description	Develop telecommunications engineering research publications, software programs, and data sets that are used by engineers and scientists associated with industry, other government agencies, standards development organizations, and academia for technical data and information to support efficient and effective management of spectrum and innovative use of new technologies							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target		7,000 downloads	7,300 downloads	7,500 downloads	8,000 downloads	7,000 downloads	7,000 downloads	7,000 downloads
Actual		7,707 downloads	8,960 downloads	8,748 downloads	8,089 downloads	7553 downloads		
Status		Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Stable							
Explanation (if not met in 2018)	None.							
Actions to be taken to correct not meeting target	None.							
Adjustments to targets	Advanced research technology transferred by publications is giving way to technology transferred through software programs and data set releases. This is a new phenomenon and no trend information is available, but the audience for the software and data sets is known to be smaller than the audience for publications. Resource constraints are also reducing the average number of new research publications available each year.							
Notes	Metric is restated to include downloads of software programs and data sets. Software and data sets represented 23% of downloads in FY 2017 versus 13% of downloads in FY 2014. As the number of print publications decreases and the number of published software programs and data sets increase, the metric will also transition to total downloads.							
Information Gaps	None.							

<b>Indicator</b>	<b>Successfully completed deliverables under reimbursable agreements (on time, on budget, and accepted)</b>
Category	Supporting (Non-Strategic Plan)
Type	Process
Description	Perform research on cost-reimbursable basis for other federal agencies under IAAs and for private entities under CRADAs. As a proxy for customer satisfaction with research performed under an aggregate of unique agreements,

<b>Indicator</b>	<b>Successfully completed deliverables under reimbursable agreements (on time, on budget, and accepted)</b>							
	the laboratory tracks three success parameters – on time, on budget, and accepted – for each deliverable under all agreements.							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target		95% of customer satisfaction surveys meet expectations on three parameters	95% of customer satisfaction surveys meet expectations on three parameters	95% of customer satisfaction surveys meet expectations on three parameters	95% of customer satisfaction surveys meet expectations on three parameters	95% of customer satisfaction surveys meet expectations on three parameters	95% of customer satisfaction surveys meet expectations on three parameters	95% of customer satisfaction surveys meet expectations on three parameters
Actual		98%	99%	99%	99%	100%		
Status		Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Stable							
Explanation (if not met in 2018)	None.							
Actions to be taken to correct not meeting target	None.							
Adjustments to targets	None.							
Notes	None.							
Information Gaps	None.							

<b>Indicator</b>	<b>Create a pipeline of spectrum for mission-critical government services and commercial providers</b>
Category	Key
Type	Intermediate Outcome
Description	Create and institutionalize enduring processes that foster full, efficient, and effective use of radio spectrum and result in a pipeline that provides sufficient spectrum access opportunities to meet the increasing needs of the Federal Government, State and Local entities providing mission critical services, as well as commercial wireless services. The required ongoing analyses combined with various possible band-repurposing options results in a new set of deliverables each fiscal year. NTIA will establish at the beginning of each fiscal year the set of expected deliverables to complete this complex project.



<b>Indicator</b>	<b>Create a pipeline of spectrum for mission-critical government services and commercial providers</b>							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target						Meet 66% of annual milestones	Meet 66% of annual milestones	Meet 66% of annual milestones
Actual						75%		
Status						Exceeded		
Trend	Positive							
Explanation (if not met in 2018)								
Actions to be taken to correct not meeting target	NTIA will continue to conduct spectrum assessments in order to support informed and timely spectrum sharing decisions, as well as produce band studies in order to identify spectrum for repurposing from federal to non-federal or shared use.							
Adjustments to targets								
Notes								
Information Gaps								

<b>Indicator</b>	<b>Deploy, operate, and maintain a nationwide public safety broadband network</b>							
Category	Supporting (Non-Strategic Plan)							
Type	Intermediate Outcome							
Description	Deploy, operate, and maintain a nationwide public safety broadband network. With its selection of a network partner in 2017, FirstNet has begun its initial five-year period of technical implementation and providing services to public safety first responders.							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target						Stagger deployment of FirstNet core network and nationwide functions. Initiate Band 14	Target public safety device connections and Band 14 coverage in Opt-In states	Reinvest partner receipts back into the network to build better coverage

Indicator	Deploy, operate, and maintain a nationwide public safety broadband network							
						RAN build-out for Opt-In states		and capacity
Actual						Completed		
Status						Met		
Trend	Stable							
Explanation (if not met in 2018)								
Actions to be taken to correct not meeting target	Measurement of network adoption by public safety users against targets within NPSBN contract							
Adjustments to targets	None.							
Notes	None							
Information Gaps	None.							

**Proposed New Indicators**

Indicator	Percentage of spectrum assignments transitioned on time, based on approved plans							
Category	Strategic Plan – Key							
Type	Intermediate Outcome							
Description	Create a sustainable pipeline of spectrum for commercial wireless services, while ensuring sufficient spectrum is available for mission-critical government services. Leveraging advanced technical research and key assessment of prioritized spectrum bands, NTIA will verify federal agencies transition plan compliance with requirements and oversee execution of approved plans to ensure on-time relocation or implementation of spectrum sharing opportunities between federal agencies and industry to foster economic innovation and growth.							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target						80%	75%	75%
Actual						92%		
Status						Exceeded		

<b>Indicator</b>	<b>Percentage of spectrum assignments transitioned on time, based on approved plans</b>
Trend	New indicator – not enough data.
Explanation (if not met in 2018)	
Actions to be taken to correct not meeting target	
Adjustments to targets	
Notes	
Information Gaps	

<b>Indicator</b>	<b>Projected impact on the number of hospitals, K-12 schools, and students in areas where NTIA is providing broadband project support</b>							
Category	Strategic Plan – Key							
Type	Output							
Description	By providing broadband technical assistance and support, NTIA will provide the foundation for state and local governments to attract broadband infrastructure investments. Broadband infrastructure leads to the delivery of new jobs, better service delivery, and creation of innovative technologies benefitting hospital, schools, and students.							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target								
• K-12 Community Anchor Institutions (CAIs)							7,000	7,700
• K-12 students							3,150,000	3,400,000
• Hospitals							1,250	1,350
Actual								
• K-12 CAIs						6,300		

Indicator	Projected impact on the number of hospitals, K-12 schools, and students in areas where NTIA is providing broadband project support							
• K-12 Students						2,875,000		
• Hospitals						1,150		
Status								
Trend	New indicator							
Explanation (if not met in 2018)								
Actions to be taken to correct not meeting target								
Adjustments to targets								
Notes								
Information Gaps								

Indicator	Percentage of public safety adoption targets achieved							
Category	Strategic Plan – Key							
Type	Intermediate Outcome							
Description	Deploy, maintain, and operate the Nationwide Public Safety Broadband Network (PSBN) – a mission critical, prioritized, nationwide interoperable broadband network for first responders throughout the nation, with adoption by firefighters, paramedics, law enforcement officers, and other public safety personnel							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target						New	N/A	50% of 2023 target
Actual								
Status								
Trend	New indicator – not enough data.							
Explanation (if not met in 2018)								
Actions to be taken to correct not meeting target								

Indicator	Percentage of public safety adoption targets achieved
Adjustments to targets	
Notes	Per the terms of the NPSBN contract, (1) adoption targets begin in IOC-3 and therefore will not be reported on in FY 19 and (2) % of adoption targets met for 2020 are based on the targets for 2023.
Information Gaps	

Indicator	Percentage of planned coverage achieved							
Category	Strategic Plan – Key							
Type	Intermediate Outcome							
Description	By providing a single interoperable platform, the NPSBN will meet the communication needs of first responders for day-to-day operations, disaster recovery, and securing large events. The advanced communications services will be offered to more than 60,000 independent public safety agencies that cover the geographic reach of the United States and territories, over a phased deployment							
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Target						New	20% of 2023 target	60% of 2023 target
Actual								
Status								
Trend	New indicator – not enough data.							
Explanation (if not met in 2018)								
Actions to be taken to correct not meeting target								
Adjustments to targets								
Notes	Per the terms of the NPSBN contract, (1) adoption targets begin in IOC-3 and therefore will not be reported on in FY 19 and (2) % of adoption targets met for 2020 are based on the targets for 2023.							
Information Gaps								