U.S. DEPARTMENT OF COMMERCE

National Telecommunications and Information Administration

FY 2018 Budget as Presented to Congress

May 2017

DEPARTMENT OF COMMERCE
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
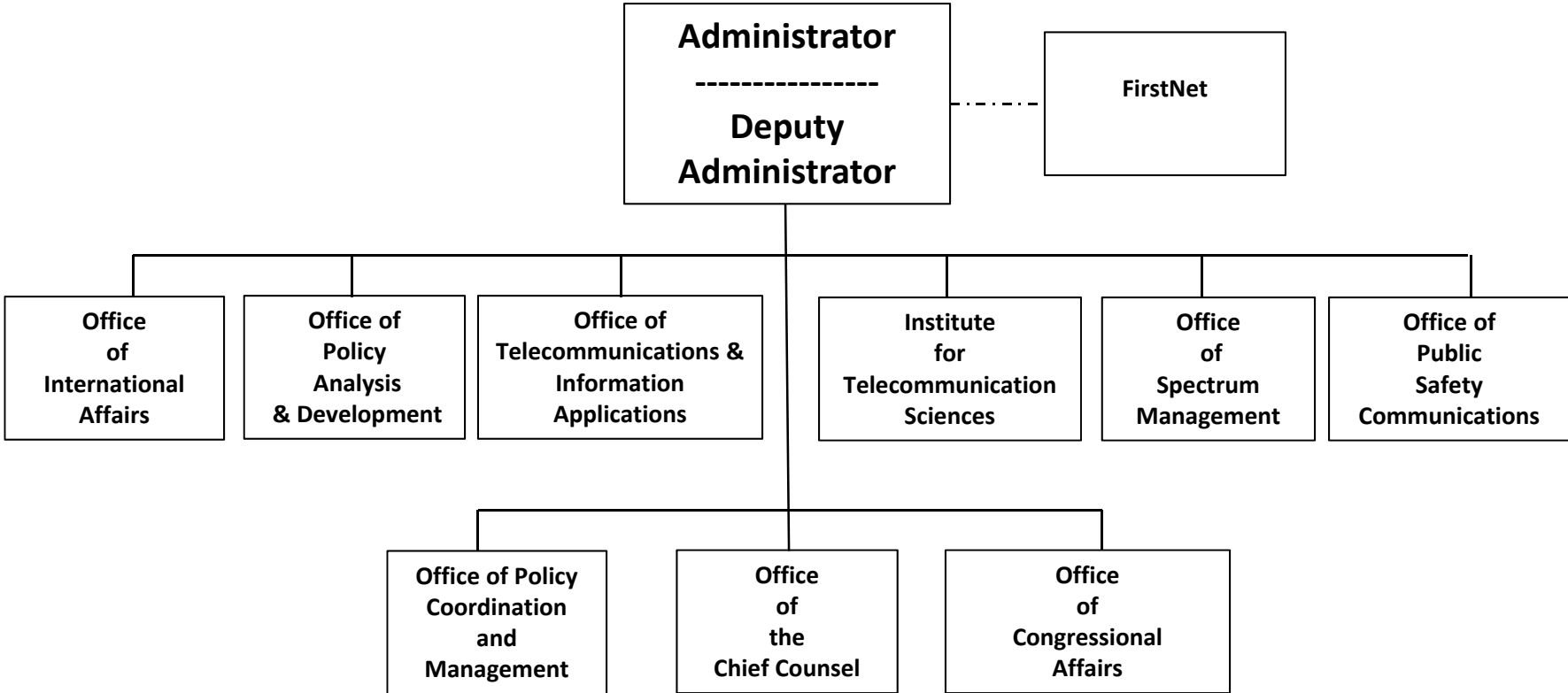**Budget Estimates, Fiscal Year 2018**
Budget as Presented to Congress

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U.S. DEPARTMENT OF COMMERCE
National Telecommunications & Information Administration

Administrator

Deputy Administrator

FirstNet

Office of International Affairs	Office of Policy Analysis & Development	Office of Telecommunications & Information Applications	Institute for Telecommunication Sciences	Office of Spectrum Management	Office of Public Safety Communications

Office of Policy Coordination and Management	Office of the Chief Counsel	Office of Congressional Affairs

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National Telecommunications and Information Administration
Fiscal Year 2018 Executive Summary

Salaries and Expenses

Program	FY 2016 Actual ($000)	FY 2017 Annualized CR ($000)	FY 2018 Base ($000)	FY 2018 Request ($000)
Domestic and International Policies	$ 9,093	$ 9,076	$ 9,245	$ 8,402
Spectrum Management	8,488	8,472	8,472	8,472
Advanced Communications Research	10,075	10,056	10,286	8,805
Broadband Programs	11,844	11,822	12,185	10,321
TOTAL	$ 39,500	$ 39,426	$ 40,188	$ 36,000
FTE	127	160	160	152

The National Telecommunications and Information Administration (NTIA) is responsible by law for advising the President on communications and information policy issues, as well as managing the federal government's use of spectrum. NTIA's programs and policymaking focus on expanding broadband Internet access and adoption in America, expanding the availability of spectrum for all users, and ensuring that the Internet remains an engine for innovation and economic growth. The FY 2018 President's Budget continues NTIA's presence representing the United States interests at multi-stakeholder forums on internet governance and digital commerce. The Budget supports the commercial sector's development of next generation wireless services by funding NTIA's mission of evaluating and ensuring the efficient use of spectrum by government users. These goals are critical to America's competitiveness in the 21st century global economy and to addressing the nation's most pressing needs, such as improving education, health care, and public safety.

Domestic and International Policies. NTIA must sufficiently influence domestic and international policies and discussions to preserve the Internet's openness and its cultural and economic potentials while advancing key U.S. interests. NTIA must ensure its policy program is positioned to meet the growing complexity of the Internet environment, as the world becomes more interconnected via rapid growth of the Internet and the globalization of information technology services and equipment. The FY 2018 President's Budget Request continues to proactively posture the United States on these broad range of Internet policy and digital economy issues. Utilizing the multistakeholder process, which involves the full inclusion of stakeholders, to reach general consensus on priority internet policy issues (e.g., consumer data privacy, cybersecurity, digital copyright); NTIA will provide support for the Digital Economy Leadership Team (DELT); perform a central role in 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. The tremendous growth in demand for wireless broadband by consumers, businesses, and government agencies requires innovative approaches to increase spectrum access to commercial and federal users. NTIA supports the commercial sector's development of next generation wireless services by evaluating and ensuring the efficient use of spectrum by Government users. The agency promotes the best possible and most efficient use of the nation's limited spectrum resources across the Federal Government to satisfy the congressionally mandated missions of all federal agencies in support of national defense, homeland security, law enforcement, and public safety. 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 and other interested agencies to advance U.S. interests and positions related to international spectrum issues, conferences, and negotiations.

Advanced Communications Research. This request includes resources for NTIA's Institute for Telecommunication Sciences (ITS) which provides scientific research on spectrum capability, spectrum management approaches (e.g., spectrum sharing) and spectrum-enabled technology development and testing for both federal agencies and private industry partners. NTIA has a statutory directive to further scientific knowledge related to telecommunications, particularly with respect to radio spectrum. NTIA is expanding collaborative research and development in advanced communications technologies to support commercial and government applications. This work will advance research, development, testing, and evaluation to enhance spectrum sharing and wireless efficiencies.   NTIA leverages these capabilities with the National Institute of Standards and Technology, bringing basic and applied scientific research methods together to further our capacity.

Broadband Programs. There continues to be a pent-up demand for technical assistance and hands-on guidance in bringing broadband capabilities to American communities across the nation. In FY 2018, NTIA will continue to respond to high levels of demand for technical services and broadband leadership efforts by partnering with unserved and underserved communities, so that they can attract new business investments and spur economic growth. The program provides technical and administrative expertise to communities—including infrastructure financing, coalition building, broadband adoption, engineering challenges, project management, fee development, and billing management—that often cut short very promising broadband projects. Our strategy capitalizes on NTIA's strong relationships with broadband providers, municipal organizations, innovation economy firms, non-profit organizations, foundations, and other federal stakeholders.

Public Safety – Mandatory. The Middle Class Tax Relief and Job Creation Act of 2012 provided $7 billion to establish a nationwide interoperable public safety broadband network (NPSBN). The investment is now fully supported by proceeds from spectrum auctions conducted by the Federal Communications Commission (FCC). The Act also provided $135 million for a grant program to assist state, regional, tribal, and local jurisdictions in identifying, planning, and implementing efficient and effective ways to utilize and integrate the infrastructure, equipment, and other architecture associated with the NPSBN. In FY 2015, receipts received from the FCC completed the deposits required to fully repay borrowing and fund the construction of the NPSBN, the State and Local Implementation Program, provide a first installment to NIST for research on public safety communications and provide $12 billion to Treasury for deficit reduction. In FY 2016, an additional $8.4 billion in receipts enabled NTIA to fulfill the remaining requirements of the law as outlined in Section 6413 and transfer an additional $7.8 billion to the Department of Treasury for deficit reduction; an additional $200 million to NIST for public safety communications research, $112 million to the Department of Transportation and $3 million to NTIA for their joint work on the NG-911 program; and, begin investing the remaining funds of $333 million in Treasury securities.

Summary. NTIA's FY 2018 Budget Request reflects a funding level matching the important economic and social roles played by the fast-growing broadband and Internet world. This Budget provides the resources necessary to support NTIA's responsibilities as advisor to the President on Internet and communications issues; promote and create opportunities related to broadband expansion and adoption; and manage core programs effectively and efficiently. This Budget ensures that the Internet remains an engine for continued innovation and economic growth.

Note: A full-year 2017 appropriation was not enacted at the time the FY 2018 Budget was prepared; therefore, the Budget assumes the Department is operating under the Further Continuing Appropriations Act, 2017 (P.L. 114–254). The amounts included for 2017 reflect the annualized level provided by the continuing resolution.

Department of Commerce
National Telecommunications and Information Administration
FY 2018 PROGRAM INCREASES / DECREASES / TERMINATIONS
(Dollar amounts in thousands)
(Largest to Smallest)

Increases

Page No. in CJ	Appropriation	Budget Program	Activity/Subactivity	FTE	Budget Authority
-		NOT APPLICABLE		-	-
Subtotal, Increases				**0**	**0**

Decreases

Page No. in CJ	Appropriation	Budget Program	Activity/Subactivity	FTE	Budget Authority
NTIA-36	Salaries & Expenses	Broadband Programs	Technical Assistance	(5)	(1,864)
NTIA-27	Salaries & Expenses	Advanced Comm Research	Spectrum Monitoring and Sharing	(3)	(1,481)
NTIA-15	Salaries & Expenses	Domestic & International Policy	Toolkit Development	0	(843)
Subtotal, Decreases				**(8)**	**(4,188)**

Terminations

Page No. in CJ	Appropriation	Budget Program	Activity/Subactivity	FTE	Budget Authority
-		NOT APPLICABLE			-
Subtotal, Terminations				**0**	**0**
Total, Increases, Decreases and Terminations				**(8)**	**(4,188)**

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Exhibit 5

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

	Positions	FTE	Budget Authority	Direct Obligations
FY 2017 Annualized CR	160	160	$39,426	$39,426
less: Obligations from prior years	0	0	0	0
plus: 2018 adjustments to base	0	0	762	762
2018 Base	160	160	40,188	40,188
plus: 2018 program changes (net)	(8)	(8)	(4,188)	(4,188)
2018 Estimate	152	152	36,000	36,000

Comparison by budget program/sub-program		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Domestic and International Policies…………………………… Pos/BA		35	$9,093	35	$9,076	35	$9,245	35	$8,402	0	($843)
FTE/Obl.		33	$9,780	35	$10,194	35	$9,245	35	$8,402	0	($843)
Spectrum Management... Pos/BA		39	8,488	39	8,472	39	8,472	39	8,472	0	0
FTE/Obl.		25	9,645	39	8,472	39	8,472	39	8,472	0	0
Advanced Communications Research..................................... Pos/BA		50	10,075	50	10,056	50	10,286	47	8,805	(3)	(1,481)
FTE/Obl.		29	8,827	50	11,373	50	10,286	47	8,805	(3)	(1,481)
Broadband Programs…………………………………………… Pos/BA		36	11,844	36	11,822	36	12,185	31	10,321	(5)	(1,864)
FTE/Obl.		40	13,470	36	12,750	36	12,185	31	10,321	(5)	(1,864)
TOTALS.. Pos/BA		160	39,500	160	39,426	160	40,188	152	36,000	(8)	(4,188)
FTE/Obl.		127	41,722	160	42,789	160	40,188	152	36,000	(8)	(4,188)
Adjustments to Obligations:											
Recoveries/Refunds...			(1,385)		0		0		0		0
Unobligated Balance, start of year……….……………………			(4,200)		(3,363)		0		0		0
Unobligated Balance, end of year..			3,363		0		0		0		0
Unobligated Balance expiring..			0		0		0		0		0
Financing from transfers:											
Transfer from DOC Census (-)………………………………………			0		0		0		0		0
Transfer to other accounts (+)..			0		0		0		0		0
Appropriation...			39,500		39,426		40,188		36,000		(4,188)

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Exhibit 6

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

Comparison by sub-program		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Reimbursable projects											
Telecommunication Sciences Research	Pos/BA	45	$0	45	$0	45	$0	45	$0	0	$0
	FTE/Obl.	43	9,695	45	21,826	45	10,200	45	10,200	0	0
Other	Pos/BA	1	0	2	0	2	0	2	0	0	0
	FTE/Obl.	1	271	2	949	2	375	2	375	0	0
Total, Reimbursable projects	Pos/BA	46	0	47	0	47	0	47	0	0	0
	FTE/Obl.	44	9,966	47	22,775	47	10,575	47	10,575	0	0
Spectrum Fees											
Spectrum Management	Pos/BA	114	0	123	0	123	0	123	0	0	0
	FTE/Obl.	100	33,020	123	48,557	123	33,888	123	33,888	0	-
Total, Spectrum fees	Pos/BA	114	0	123	0	123	0	123	0	0	0
	FTE/Obl.	100	33,020	123	48,557	123	33,888	123	33,888	0	$ -
Total, Reimbursable Obligations	Pos/BA	160	0	170	0	170	0	170	0	0	0
	FTE/Obl.	144	42,986	170	71,332	170	44,463	170	44,463	0	-

Exhibit 7

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

Comparison by budget program	2016 Actual	2017 Annualized CR	2018 Base	2018 Estimate	2018 Increase/ (Decrease)
Total Obligations..	**$84,708**	**$114,121**	**$84,651**	**$80,463**	**($4,188)**
Offsetting collections from:					
Other	(42,715)	(70,832)	(43,963)	(43,963)	0
Non-Federal sources..	(271)	(500)	(500)	(500)	0
Recoveries/Refunds..	(1,385)	0	0	0	0
Unobligated balance, start of year....................................	(4,200)	(3,363)	0	0	0
Unobligated balance, end of year.......................................	3,363	0	0	0	0
Unobligated balance, expiring..	0	0	0	0	0
Budget Authority..	**39,500**	**39,426**	**40,188**	**36,000**	**(4,188)**
Restoration of unobligated balance, rescission..................	0	0	0	0	0
Financing:					
Transferred from other accounts (-)..................................	0	0	0	0	0
Transferred to other accounts (+)......................................	0	0	0	0	0
Appropriation...	**39,500**	**39,426**	**40,188**	**36,000**	**(4,188)**

Exhibit 9

Department of Commerce
National Telecommunications and Information Administration
Salaries and Expenses
JUSTIFICATION OF ADJUSTMENTS TO BASE

Adjustments to Base	FTE	Amount ($000)
Pay Raises	0	$ 464
Full-year cost of FY 2017 pay increase and related costs		
Total cost in FY 2018 of FY 2017 pay increase.. 438,000	0	
Less amount funded in FY 2017.. 258,462		
Total amount requested in FY 2018 to provide cost of FY 2017 pay raise... 179,538		
Other		
FY 2018 pay increase and related costs		
A general pay raise of 2.1 percent is assumed to be effective January 1, 2018.		
Total cost of FY 2018 pay raise.. 284,000		
Working Capital Fund…………………………………………………………………………………… 0		
Total adjustment for FY 2018 pay increase.. 284,000		
Civil Service Retirement System (CSRS)	0	$ (15)
The number of employees covered by CSRS continues to drop as positions become vacant and are filled by		
employees who are covered by the Federal Employees' Retirement System (FERS).		
The estimated percentage of payroll for employees covered by CSRS will drop from 2.8 percent in FY 2017 to 1.5 percent in		
FY 2018. The contribution rate will remain 7.0 percent.		
FY 2018 ($16,220,000 x .015 x. 07).. 17,031		
FY 2017 ($16,220,000 x .028 x .07)... 31,791		
Total adjustment to base.. (14,760)		
Federal Employees Retirement System (FERS)	0	$ 29
The number of employees covered by FERS continues to rise as employees covered by CSRS leave and are		
replaced by employees covered by FERS.		
FY 2018 ($16,220,000 x .985 x .137)... 2,188,808		
FY 2017 ($16,220,000 x .972 x .137) 2,159,920		
Total adjustment to base.. 28,888		

Exhibit 9

Department of Commerce
National Telecommunications and Information Administration
Salaries and Expenses
JUSTIFICATION OF ADJUSTMENTS TO BASE

Adjustments to Base	FTE	Amount ($000)
Federal Insurance Contribution Act (FICA)	0	$ 30

As the percentage of payroll covered by FERS rises, the cost of OASDI contributions will increase.

Regular Employees

FY 2018   ($16,220,000 x .985 x .885. x .062)... 876,642
FY 2017   ($16,220,000 x .972 x .866 x .062)... 846,499
30,142

Other Employees

FY 2018   ($169,000 x..985 x.885 x .062)... 9,134
FY 2017   ($169,000 x .972 x .866 x .062)... 8,820
314

Total adjustment to base... 30,456

Thrift Savings Plan (TSP)	0	$ 4

The cost of NTIA's contributions to the Thrift Savings Plan will also rise as FERS participation increases. The contribution rate is expected to remain at 1 percent.

FY 2018   ($16,220,000 x .985 x .02)... 319,534
FY 2017   ($16,220,000 x .972 x .02)... 315,317
4,217

Health Insurance	0	$ 38

Effective January 2018, NTIA's contribution to Federal employees' health insurance premiums increased by 3.9 percent. Applied against the 2017 estimate of $966,000, the additional amount required is $37,674.

Exhibit 9

Department of Commerce
National Telecommunications and Information Administration
Salaries and Expenses
JUSTIFICATION OF ADJUSTMENTS TO BASE

Adjustments to Base	FTE	Amount ($000)
Postage	0	$ 1
Effective January 22 2017, the Governors of the Postal Service implemented a rate increase of 4.3% for shipping. This percentage was applied to the 2017 estimate of $33,000 to arrive at an increase of $1,419		
Rental Payments to GSA	0	$ 26
GSA rates are projected to increase 1.80 percent in FY 2018. This percentage was applied to the FY 2017 estimate of $1,418,000 to arrive at an increase of $25,524. Costs for Federal Protective Services are not anticipated to change for FY 2018.		
Storage	0	$ 3
National Archives and Records Administration (NARA) storage costs - For FY 2018, NARA estimates reflect an increase of 3,000 for records storage and maintenance costs.		
Working Capital Fund	0	$ 65
The amount of $65,000 is a net increase in charges for the Departmental Working Capital Fund.		
General Pricing Level Adjustment	0	$ 117
This request applies 2.0 percent based on OMB economic assumptions for FY 2018 to object classes where the prices that the Government pays are established through the market system. Factors are applied to: other services ($65,080), supplies and materials ($4,460), equipment ($44,780), travel ($0), GPO printing ($1,400), and communications, utilities, and misc. charges ($2,080).		
Subtotal, Cost Changes	0	$ 762
Total, Adjustments to Base	0	$ 762

Exhibit 10

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

Budget Program: Salaries and Expenses
Sub-Program: Domestic and International Policies

Comparison by sub-program		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Domestic and International Policies…………..………..	Pos/BA	35	$9,093	35	$9,076	35	$9,245	35	$8,402	0	($843)
	FTE/Obl.	33	9,780	35	10,194	35	9,245	35	8,402	0	(843)
Direct Obligations.....................................	Pos/BA	35	9,093	35	9,076	35	9,245	35	8,402	0	(843)
	FTE/Obl.	33	9,780	35	10,194	35	9,245	35	8,402	0	(843)

Department of Commerce
National Telecommunications and Information Administration
Salaries and Expenses

Program Justification Domestic and International Policies for ($000)

Program	FY 2017 Annualized CR	FY 2018 Base	FY 2018 Request	Difference
Domestic and International Policies	$9,076	$9,245	$8,402	$(843)
FTE	35	35	35	0

Mission/Objective: NTIA will protect and promote the Internet and the innovation and economic value it fosters.

Background: NTIA is the principal adviser to the President on communications issues and policies and represents the Administration before the Federal Communications Commission. It is the only Executive Branch agency with a core mission to protect and promote the Internet, digital economy, and the innovation and economic value it fosters. NTIA provides timely analyses and policy recommendations on Internet and communications policy issues. It also endeavors to ensure that the Internet remains an open, dynamic platform for innovation, job creation, and economic growth in traditional and emerging communications networks and services.

From major cybersecurity incidents, to the stability and security of the Internet's domain name system, to the Internet protocol (IP) transition, to foreign Internet regulations, to digital copyright, to how online corporations are targeting ads and utilizing big data, NTIA addresses issues that support continued Internet innovation and job creation. The Internet and communications services are integral to the U.S. economy and account for a significant portion of our economy's recent growth.

Domestically and internationally, NTIA promotes a multistakeholder approach to Internet policymaking, standards development, and governance issues (e.g., cybersecurity, privacy, Internet of Things), which involves the full inclusion of all stakeholders; relies on consensus-based decision-making; and operates in an open, transparent, and accountable manner. Although the Internet has flourished because this approach was followed from its infancy to resolve technical and policy issues, the multistakeholder approach currently is threatened by countries that do not share our interest in an open, dynamic, and innovative Internet. NTIA addresses these challenges through a combination of subject matter expertise; engagement with a broad array of multistakeholder organizations, regulatory agencies, and multilateral bodies; empirical research on broadband adoption and usage; and interagency coordination and collaboration.

NTIA also supports and enhances the Department's leadership role on digital economy issues by strengthening internal coordination among bureaus across the Department. This includes a greater emphasis on anticipating emerging issues, conducting research and analysis from multiple perspectives, and working together to share information and leverage resources. NTIA plays an executive role in convening meetings among Department components, providing analytical support for joint projects, and developing and coordinating Department-wide policy

positions. As an example, NTIA administers and convenes the USG DNS Interagency Working Group. In addition, NTIA represents the Department in key interagency processes on a range of cyber- and national security matters

As the Internet, digital economy and cybersecurity landscape evolves to include a wider swath of functions and services involving big data, the Internet of things, advanced analytics, artificial intelligence, and numerous other innovative developments, the need to find an appropriate balance between openness and innovation that can grow our digital economy and secure the infrastructure upon which we depend is increasing. NTIA's request reflects this approach.

FY 2018 Activities: During FY 2018 NTIA will continue to promote sound Internet policies to protect and expand Internet use and encourage further innovation and economic growth by continuing to support the multistakeholder approach for Internet governance; engaging in international negotiations, standards development and diplomacy; and engaging both Commerce and other federal agencies in dynamic processes to strengthen and expand Internet policy development to include economic and business/industry concerns and impacts. Specifically, NTIA will preserve, promote, and enhance the multistakeholder approach to address Internet policymaking, standards development, and governance issues. This includes developing and presenting U.S. government (USG) positions at interagency, bilateral, multilateral and international organizational meetings and stakeholder fora to support and advance the multistakeholder approach.

Policy and Trends Analysis. NTIA will continue to identify new research resources from the private sector, governmental organization and academia and develop new products to keep the Executive Branch, the Department, Congress, and other stakeholders apprised of fast developing Internet policy issues and trends. In FY 2018, 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 on issues such as privacy and intellectual property and will continue to address issues in a multistakeholder manner. 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.

Law Enforcement and National Security, including Cybersecurity. In FY 2018, NTIA will provide advice focusing on innovation and economic growth in policy discussions related to the protection of Americans from criminal and national security threats in the online environment. Actions will be taken 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 will continue to act as the lead for the Department in representing its equities in interagency deliberations related to cyber operations and policy, and will 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. NTIA will strengthen existing partnerships and develop new allies both domestically and internationally to achieve measurable results in cybersecurity while using the multistakeholder model. NTIA will promote the development of forceful cybersecurity-related policies, while also developing new and innovative approaches to engagement with a wide range of stakeholders, including businesses, various nations, and citizens. NTIA will coordinate effective DOC participation in the work of domestic and international conferences and meetings discussing and developing policies related to cybersecurity in the digital economy. NTIA will promote U.S. cybersecurity policies internationally and in intergovernmental fora, including the Organizations for Economic Cooperation and Development (OECD) and the Asia Pacific Economic Cooperation (APEC)

Telecommunications and Information Working Group. NTIA will promote practices which enhance protection of Americans from criminal and national security threats online.

Executive Branch Support. In its role as advisor to the President on telecommunications and internet issues, NTIA will continue to coordinate Executive Branch communications policy and represent the Administration's policy to independent agencies such as the Federal Communication Commission (FCC) and the Federal Trade Commission (FTC) in FY 2018. NTIA will also provide technical and policy expertise to the Executive Branch and other stakeholders related to this important element of Internet infrastructure, the Domain Name System (DNS). NTIA is known for its leadership in promoting Internet DNS security and stability, including providing a framework for the administration of the .edu and .us domains. Through the coordination of policies and positions that impact the Internet and other communications, NTIA will ensure consistent U.S. messaging and positions domestically and internationally. NTIA will play a critical role in supporting the interagency legislative coordination and clearance process by reviewing Internet and Digital Economy policy related documents.

International Representation. NTIA plays a critical role in developing strategy and representing the United States government (USG) in international negotiations, standard setting and diplomacy efforts. We advocate for bilateral, multistakeholer, 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 internationally. A wide variety of international forums – some treaty-based, others producing policy guidelines and research – are developing Internet and digital economy policy, and NTIA participates in many of these forums to ensure that they maintain a central focus on innovation and economic growth and preserve the multistakeholder approach to Internet policymaking. For FY 2018, NTIA's priorities for international representation are organized as follows;

- **Bilateral, multistakeholder, and multilateral engagement** - NTIA in FY2018 will continue to conduct strategic outreach on key USG information and communication technology and Internet policy messages through formal and informal USG bilateral exchanges with most major economies, including commercial and economic dialogues, Internet Economy and now Digital Economy dialogues, and cyber dialogues. NTIA will continue to shape the Internet Governance Forum (IGF) program and intersessional work through the Multistakeholder Advisory Group (MAG) by improving the transparency, accountability and "results" of the global IGF; a multistakeholder venue that facilitates global discussions of Internet policy issues. NTIA will participate in, and advocate before, multilateral forums, including the International Telecommunication Union (ITU), APEC, CITEL-- the specialized communications Advisory organization of the Organization of American States (OAS), and the OECD. These organizations address important Internet and communications services issues. In FY 2017 and into FY 2018, NTIA enhanced its advisory work to improve American economic prospects and digital skills development, in the G20 and G7 digital economy task forces and ministerials processes created in 2016. By planning and conducting training to communications regulators from other countries through the U.S. Telecommunications Training Institute (USTTI) and a variety of digital Development Leadership Programs, NTIA will increase positive interactions with regulators and policymakers in emerging economies and provide NTIA with the opportunity to emphasize the importance of open and competitive markets and transparent decision making in communications policy as elements of economic development and growth. NTIA also plans to provide policy and technical

guidance to the State Department on issues before the multilateral International Telecommunications Satellite Organization (ITSO) and the International Mobile Satellite Organization (IMSO).

- **Internet Domain Name System (DNS)** - In FY 2018, NTIA will continue to play a key role at the Governmental Advisory Committee (GAC) of the Internet Corporation for Assigned Names and Number (ICANN) and will coordinate USG policy positions. The GAC's key role is to provide advice to ICANN on issues of public policy related to the DNS.

Trade Negotiations. Participate and provide 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 communications and e-commerce services and the free flow of information across borders, preserving and/or creating jobs for Americans and facilitating economic growth. 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 increase its participation in Department of Commerce-run bilateral commercial dialogues to improve understanding with counterpart trade and economics (not just communications) ministries. NTIA will continue working with other agencies and stakeholders to determine how best to address telecommunications and Internet policy issues that emerge in trade venues and during negotiation processes.

Digital Economy Leadership. In FY 2018, 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 digital economy issues. These meetings will focus on better policy coordination within Commerce and increasing the Department profile on digital economy issues. To proactively identify emerging Internet issues and better understand the concerns of the U.S. business community and Internet industry, NTIA will continue to provide administrative and technical support to the Digital Economy Federal Advisory Committee**.**   NTIA will coordinate the review and follow-up on the Committee's analysis and recommendations. 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 Internet economy.

Promoting Small Business and Minority Interests in the Digital Economy. NTIA also will conduct outreach to groups that represent minority interests in communications policies by engaging with minority trade associations; participating in meetings, conferences, and other events that focus on minority issues in the digital economy; and assisting other federal agencies in identifying strategic partnership prospects in emerging economies to advance Internet governance and minority business goals.

Surveying Broadband Adoption. Working with the Census Bureau, NTIA will conduct a survey in FY 2018 to measure and analyze broadband adoption in the United States, share its findings with the American public, and inform consumers of the benefits of using broadband.

Risk Assessment: Without staff with specific expertise on Internet policy issues, NTIA runs the risk of failing to respond quickly and effectively to emerging Internet and Digital Economy

policy issues, which could lead to disengagement with our stakeholders and lost economic opportunities with long-term negative impacts to U.S. citizens and businesses. If NTIA lacks capacity, it will not provide needed interagency and stakeholder coordination and coherence that is essential to advancing the multistakeholder approach to Internet policymaking both domestically and internationally. Nor will NTIA be able to participate in some regional and bilateral training activities. No other Executive Branch agency views – as a core mission – the Internet as something to protect and promote. NTIA regularly engages with interagency partners that have significantly more resources, but that lack a key focus on the Internet; our engagement is vital to ensure that the economic potential of the Internet is realized. From an economic and educational standpoint, broadband access and adoption are critical and without an ability to assess the impact of our efforts to promote broadband and the economic and societal benefits it brings, future investment and policy decisions would be less effective.

Significant Adjustments-to-Base (ATBs): NTIA requests a net increase of $0.169 million to fund adjustments-to-base to current programs for Domestic and International Policies activities. The increase will fund the estimated 2018 federal pay, inflationary increases for non-labor activities, including service contracts, utilities, per diem, rent charges from the General Services Administration (GSA), and NTIA's costs for the Working Capital Fund.

PROGRAM CHANGE FOR FY 2018:

The Domestic and International Policy Program is reduced by ($0.843 million) in FY 2018. This reduction is taken in two parts:

Programmatic: NTIA will halt efforts to provide a toolkit supporting multistakeholder efforts. The toolkit was intended to augment NTIA's continued advocacy and support of multistakeholder approaches to address internet policy issues and run successful processes.

Management and Administration: NTIA will decrease administrative costs by: reducing the hours of its information technology help desk; shifting administrative management responsibilities for the Gettysburg, PA field office to Headquarters staff; reducing staff as a result of Department shared service initiatives, amending replacement schedules to extend the lifetime period of designated hardware and software, and delaying IT business tool enhancements and purchases. These administrative cost reductions will result in savings across all projects, programs and activities.

FY 2017 Current plus Adjustments to Base plus Program Change by Object Class
(Dollar amounts in thousands)

Budget Program: Salaries and Expenses
Sub-Program: Domestic and International Policies
Program Change: Domestic and International Policies

	Object Class	2017 Annualized CR	2018 ATBs	2018 Base	2018 Prg Chg	2018 Request
11	Personnel compensation					
11.1	Full-time permanent	3,879	83	3,962	-	3,962
11.3	Other than full-time permanent	0	0	0	-	0
11.5	Other pers. compensation	53	0	53	-	53
11.8	Spec. personnel serv. Paymts.	0	0	0	-	0
11.9	Total pers. compensation	3,932	83	4,015	-	4,015
12	Civilian personnel benefits	1,120	38	1,158	-	1,158
13	Benefits for former personnel	0	0	0	-	0
21	Travel & transport. of persons	328	0	328	-	328
22	Transportation of things	1	0	1	-	1
23.1	Rental payments to GSA	359	8	367	-	367
23.2	Rental Payments to others	0	0	0	-	0
23.3	Commun., util., misc. charges	96	0	96	-	96
24	Printing and reproduction	3	0	3	-	3
25.1	Advisory & assistance services	0	0	0	-	0
25.2	Other services	807	14	821	(415)	406
25.3	Goods & serv. fr. Gov't accts.	2,195	15	2,210	(428)	1,782
25.4	Operation & maint. of facilities	0	0	0	-	0
25.5	Research & devel. contracts	0	0	0	-	0
25.6	Medical care	0	0	0	-	0
25.7	Operation & maint. of equip.	2	0	2	-	2
25.8	Subsist. & support of persons	0	0	0	-	0
26	Supplies & materials	36	1	37	-	37
31	Equipment	62	10	72	-	72
32	Lands & structures	0	0	0	-	0
33	Investments & loans	0	0	0	-	0
41	Grants, subsidies & contributions	135	0	135	-	135
42	Insurance claims & indemnities	0	0	0	-	0
43	Interest & dividends	0	0	0	-	0
44	Refunds	0	0	0	-	0
99	Total obligations	9,076	169	9,245	(843)	8,402

Exhibit 10

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

Budget Program: Salaries and Expenses
Sub-Program: Spectrum Management

Comparison by sub-program		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Spectrum Management...	Pos/BA	39	$8,488	39	$8,472	39	$8,472	39	$8,472	0	$0
	FTE/Obl.	25	9,645	39	8,472	39	8,472	39	8,472	0	0
Direct Obligations......................................	Pos/BA	39	8,488	39	8,472	39	8,472	39	8,472	0	0
	FTE/Obl.	25	9,645	39	8,472	39	8,472	39	8,472	0	0

Department of Commerce
National Telecommunications and Information Administration
Salaries and Expenses

Program Justification for Spectrum Management ($000)

Program	FY 2017 Annualized CR	FY 2018 Base	FY 2018 Request	Difference
Spectrum Management	**$8,472**	**$8,472**	**$8,472**	**$0**
FTE	39	39	39	0

Mission/Objective: Under the Spectrum Management program, NTIA evaluates and ensures the best possible and most efficient use of electromagnetic spectrum resources across the Federal Government, subject to and consistent with the needs and missions of federal agencies, while supporting the commercial sector's development of next generation wireless services.

Background: NTIA carries out the President's authority to assign frequencies to radio stations belonging to and operated by the United States. The federal agencies rely on the radio spectrum to execute their congressionally mandated missions, which range 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. Agencies could not provide these and other vital government services without frequency assignments and NTIA's management of scarce spectrum resources pursuant to the NTIA Organization Act, as amended (47 USC 901 et. seq.). In addition to direct funding, NTIA charges agencies fees for costs incurred in 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 for commercial wireless services, update spectrum policies, and develop long-range spectrum management plans. To execute these responsibilities and minimize costs, NTIA depends on significant collaboration with interested federal agencies and key private-sector stakeholders through the Interdepartment Radio Advisory Committee (IRAC), Policy and Plans Steering Group (PPSG), and Commerce Spectrum Management Advisory Committee (CSMAC).

FY 2018 Activities:

During FY 2018, NTIA will continue its implementation of the Spectrum Pipeline Act of 2015, which requires NTIA and the FCC to identify and reallocate additional spectrum to meet the commercial sector's long-term needs. This includes, in collaboration with the FCC and the Office of Management and Budget (OMB), NTIA's review and oversight of federal agency plans for conducting research and development, engineering studies, economic analyses, and planning activities under the Spectrum Relocation Fund (SRF) that will improve the efficiency and effectiveness of spectrum use. NTIA will also commence efforts to analyze technical and operational options, and prepare reports to the President and Congress, as mandated by the Spectrum Pipeline Act, which must identify 130 megahertz of spectrum for reallocation to non-Federal use. These activities will leverage a PPSG-approved, multi-agency strategic process for prioritizing frequency bands for more detailed feasibility studies.

NTIA's spectrum engineering studies and technical analyses inform important spectrum policy decisions. In FY 2018, NTIA will conduct in-depth studies and analyses to: assist federal agencies in resolving interference problems; quantify the effects on federal missions of proposed national and international allocation changes; establish and update federal technical standards; and develop new or improved automated analysis techniques for the study of spectrum sharing, interference prediction, and frequency coordination. For example, NTIA will help implement the FCC's certification process for the Spectrum Access Systems and Environmental Sensing Capability components of the 3.5 GHz Citizens Broadband Radio Service regulations and develop innovative propagation assessment tools to enable dynamic spectrum access in the millimeter wave bands.

In support of mission-critical federal agency operational requirements during FY 2018, NTIA expects to review and process more than 100,000 domestic radio frequency assignment requests in accordance with the Manual of Regulations and Procedures for Federal Radio Frequency Management. NTIA expects to certify approximately three hundred major federal spectrum-dependent systems for compliance with applicable spectrum regulations, policies, and technical standards. These assignment and certification actions require expert electromagnetic compatibility evaluations based on available frequency bands, proposed design and operational parameters, various real-world operating constraints, and support national security and emergency communications planning and exercises.

Concurrently, NTIA will improve these regulations, procedures, and spectrum authorization business processes through a more user-friendly Manual, higher quality data, streamlined workflows, and modern automation tools. Specifically, NTIA will continue its Frequency Authorization Management Program (FAMP) investment to enhance assignment systems by developing a flexible and sustainable information technology architecture with more robust reporting tools that will enhance interoperability across the federal government and increase spectrum manager productivity. NTIA will also launch technology upgrades to the current certification tools resulting in an online, browser-based user interface to more effectively support the evaluation of complex and more efficient spectrum-dependent systems.

Domestic and international spectrum policy efforts in FY 2018 will consist of developing, advocating, and implementing spectrum policies that expand spectrum access and improve efficiency across the Federal Government. NTIA will provide technical assistance for proposed spectrum legislation, respond to Congressional requests for information on federal spectrum use and operations, and faithfully implement any new statutory provisions as resources allow. The views of the executive branch will be formulated and presented in dozens of new and ongoing FCC proceedings, including important matters addressing proposals to share millimeter wave spectrum (Spectrum Frontiers), the 3.5 GHz band, and the 1675-1680 MHz band. In addition to other bands that it and the FCC may identify to satisfy growing private and public sector requirements, NTIA's responsibilities under the Middle Class Tax Relief and Job Creation Act of 2012, in collaboration with OMB and FCC, will ensure that commercial licensees have timely access to federal spectrum bands the FCC auctioned in 2015 and that agencies will spend SRF transfers in accordance with their approved transition plans.

NTIA will assess and establish effective incentive-based reforms that enable federal agencies to improve their systems' spectrum efficiency while maintaining or enhancing the essential services they provide. These objectives will be accomplished through NTIA's engagement with subject matter experts, maintaining transparency, educating the spectrum management community, and ongoing collaboration with industry and other key spectrum stakeholders on

the CSMAC and other forums. For example, NTIA will update its "spectrum.gov" website with more information regarding federal spectrum authorizations and access requirements, conduct broader stakeholder outreach, and hold at least three training courses and seminars for U.S. and foreign spectrum managers. These activities are critical to the success of the activities described above.

On international matters, NTIA will work closely with the State Department, the FCC, and other agencies to develop U.S. positions and represent the executive branch in preparation for the 2019 International Telecommunication Union (ITU) World Radiocommunication Conference (WRC). Specifically, NTIA will conduct and coordinate technical studies, negotiate solutions to critical issues under WRC agenda items, and represent U.S. interests in bi-lateral, multi-lateral, regional, and ITU forums. The results of these efforts will enable military operations worldwide, support global broadband adoption, enable groundbreaking wireless technologies, and help increase worldwide market penetration of U.S. companies through spectrum harmonization.

Within the IRAC's Space Systems Subcommittee, NTIA will continue to review federal space systems for compliance with national requirements, register federal satellite networks with the ITU, and coordinate hundreds of satellite actions to ensure protection of global satellite services from harmful interference and availability of orbital slots for U.S. satellite systems. In collaboration with the FCC and the State Department, NTIA will also continue to coordinate federal spectrum requirements along the borders with Canada and Mexico to prevent harmful interference and facilitate spectrum access for foreign embassies in Washington, D.C., in accordance with the Communications Act.

Risk Assessment: Reductions in funding will also adversely impact planned contracts and other services. Cuts will eliminate or significantly delay information technology investments to modernize and improve automated capabilities in support of the federal spectrum management mission. This would impact NTIA's ability to support federal government operations and directly hamper other federal agencies' ability to satisfy their mission requirements.

Budget Program: Salaries and Expenses
Sub-Program: Spectrum Management
Program Change: Spectrum Pipeline

	Object Class	2017 Annualized CR	2018 ATBs	2018 Base	2018 Prg Chg	2018 Request
11	Personnel compensation					
11.1	Full-time permanent	2,833	0	2,833	-	2,833
11.3	Other than full-time permanent	0	0	0	-	0
11.5	Other pers. compensation	29	0	29	-	29
11.8	Spec. personnel serv. paymts	0	0	0	-	0
11.9	Total pers. compensation	2,862	0	2,862	-	2,862
12	Civilian personnel benefits	835	0	835	-	835
13	Benefits for former personnel	0	0	0	-	0
21	Travel & transport. of persons	91	0	91	-	91
22	Transportation of things	5	0	5	-	5
23.1	Rental payments to GSA	404	0	404	-	404
23.2	Rental Payments to others	0	0	0	-	0
23.3	Commun., util., misc. charges	16	0	16	-	16
24	Printing and reproduction	15	0	15	-	15
25.1	Advisory & assistance services	0	0	0	-	0
25.2	Other services	884	0	884	-	884
25.3	Goods & serv. fr. Gov't accts.	3,066	0	3,066	-	3,066
25.4	Operation & maint. of facilities	0	0	0	-	0
25.5	Research & devel. contracts	0	0	0	-	0
25.6	Medical care	0	0	0	-	0
25.7	Op. and maint. of equip.	0	0	0	-	0
25.8	Subsist. & support of persons	0	0	0	-	0
26	Supplies and materials	46	0	46	-	46
31	Equipment	248	0	248	-	248
32	Lands and structures	0	0	0	-	0
33	Investments and loans	0	0	0	-	0
41	Grants, subsidies & contributions	0	0	0	-	0
42	Insurance claims & indemnities	0	0	0	-	0
43	Interest and dividends	0	0	0	-	0
44	Refunds	0	0	0	-	0
99	Total obligations	8,472	0	8,472	-	8,472

Exhibit 10

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

Budget Program: Salaries and Expenses
Sub-Program: Advanced Communications Research

Comparison by sub-program		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Advanced Communications Research………………	Pos/BA	50	$10,075	50	$10,056	50	$10,286	47	$8,805	(3)	($1,481)
	FTE/Obl.	29	$8,827	50	$11,373	50	10,286	47	8,805	(3)	(1,481)
Direct Obligations......................................	Pos/BA	50	10,075	50	10,056	50	10,286	47	8,805	(3)	(1,481)
	FTE/Obl.	29	8,827	50	11,373	50	10,286	47	8,805	(3)	(1,481)

Department of Commerce
National Telecommunications and Information Administration
Salaries and Expenses

Program Justification for Advanced Communications Research ($000)

Program	FY 2017 Annualized CR	FY 2018 Base	FY 2018 Request	Difference
Advanced Communications Research	$10,056	$10,286	$8,805	($1,481)
FTE	50	50	47	(3)

Mission/Objective: Through cutting-edge research and engineering, NTIA advances radio science, enables effective spectrum sharing, develops advanced telecommunication and information technology, and influences domestic and international telecommunications standards.

Background NTIA's research facility in Boulder, CO, is recognized as one of the world's leading telecommunications research laboratories. Research conducted there is a critical component in NTIA's development of policies to support more efficient use of the nation's radio spectrum resources, including new approaches to dynamic spectrum-sharing, and promotes Administration positions in national and international standards-setting bodies. Additionally, using the tools and techniques developed under direct-funded research, the laboratory solves telecommunications problems, such as interference resolution, on a cost-reimbursable basis for other Federal agencies and for private entities.

The Advanced Communications Research program:

- Provides timely technical advice in support of NTIA's mandate to develop and promulgate Executive Branch policies that address domestic and international communications issues.
- Continually advances the state of the art in radio frequency (RF) propagation measurement, RF propagation modeling, electromagnetic compatibility analysis, development of interference mitigation strategies, evaluation of end-user experience, and engineering analysis of evolving technologies to manage and share spectrum efficiently.
- Delivers expanded knowledge of the nature and interaction of communications equipment, systems, and services in support of the deployment of new technologies and services that rely on spectrum to position U.S. industry for international leadership in communications technology.
- Leverages, through interagency agreements, NTIA expertise and capabilities on behalf of other Federal agencies to perform measurements and analysis to support planning for spectrum reallocation or sharing and to resolve interference events.

NTIA is involved in the following advanced communications research activities:

Radio Frequency Measurements: Radio frequency (RF) measurements of spectrum occupancy and device emissions provide information about the electromagnetic radiation actually present in a certain band in select locations: how many signals, the extent of coverage, how often they occur, and on what frequencies. This quantitative data informs assessments of spectrum utilization for policy and regulatory actions, and is critical for validating the propagation models

that underpin spectrum management decisions on spectrum reallocation and spectrum sharing.

During FY 2018 NTIA will:
- Improve and expand NTIA's ability to perform accurate, timely, and ongoing radio frequency measurements of spectrum occupancy and device emissions to inform assessments of spectrum usage and sharing feasibility, and continue to perform and publish the results of such measurements to inform Federal and private sector spectrum planning and use.
- Study and characterize the broadband transmission channel for within-building and campus-wide wireless networks and ultrawideband communications.

Radio Frequency Propagation Modeling: RF propagation models are software implementations of physics-based mathematical models that predict how radio waves behave in operational environments. RF propagation models are used, for example, to predict the distance from a transmitter at which a receiver can detect a signal, or to predict areas where the radio waves from different transmitters may overlap and interfere with each other. Government communications operations, including those for public safety and national security, depend critically on the ability to successfully predict radio propagation in a variety of environments and conditions. Different radio frequencies have different propagation properties, and characterizing the interactions of radio waves with environmental features such as buildings or foliage is critical to making accurate predictions. Additionally, accurate propagation predictions also depend on antenna heights, antenna characteristics, and distance. The accuracy of a propagation prediction depends not only on the reliability of the model itself, but also on the suitability of the model for use in the particular case.

During FY 2018 NTIA will:
- Improve and extend propagation models, radio channel models, statistical analysis techniques, and signal processing algorithms.
- Develop and validate improved radio propagation models for various radio bands and environments and promulgate them to industry, agencies, and national and international standard bodies.
- Apply models towards assessing new spectrum-sharing techniques and the development of improved dynamic frequency management and spectrum-sharing systems.
- Refine and expand computerized propagation prediction methods as the technology advances to ensure continued availability of accurate, rapid, and easily accessible propagation prediction planning tools for deployment of new, relocated, or expanding wireless services.

Electromagnetic Compatibility Analyses: Electromagnetic compatibility (EMC) analyses use models, simulations, tests, and measurements to examine the totality of spectrum usage by radio transmitters and receivers and the interactions between different radio systems. They support effective spectrum sharing and spectrum reallocation by defining the technical parameters that will allow both legacy and new services to operate in the same or adjacent bands without interference. When interference occurs, they are used to trace interference to root causes and devise mitigation strategies.

During FY 2018 NTIA will:
- Conduct comprehensive EMC studies that include realistic scenarios, radio wave

propagation constraints, transmitter emission characteristics, receiver susceptibility to other signals, radio system protocols, and radio regulation considerations.

- Use electromagnetic compatibility (EMC) analysis to predict and prevent or troubleshoot and resolve interference issues involving Federal communications and radar systems, such as safety-of-life radar stations, by determining the source of the interference.
- Recommend mitigation actions to Federal agencies, including necessary system modifications, and assist with FCC enforcement actions.
- Conduct experiments to define technical interference protection parameters such as transmitter emission limits, frequency offsets, or separation distances for proposed rulemakings in support of new spectrum uses/sharing requirements.

Spectrum Monitoring: NTIA conducts spectrum monitoring over the entire lifecycle of new radio technologies, from the earliest stages when spectrum sharing is first proposed, to conformity assessment of newly deployed systems, to longer-term surveillance testing that regulators may use to support enforcement actions. This research supports dynamic spectrum sharing by providing both industry and government with key insights into usage, and thereby helps to identify frequencies that are good candidates for sharing.

During FY 2018 NTIA will:
- Continue to facilitate access to monitoring data for spectrum policy makers, researchers, and other stakeholders to investigate the feasibility of new spectrum-sharing approaches in key Federal and non-Federal bands.
- Build additional sensors for different sharing scenarios and continue to expand the potential applications of a fully developed spectrum monitoring system.
- Implement program changes recommended to the spectrum monitoring pilot based on preliminary results in FY 2015 and FY 2016, including exploration of the use of empirical data to inform agency quantitative assessments of actual spectrum usage and to refine models for assessing the potential for interference with Federal systems in bands identified for future sharing.
- Pursue private-sector participation in the spectrum monitoring effort and in efforts to develop approaches for spectrum sharing.
- Assess spectrum-sharing opportunities in key bands of interest, including evaluating the degree of LTE deployment in the bands allocated to FirstNet and gauging the degree of legacy Project 25 LMR usage.
- Prepare an annual status report based on monitoring data and spectrum-related technology developments including an assessment of data collected, its potential uses, and recommendations.

Public Safety Communications Research: The Public Safety Communications Research (PSCR) program is a joint effort that leverages the capabilities of NIST and NTIA through collaborative research projects. It is supported by the Department of Homeland Security (DHS) and FirstNet. PSCR conducts research and contributes to standardization efforts to assist fire, emergency medical, national security, emergency preparedness, and law enforcement agencies to select and procure communications equipment that fully supports their unique needs for reliability of coverage, signal and network quality, and network management.

During FY 2018 NTIA will:
- Conduct close, constant coordination with public safety practitioners, and develop standards, technologies, and test methods to ensure interoperability of land mobile radio and broadband communications systems used by law enforcement, fire, emergency medical response, and emergency preparedness communities.

- Develop information technology standards that public safety can adopt to ensure interoperability for information sharing. With respect to standards, advance the work of other Federal programs (e.g., FirstNet, DHS/OEC, etc.) through leadership and critical technical contributions to the 3GPP for public safety broadband.
- Operate a broadband demonstration network to provide manufacturers and practitioners a venue to test and evaluate broadband technologies and systems for newly available FirstNet 700 MHz spectrum.

Radio Network Performance Assessment and Enhancement: Engineering studies identify the numerically quantifiable factors that influence how accurately and reliably digital representations of speech, video, images, text messages, etc. are transmitted over networks. NTIA conducts research and development leading to implementation, publication, and standardization of perception-based tools for assessment and end-to-end optimization of video and audio communication systems. This work provides important and reliable information on the impact of bandwidth constraints, time-varying channel quality, and new technologies on telecommunications network performance. This data is used by government and industry network and equipment designers as well as standards bodies.

During FY 2018 NTIA will:
- Develop tools to monitor, evaluate, and optimize the user experience of audio and video information on communication channels, especially in light of bandwidth constraints and time-varying channel quality.
- Use subjective testing to assess the effectiveness of emerging audio and video coding and transmission technologies
- Perform technology transfer to government, industrial, academic, and individual users to support the development and validation of automated perception-based audio and video performance assessment tools for critical new areas including Internet multimedia conferencing, advanced television, and wireless services.
- Perform interoperability and quality assessments of representative wireless network technologies.
- Spearhead standards committee activities and provide engineering analysis and simulation results defining quantitative limits for adjacent and co-frequency block interference within and among advanced wireless communications technologies.

Spectrum-Dependent System Certification: Spectrum-dependent systems must meet various engineering criteria to guarantee operation without affecting other systems in the same or nearby bands. NTIA performs RSEC (Radar System Engineering Criteria) certification on new radars, before deployed, to ensure that out-of-band emissions are within acceptable bounds. NTIA also works with the FCC to develop and execute certification processes and criteria for commercial systems that share spectrum with mission-critical Federal systems to ensure that system behavior meets the system specification and will not interfere with critical Federal capabilities. This suite of tests, allows NTIA to certify new radars with a high level of confidence.

Continued involvement of ITS with development of certification tests is necessary to ensure that the test suite includes difficult test cases, randomized test parameters, and stress testing so that real-world capabilities are tested in the lab, prior to deployment. Testing that is not sufficiently robust and comprehensive, does not stress the components while under test, or include integrated system testing, could result in system failure in the real world, once deployed, which would put incumbent federal systems at risk of interference to their mission

critical systems and could cause undetected and unresolved interference to safety of life systems on Navy aircraft carriers near shore.

If the certification tests are not adequate, the eco-system for advanced spectrum sharing may be abandoned by Wall Street, sunk investment will be lost, the US as the technology leader in spectrum sharing will be lost, and opportunities for US companies to expand spectrum sharing domestically and internationally will have been squandered.

During FY 2018, NTIA will examine shifting the certification from being funded through NTIA's direct appropriation to being funded on a reimbursable basis by applicable agencies.

Domestic and International Standards: NTIA contributes to the development and application of strong and unbiased national and international telecommunication standards for emerging mobile radio technologies of importance to U.S. industry and government by leading, participating in, and making technical contributions to national and international telecommunication standards organizations (SDO), such as the 3rd Generation Partnership Project (3GPP), ITU, and the Alliance for Telecommunications Industry Solutions (ATIS).

During FY 2018 NTIA will:
- In cooperation with other Federal agencies and U.S. industry, influence domestic and international communications standards and policies that support industry and U.S. spectrum-sharing initiatives and needs, as well as fair competition in the information and communications technology sector.
- In cooperation with the U.S. ITU National Committees, provide technical contributions and leadership to committees in ITU-T (Telecommunication Standardization Sector) and ITU-R Study Groups developing technical standards of importance to U.S. industry and government.
- Submit recommendations on emerging mobile radio technologies, broadband network performance, radio propagation prediction, and radar systems, and coordinate their formal review and approval in important standards development organizations including the ITU, 3GPP, TIA, URSI, and IEEE.
- Develop and coordinate approval of related U.S. voluntary consensus standards where appropriate.

Table Mountain Field Site and Radio Quiet Zone: NTIA manages the Table Mountain Field Site and Radio Quiet Zone, an 1,800 acre, open-air test location that supports fundamental research into the nature, interaction, and evaluation of communications devices, systems, and services. It is one of only two sites in the country regulated to prevent the transmissions of powerful signals over the site, and currently the only one consistently available for use by private industry. The flat surface of the site and its geological features create ideal conditions for radio research to safely develop and test new spectrum-efficient technologies, and for other electromagnetic and geomagnetic research.

This site serves as a resource for Federal agencies and private companies through interagency agreements and Cooperative Research and Development Agreements (CRADAs). The site is currently being used by several Federal agencies and private companies to research, develop, and test operational performance of new communication technologies, including new radar systems; to evaluate broadband and laser radar (LADAR) technologies for public safety and national defense applications; to test radio receivers for NOAA's "All Hazards" national warning system; to perform absolute gravity measurements and gravimeter calibrations; and to measure and monitor solar, ultraviolet, and infrared radiation.

During FY 2018 NTIA will:
- Maintain and improve facilities as necessary to ensure researchers have the infrastructure (e.g., Internet access) and laboratories needed to perform research and fully utilize the site.
- Administer CRADAs and interagency agreements to enable access to and maximize utilization of this unique resource.

Risk Assessment: The primary focus of NTIA Advanced Communications Research is to enable better utilization of the highly demanded, but limited, spectrum resources. Spectrum access is essential to a 21st century economy dependent on wireless devices, and spectrum sharing is necessary to meet demand. If the base funding is not sustained, NTIA's ability to have the data, technology, and analytic tools to identify, exploit, and enforce new spectrum sharing opportunities will be significantly reduced. Additionally, NTIA will have difficulty working with the FCC to represent Federal stakeholders in the development of certification processes for spectrum sharing systems that make more spectrum available for commercial use while continuing to protect critical Federal incumbent users (such as radars and satellite downlinks) from interference.

Significant Adjustments-to-Base (ATBs): NTIA requests a net increase of $0.229 million and 0 FTE to fund adjustments-to-base to current programs for Spectrum Management activities. The increase will fund the estimated 2018 federal pay raise and also provide inflationary increases for non-labor activities, including service contracts, utilities, per diem, rent charges from the General Services Administration and NTIA's costs for the Working Capital Fund.

PROGRAM DECREASE FOR FY 2018:

Advanced Communications Research Program Change: ($1,481.000) (3 FTE): The decrease will impact spectrum sharing research, especially collaboration efforts underway with the FCC and other Federal Agencies to represent Federal stakeholders in the development of certification processes for spectrum sharing systems that make more spectrum available for commercial use while continuing to protect critical Federal incumbent users (such as radars and satellite downlinks) from interference. These resources have been used to expand test bed activities, to develop new communication technologies, and to support other Agencies in their efforts to share spectrum resources with the commercial sector.

NTIA will decrease administrative costs across all its programs by: reducing the hours of its information technology help desk; shifting administrative management responsibilities for the Gettysburg, PA field office to Headquarters staff; reducing staff as a result of Department shared service initiatives, amending replacement schedules to extend the lifetime period of designated hardware and software, and delaying IT business tool enhancements and purchases. These administrative cost reductions will result in savings across all projects, programs and activities.

Statement of Need and Economic Benefits: NTIA's base research activities are expected to accelerate the economic development and growth associated with spectrum sharing and other innovations in advanced communications. NTIA is providing Federal agencies with a clear alternative for spectrum-related development work, lowering technology costs of Federal agencies.

PROGRAM CHANGE PERSONNEL DETAIL

Budget Program: Salaries and Expenses
Sub-Program: Advanced Communications Research
Program Change: Spectrum Sharing & Monitoring, Center for Advanced Communications

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Electronics Engineer	Boulder, CO	ZP-IV	(3)	161,900	(485,700)
Total			(3)		(485,700)
Less Lapse		25%	0		0
Total full-time permanent (FTE)			(3)		(485,700)
2017 Pay Adjustment (1.6%)					(5,896)
TOTAL					(491,596)

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	(3)
Other than full-time permanent	0
Total	(3)
Authorized Positions:	
Full-time permanent	(3)
Other than full-time permanent	0
Total	(3)

FY 2017 Current plus Adjustments to Base plus Program Change by Object Class
(Dollar amounts in thousands)

Budget Program: Salaries and Expenses
Sub-Program: Advanced Communications Research
Program Change: Spectrum Sharing & Monitoring, Center for Advanced Communications

	Object Class	2017 Annualized CR	2018 ATBs	2018 Base	2018 Prg Chg	2018 Request
11	Personnel compensation					
11.1	Full-time permanent	3,754	118	3,872	(492)	3,380
11.3	Other than full-time permanent	0	0	0	-	0
11.5	Other pers. compensation	24	0	24	-	24
11.8	Spec. personnel serv. paymts	0	0	0	-	0
11.9	Total pers. compensation	3,778	118	3,896	(492)	3,404
12	Civilian personnel benefits	1,089	54	1,143	(158)	985
13	Benefits for former personnel	0	0	0	-	0
21	Travel & transport. of persons	154	0	154	(50)	104
22	Transportation of things	3	0	3	-	3
23.1	Rental payments to GSA	62	0	62	-	62
23.2	Rental Payments to others	0	0	0	-	0
23.3	Commun., util., misc. charges	2	2	4	(2)	2
24	Printing and reproduction	8	0	8	-	8
25.1	Advisory & assistance services	0	0	0	-	0
25.2	Other services	828	20	848	(1)	847
25.3	Goods & serv. fr. Gov't accts.	2,178	20	2,198	(398)	1,800
25.4	Operation & maint. of facilities	0	0	0	-	0
25.5	Research & devel. contracts	0	0	0	-	0
25.6	Medical care	0	0	0	-	0
25.7	Op. and maint. of equip.	84	0	84	(25)	59
25.8	Subsist. & support of persons	0	0	0	-	0
26	Supplies and materials	70	1	71	(41)	30
31	Equipment	1,800	14	1,814	(314)	1,500
32	Lands and structures	0	0	0	-	0
33	Investments and loans	0	0	0	-	0
41	Grants, subsidies & contributions	0	0	0	-	0
42	Insurance claims & indemnities	0	0	0	-	0
43	Interest and dividends	0	0	0	-	0
44	Refunds	0	0	0	-	0
99	Total obligations	10,056	229	10,285	(1,481)	8,804

Exhibit 10

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

Budget Program: Salaries and Expenses
Sub-Program: Broadband Programs

Comparison by sub-program		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Broadband Programs…………………………	Pos/BA	36	$11,844	36	$11,822	36	$12,185	31	$10,321	(5)	($1,864)
	FTE/Obl.	40	13,470	36	12,750	36	12,185	31	10,321	(5)	(1,864)
Direct Obligations......................................	Pos/BA	36	11,844	36	11,822	36	12,185	31	10,321	(5)	(1,864)
	FTE/Obl.	40	13,470	36	12,750	36	12,185	31	10,321	(5)	(1,864)

Program Justification for Broadband Programs ($000)

Program	FY 2017 Annualized CR	FY 2018 Base	FY 2018 Request	Difference
Broadband Programs	$11,822	$12,185	$10,321	($1,864)
FTE	36	36	31	(5)

Mission/Objective:

NTIA will support communities across America to accelerate broadband access and use to lay the foundation critical to attract jobs, promote economic growth and encourage innovation.

Background: While communities may understand that broadband access and use are vital to their economic development, innovation, workforce, education, healthcare and public safety needs, they often lack the resources and expertise to seize those benefits. In response to the established and growing community broadband needs across America, NTIA has leveraged staff expertise to develop and provide technical support through the BroadbandUSA program. Despite these efforts, the demand continues to exceed our ability to keep pace. Requests for resources through NTIA's Broadband Technical Opportunities Program grants alone were more than nine times the funds available. Thirty four million Americans lack access to the FCC standard broadband speeds of 25Mbps download and 3Mbps upload and most of those (23 million) live in rural areas. Less than 60 percent of Americans have access to 100Mbps required for more advanced internet applications. In 2015, 33 million households (27 percent of all U.S. households) did not use the Internet at home, where families can more easily share Internet access and conduct sensitive online transactions privately.

BroadbandUSA assists, educates and convenes government, community and industry leaders working together to advance broadband initiatives and policy. Leveraging years of hands-on experience providing assistance to communities developing broadband infrastructure and digital inclusion programs, NTIA staff offer extensive technical support in planning, funding (*e.g.*, public-private partnerships) and implementing broadband infrastructure and digital inclusion projects. BroadbandUSA serves as a trusted and neutral strategic advisor, working with public and private sector partners to assess local broadband needs and gaps; identify possible funding and other resources; and plan network infrastructure projects and digital inclusion programs. BroadbandUSA is necessary to ensure that assistance is available to American communities, especially in rural areas.

Small, more rural, or less affluent communities lacking broadband access get left further behind, losing industry, jobs, and population. Without access to and the ability to use broadband, small businesses will lose millions in potential revenue, individual wage growth will stagnate or decline, and communities will fail to attract new commercial enterprise.

NTIA has an ongoing responsibility to oversee the extended BTOP grants until 2020. These funds will continue NTIA's high-quality work to prevent waste, fraud, and abuse of the existing grants; ensure that recipients accomplish program goals; disseminate best practices; and

oversee recipients' continued activities to fulfill the terms of their grants through the federal-interest period.

NTIA's Broadband Program covers seven major functions:

NTIA launched BroadbandUSA in 2015 in response to demand from communities seeking to ensure their citizens have the broadband capacity they need to advance economic development, job creation, educational achievement, healthcare outcomes, and public safety. BroadbandUSA's experts know that there is no one-size-fits-all approach to expand broadband access and adoption. To date, BroadbandUSA has provided support to more than 720 communities through its regional events, workshops, educational webinars, and technical assistance activities. Requests for technical assistance grew 150 percent in FY 2016 over FY 2015.

Technical Assistance – The centerpiece of BroadbandUSA is its technical assistance (TA) team, which provides one-to-one technical assistance to state, local, nonprofit, and industry leaders interested in planning, funding, or implementing broadband infrastructure deployment and digital inclusion initiatives. BroadbandUSA's TA framework consists of the following elements: planning, funding, and implementation. Within the planning category, BroadbandUSA offers guidance on preparing needs assessments, preliminary network design, feasibility studies, business plans, market assessments, and cost modeling. The Program reviews Requests for Proposals for broadband infrastructure projects and provides feedback. Within the funding category, BroadbandUSA facilitates public-private partnerships and serves as a resource for communities in identifying other sources of federal funding or connecting them with foundations or non-profit options. BroadbandUSA is focusing most of its work in Fiscal Year 2017 in the planning and funding phases in response to customer demand. Since its inception, BroadbandUSA has provided direct, individualized assistance to 140 customers in 36 states. BroadbandUSA has also provided group technical assistance to about 2000 attendees at small-group and regional events focused on specific broadband issues designed to facilitate collaboration and networking of communities working on similar issues. Moreover, BroadbandUSA has provided technical assistance to other federal agencies and the taxpayers they serve. For example, starting in April 2017, BroadbandUSA will provide a series of webinars for the U.S. Department of Agriculture's Rural Development Stronger Economies Together program.

Events and Workshops – BroadbandUSA organizes events that bring together state, local, and federal officials, industry, community leaders, and other key broadband stakeholders to share broadband success stories and lessons learned. To date, the Program has held six regional workshops with nearly 800 attendees coupled with monthly webinars on a range of broadband topics.

Guides and Tools – BroadbandUSA develops resources, tools, fact sheets, and brochures to help stakeholders better understand the critical role of broadband in community prosperity and to navigate the broadband planning and implementation process. To date, the Program has published seven guides focused on the following topics: the power of broadband partnerships; using partnerships to drive smart city deployment; stakeholder outreach; broadband adoption; broadband planning for local and tribal governments; building public private partnerships; and federal funding opportunities for broadband projects.

Cost Modeling and Mapping Tools – NTIA's experience has shown that two of the biggest hurdles facing communities are the broadband planning phase and finding funding.

BroadbandUSA's response to this challenge has been to develop publicly available tools focused on broadband planning, as well as tools that integrate broadband planning, funding, and implementation strategies. BroadbandUSA is planning a scalable cost modeling and mapping tools that enable communities to accelerate broadband planning and shift limited financial resources to implementation.

Connectivity Assessment Tool – BroadbandUSA worked hand-in-hand with hundreds of state, local, industry, and non-profit broadband leaders to develop the Connectivity Assessment Tool, formerly the Connectivity Initiative – a planning tool designed to support communities as they convene, assess, and promote local broadband priorities. The Connectivity Assessment Tool provides a framework to assess broadband access and adoption at the local level. The online assessment tool is composed of 12 planning modules that incorporate data on the availability of broadband locally and contain questions designed to prompt discussions about a community's broadband needs and ability to advance broadband access and adoption. The final report and resource recommendations integrate national data with community information to help support local actions, including referrals to BroadbandUSA's technical assistance experts. BroadbandUSA is scheduled to perform a beta launch of the online assessment tool in spring 2017.

Partnerships – NTIA continues to use its position as co-chair of a federal broadband interagency working group to identify barriers to broadband deployment and push interagency efforts to streamline or eliminate regulatory processes and requirements that hinder infrastructure deployment. BroadbandUSA works with federal, state, and local officials to better integrate broadband into policy and program efforts. Additionally, NTIA leverages its close ties to state and local leaders through its State Broadband Leaders Network (SBLN) to collaborate on broadband deployment and expansion efforts. Through annual and regional meetings, workshops, and webinars, SBLN and BroadbandUSA discuss state priorities concerning broadband investment, access, and digital inclusion and consider how best to realize these goals.

BTOP Grants – NTIA has an ongoing responsibility to oversee the extended BTOP grants until 2020. Through effective grant administration and grant closeout, NTIA continues to prevent waste, fraud, and abuse of the public funds; ensure that recipients accomplish program goals; disseminate best practices; and oversee recipients' continued activities to fulfill the terms of their grants through the federal-interest period. With approximately $100 million in remaining grant funds, this is a prudent investment to protect taxpayer funds.

FY 2018 Activities: NTIA will use a collection of outreach products and technical assistance strategies – from toolkits and training programs, to webinars and workshops – to accelerate broadband access to generate opportunities to attract jobs, encourage innovation and promote economic growth.

- Enable communities to accelerate broadband implementation by disseminating replicable and scalable knowledge through direct and indirect interaction with program participants (local, regional or state government organizations, non-profits and/or former NTIA broadband grant recipients), and thus propelling important economic and societal benefits.
  a. Hold three regional broadband events, convening broadband stakeholders from the public, private, and non-profit sectors.
  b. Develop 10 broadband products that support states and local government in the planning, funding and implementation of broadband programs.

      c. Provide technical assistance to 160 communities.
      d. Expand BroadbandUSA's support for American Smart Cities initiatives, emphasizing broadband programs that support informatics, monitoring, and efficiency.

- Begin development of a portfolio/suite of online product and tools, including assessment, data analytics, mapping, cost modeling and speed test. The online tools will enable communities to accelerate the planning phase of their broadband projects, thus shifting their limited financial resources to implementation.

- Accelerate broadband funding opportunities by partnering with investment organizations (banks, venture capitalists, etc.) to develop guidance, checklists, and templates to better present community broadband projects as "investment ready," to accelerate investment.

- Advance public/private partnerships among broadband stakeholders, including federal, state, industry and not-for-profit organizations, to improve support for broadband deployment and digital inclusion programs.

- Streamline federal cross agency work through the Broadband Interagency Working Group and   ensure that future interagency collaboration results in federal action that helps accelerate broadband implementation and adoption. Lack of coordination between federal programs results in inefficient use of limited resources.

- Expand the number of states active in the State Broadband Leaders Network which is a network of state broadband leaders to exchange information as well as the priorities, needs and best practices of states.

During FY 2018, NTIA will also:
- Provide effective oversight of the Recovery Act grant programs through their closeout and federal interest period to protect the federal government's investment in broadband infrastructure, public computing centers and broadband adoption projects.

- Manage the grant closeout process to ensure that recipients have met all financial and reporting requirements, they used funds for eligible grant activities and any excess funds are expeditiously returned to the Treasury.

Risk Assessment:

NTIA possesses a talented team of subject-matter experts who have unique know-how in navigating the financial, technical, and human-capital issues to promote broadband development in communities and successfully manage broadband grants to minimize waste, fraud and abuse. For FY 2018, NTIA's broadband program will run as leanly as possible to fulfill our mission. By FY 2018, NTIA will decrease its personnel by five employees from FY 2017 to reduce its budget consistent with the Administration's priorities. Insufficient funding to support BroadbandUSA adequately will:

- Prevent States across America from Nevada to Wisconsin to New York from meeting their goals, as their governors count broadband access as a top state priority critical to economic development. For example, Iowa's Governor Branstad and Lieutenant Governor Reynolds want to ensure that "every Iowan has an equal opportunity to access quality broadband technology;"

- Reduce NTIA's ability to meet the demands of state and local governments across the country that are attempting to launch efforts to grow and expand their broadband readiness and preparedness capabilities;
- Increase the potential for communities to miss critical, non-partisan information from NTIA products when making broadband adoption and deployment decisions;
- Risk the loss of potential matchmaking and partnership opportunities to assist communities in improving their broadband adoption and deployment;
- Affect NTIA's ability to serve as a critical, neutral resource to help communities improve economic development through broadband deployment and adoption efforts;
- Increase the potential for waste, fraud, and abuse due to inadequate program oversight.
- Compromise NTIA's ability to identify, recover, and return funds to the Treasury; and
- Preclude the documentation and sharing of BTOP lessons learned and best practices in support of broadband initiatives and as a resource for states and communities to use in building out future broadband projects.

Significant Adjustments-to-Base (ATBs): NTIA requests a net increase of $0.363 million and 0 FTE to fund adjustments-to-base to current programs for Broadband activities. The increase will fund the estimated 2018 federal pay raise and also provide inflationary increases for non-labor activities, including service contracts, utilities, per diem, rent charges from the General Services Administration and NTIA's costs for the Working Capital Fund.

PROGRAM CHANGE FOR FY 2018: NTIA's Broadband budget is reduced by ($1.86 million) and (5 FTE) in FY 2018.

These reductions impact two major BroadbandUSA activities. First, technical assistance engagements to clients will be reduced by approximately from 175 to 160 from FY 2017 and BroadbandUSA will decrease its group technical assistance workshops from four to three in FY 2018. In addition, the reduction will limit BroadbandUSA's ability plan, develop, publish and upgrade online modeling, data aggregation and other planning tools.

NTIA will also decrease administrative costs across all programs by: reducing the hours of its information technology help desk; shifting administrative management responsibilities for the Gettysburg, PA field office to Headquarters staff; reducing staff as a result of Department shared service initiatives, amending replacement schedules to extend the lifetime period of designated hardware and software, and delaying IT business tool enhancements and purchases. These administrative cost reductions will result in savings across all projects, programs and activities.

PROGRAM CHANGE PERSONNEL DETAIL

Budget Program: Salaries and Expenses
Sub-Program: Broadband Programs
Program Change: Broadband Programs

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Broadband Program Specialist	Washington, DC	GS-15	(1)	158,123	(158,123)
Communications Prog Specialist	Washington, DC	GS-14	(1)	126,958	(126,958)
Broadband Program Specialist	Washington, DC	GS-15	(1)	144,945	(144,945)
Broadband Program Specialist	Washington, DC	GS-15	(1)	144,945	(144,945)
Broadband Program Specialist	Washington, DC	GS-15	(1)	158,123	(158,123)
Total			(5)		(733,094)
Less Lapse		25%	0		0
Total full-time permanent (FTE)			(5)		(733,094)
2017 Pay Adjustment (1.6%)					0
TOTAL					(733,094)

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	(5)
Other than full-time permanent	0
Total	(5)
Authorized Positions:	
Full-time permanent	(5)
Other than full-time permanent	0
Total	(5)

FY 2017 Current plus Adjustments to Base plus Program Change by Object Class
(Dollar amounts in thousands)

Budget Program: Salaries and Expenses
Sub-Program: Broadband Programs
Program Change: BroadbandUSA

	Object Class	2017 Annualized CR	2018 ATBs	2018 Base	2018 Prg Chg	2018 Request
11	Personnel compensation					
11.1	Full-time permanent	5,754	176	5,930	(825)	5,105
11.3	Other than full-time permanent	0	0	0	-	0
11.5	Other pers. compensation	63	0	63	-	63
11.8	Spec. personnel serv. Paymts.	0	0	0	-	0
11.9	Total pers. compensation	5,817	176	5,993	(825)	5,168
12	Civilian personnel benefits	1,598	81	1,679	(254)	1,425
13	Benefits for former personnel	0	0	0	-	0
21	Travel & transport. of persons	155	0	155	-	155
22	Transportation of things	7	0	7	(1)	6
23.1	Rental payments to GSA	593	18	611	(91)	520
23.2	Rental Payments to others	0	0	0	-	0
23.3	Commun., util., misc. charges	23	1	24	(4)	20
24	Printing and reproduction	44	1	45	(7)	38
25.1	Advisory & assistance services	0	0	0	-	0
25.2	Other services	735	31	766	(118)	648
25.3	Goods & serv. fr. Gov't accts.	2,650	32	2,682	(524)	2,158
25.4	Operation & maint. of facilities	0	0	0	-	0
25.5	Research & devel. contracts	0	0	0	-	0
25.6	Medical care	0	0	0	-	0
25.7	Operation & maint. of equip.	0	0	0	-	0
25.8	Subsist. & support of persons	0	0	0	-	0
26	Supplies & materials	71	2	73	(11)	62
31	Equipment	129	21	150	(29)	121
32	Lands & structures	0	0	0	-	0
33	Investments & loans	0	0	0	-	0
41	Grants, subsidies & contributions	0	0	0	-	0
42	Insurance claims & indemnities	0	0	0	-	0
43	Interest & dividends	0	0	0	-	0
44	Refunds	0	0	0	-	0
99	Total obligations	11,822	363	12,185	(1,864)	10,321

Exhibit 16

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

Object Class	2016 Actual	2017 Annualized CR	2018 Base	2018 Estimate	2018 Increase/(Decrease)
11 Personnel compensation					
11.1 Full-time permanent	$18,280	$16,220	$16,597	$15,280	($1,317)
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	217	169	169	169	0
11.8 Other	0	0	0	0	0
11.9 **Total personnel compensation**	18,497	16,389	16,766	15,449	(1,317)
12.1 Civilian personnel benefits	5,658	4,642	4,815	4,403	(412)
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	687	728	728	678	(50)
22 Transportation of things	6	16	16	15	(1)
23.1 Rental payments to GSA	1,449	1,418	1,444	1,353	(91)
23.2 Rental payments to others	0	0	0	0	0
23 Communications, utilities and miscellaneous charges	223	137	140	134	(6)
24 Printing and reproduction	101	70	71	64	(7)
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services	1,561	6,617	3,319	2,785	(534)
25.3 Purchases of goods and services from Government accounts	11,448	10,089	10,157	8,807	(1,350)
26 Research and development	0	0	0	0	0
25.7 Operation and maintenance of equipment	0	86	86	61	(25)
26 Supplies and materials	228	223	227	175	(52)
31 Equipment	1,727	2,239	2,284	1,941	(343)
41 Grants, subsidies and contributions	137	135	135	135	0
99 **TOTAL OBLIGATIONS** * An addition of five FTE reflects	$41,722	$42,789	$40,188	$36,000	($4,188)
Prior Year Recoveries/Refunds	(1,385)				
Unobligated balances from Prior Years	(4,200)	(3,363)			
Unobligated balance EOY	3,363				
Unobligated balance, expiring					
Total Budget Authority	$39,500	$39,426	$40,188	$36,000	($4,188)

Exhibit 16

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

Personnel Data	2016 Actual	2017 Annualized CR	2018 Base	2018 Estimate	2018 Increase/(Decrease)
Full-Time Equivalent Employment:					
Full-time permanent	127	160	160	152	(8)
Other than full-time permanent	0	0	0	0	0
Total	127	160	160	152	(8)
Authorized Positions:					
Full-time permanent	160	160	160	152	(8)
Other than full-time permanent	0	0	0	0	0
Total	160	160	160	152	(8)

Exhibit 33

Department of Commerce
National Telecommunications and Information Administration
Salaries and Expenses
APPROPRIATIONS LANGUAGE AND CODE CITATIONS

For necessary expenses, as provided for by law, of the National Telecommunications and Information Administration (NTIA), [$39,500,000] $36,000,000 to remain available until September 30, [2017]2019: 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.

Code Citations

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.

 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.

Exhibit 34

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

	2016 Actual	2017 Annualized CR	2018 Estimate
Management and Professional Support Services……………………………………………	$0	$0	$0
Studies, Analysis & Evaluations…………………………………………………………	0	0	0
Engineering & Technical Services………………………………………………………	67	65	65
Total	$67	$65	$65

NTIA utilizes consultants throughout its programs to provide scientific or technical expertise in specialized areas.

Exhibit 35

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

	2016 Actual	2017 Annualized CR	2018 Estimate
Periodicals………………………………………………………………………	$0	$0	$0
Pamphlets………………………………………………………………………	10	10	10
Audiovisual Products…………………………………………………………	0	0	0
Total	$10	$10	$10

Exhibit 36

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

	2016 Actual	2017 Annualized CR	2018 Estimate
Direct:			
Average ES Salary……………………………………………………………………………	$176,446	$181,528	$184,977
Average Career Path Salary………………………………………………………………	106,077	108,633	110,697
Average GS Grade…………………………………………………………………………	13.9	13.9	13.9
Average GS Salary…………………………………………………………………………	$119,327	$122,764	$125,097

Exhibit 5

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
FY 2017 Annualized CR	0	0	$0	$0
less: Obligations from prior years	0	0	0	0
plus: 2018 adjustments to base	0	0	0	0
2018 Base	0	0	0	0
plus: 2018 program changes	0	0	0	0
2018 Estimate	0	0	0	0

Comparison by budget program/sub-program	2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	(Decrease)	Amount
Public Telecommunications Facilities, Planning and Construction										
Grants... Pos/BA	0	$0	0	$0	0	$0	0	$0	0	$0
	0	0	0	0	0	0	0	0	0	0
Program management...................................... FTE/Pos/BA	0	0	0	0	0	0	0	0	0	0
FTE/Obl. 0	0	52	0	903	0	0	0	0	0	0
TOTALS.. Pos/BA	0	0	0	0	0	0	0	0	0	0
FTE/Obl.	0	52	0	903	0	0	0	0	0	0
Adjustments to Obligations										
Recoveries/Refunds.. 0		(20)		0		0		0		0
Unobligated Balance, start of year...........................		(935)		(903)		0		0		0
Unobligated Balance, end of year............................		903		0		0		0		0
Unobligated Balance, rescinded...............................				0		0		0		0
Financing from transfers:										
Transfer from other accounts (-)................................		0		0		0		0		0
Transfer to other accounts (+).................................		0		0		0		0		0
Appropriation...				0		0		0		0

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Exhibit 12

**APPROPRIATION ACCOUNT: PUBLIC TELECOMMUNICATIONS FACILITIES, PLANNING
AND CONSTRUCTION**

**BUDGET PROGRAM: PUBLIC TELECOMMUNICATIONS FACILITIES, PLANNING AND
CONSTRUCTION**

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

Exhibit 33

Department of Commerce
National Telecommunications and Information Administration
Public Telecommunications Facilities, Planning and Construction
APPROPRIATIONS LANGUAGE AND CODE CITATIONS:

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 114-254)

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) assigns to NTIA the administration of the Public Telecommunications Facilities Program.

Exhibit 5

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
FY 2017 Annualized CR	0	0	$0	$0
less: Obligations from prior years	0	0	0	0
plus: 2018 adjustments to base	0	0	0	0
2018 Base	0	0	0	0
plus: 2018 program changes	0	0	0	0
2018 Estimate	0	0	0	0

Comparison by budget program/sub-program	2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Technology Opportunities Program										
Grants.. Pos/BA	0	$0	0	$0	0	$0	0	$0	0	$0
FTE/Obl.	0	0	0	0	0	0	0	0	0	0
Program management........................ Pos/BA	0	0	0	0	0	0	0	0	0	0
FTE/Obl.	0	64	0	278	0	0	0	0	0	0
TOTALS... Pos/BA	0	0	0	0	0	0	0	0	0	0
FTE/Obl.	0	64	0	278	0	0	0	0	0	0
Adjustments to Obligations										
Recoveries/Refunds..........................				0		0		0		0
Unobligated Balance, start of year.........				(278)		0		0		0
Unobligated Balance, end of year...........				0		0		0		0
Financing from transfers:										
Transfer from other accounts (-)............		0		0		0		0		0
Transfer to other accounts (+)...............		0		0		0		0		0
Appropriation..		**0**		**0**		**0**		**0**		**0**

(342)
0
278

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Exhibit 12

APPROPRIATION ACCOUNT: INFORMATION INFRASTRUCTURE GRANTS

BUDGET PROGRAM: INFORMATION INFRASTRUCTURE GRANTS

The Technology Opportunities Program was discontinued in FY 2005.

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Exhibit 5

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
FY 2017 Annualized CR	0	78	21,420	50,250
less: Obligations from prior years			0	0
plus: 2018 adjustments to base	0	0	0	0
2018 Base	0	78	21,420	50,250
plus: 2018 program changes	0	(10)	(21,420)	(16,823)
2018 Estimate	0	68	0	33,427

Comparison by activity/subactivity		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Public Safety Trust Fund	Pos/BA	0	$365,000	0	$0	0	$0	0	$0	0	0
	FTE/Obl.	0	366,269	0	$0	0	0	0	0	0	0
First Responder Network Authority Administrative	A Pos/B	0	0	0	$0	0	0	0	0	0	0
	FTE/Obl.	46	9,910	68	25,029	68	25,029	62	30,000	(6)	4,971
National Telecommunications and Information Administration Oversight & Programmatic	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl.	10	2,736	9	2,801	9	2,801	5	2,427	(4)	(374)
NIST Public Safety Wireless Research	Pos/BA	0	193,700	0	13,600	0	13,600	0	0	0	(13,600)
	FTE/Obl.	0	193,700	0	13,600	0	13,600	0	0	0	(13,600)
Next Generation E-911 Department of Transportation	Pos/BA	0	104,430	0	7,820	0	7,820	0	0	0	(7,820)
	FTE/Obl.	0	104,430	0	7,820	0	7,820	0	0	0	(7,820)
Next Generation E-911, NTIA	A Pos/B	0	2,750	0	0	0	0	0	0	0	0
	FTE/Obl.	0	0	1	1,000	1	1,000	1	1,000	0	0
TOTALS..	Pos/BA	0	665,880	0	21,420	0	21,420	0	0	0	(21,420)
	FTE/Obl.	56	677,045	78	50,250	78	50,250	68	33,427	(10)	(16,823)
Adjustments to Obligations:											
Recoveries/Refunds..			(1,639)		0		0		0		0
Unobligated Balance, start of year……………………………………			(157,257)		(147,731)		(147,731)		0		0
Unobligated Balance, end of year................................			147,731		118,901		118,901		0		0
									0		0
Appropriation...			665,880		21,420		21,420		0		0

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Exhibit 10

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

Comparison by line item		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Public Safety Trust Fund	Pos/BA	0	$365,000	0	$0	0	$0	0	$0	0	$0
	FTE/Obl.	0	366,269	0	0	0	0	0	0	0	
Direct Obligations...............................	Pos/BA	0	365,000	0	0	0	0	0	0	0	0
	FTE/Obl.	0	366,269	0	0	0	0	0	0	0	

Exhibit 10

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

Comparison by line item		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
First Responder Network Authority	Pos/BA	0	$0	0	$0	0	$0	0	$0	0	$0
Administrative	FTE/Obl.	46	9,910	68	25,029	68	$25,029	62	30,000	(6)	$4,971
Direct Obligations................................	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl.	46	9,910	68	25,029	68	25,029	62	30,000	(6)	$4,971

Exhibit 10

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

Comparison by line item		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Telecommunications and	Pos/BA	0	$0	0	$0	0	$0	0	$0	0	$0
Information Administration Oversight &	FTE/Obl.	10	2,735	9	2,801	9	$2,801	5	2,427	(4)	($374)
Programmatic											
Direct Obligations...............................	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/Obl.	10	2,735	9	2,801	9	2,801	5	2,427	(4)	($374)

Exhibit 10

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

Comparison by line item		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NIST Public Safety Wireless Research	Pos/BA	0	$193,700	0	$13,600	0	$13,600	0	$0	0	($13,600)
	FTE/Obl.	0	193,700	0	$13,600	0	13,600	0	$0	0	($13,600)
Direct Obligations...............................	Pos/BA	0	193,700	0	13,600	0	13,600	0	0	0	(13,600)
	FTE/Obl.	0	193,700	0	13,600	0	13,600	0	0	0	($13,600)

Exhibit 10

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

Comparison by line item		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Next Generation E-911	Pos/BA	0	$104,430	0	$7,820	0	$7,820	0	$0	0	($7,820)
Department of Transportation	FTE/Obl.	0	104,430	0	7,820	0	7,820	0	0	0	($7,820)
Direct Obligations...............................	Pos/BA	0	104,430	0	7,820	0	7,820	0	0	0	(7,820)
	FTE/Obl.	0	104,430	0	7,820	0	7,820	0	0	0	($7,820)

Exhibit 10

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

Comparison by line item		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Next Generation E-911, NTIA	Pos/BA	0	$2,750	0	$0	0	$0	0	$0	0	$0
	FTE/Obl.	0	0	1	587	1	587	1	593	1	0
Direct Obligations...............................	Pos/BA	0	2,750	0	0	0	0	0	0	0	0
	FTE/Obl.	0	0	1	587	1	587	1	593	1	0

Exhibit 16

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

Object Class		2016 Actual	2017 Annualized CR	2018 Base	2018 President's Budget	2018 Increase/ (Decrease)
11	Personnel compensation					
11.1	Full-time permanent	$5,269	$5,967	$5,967	$5,440	($527)
11.3	Other than full-time permanent	0	0	0	0	0
11.5	Other personnel compensation	118	0	0	0	0
11.8	Special personnel services payments	0	0	0	0	0
11.9	**Total personnel compensation**	5,387	5,967	5,967	5,440	(527)
12.1	Civilian personnel benefits	1,659	1,750	1,750	1,274	(476)
13	Benefits for former personnel	0			0	0
21	Travel and transportation of persons	141	225	225	225	0
22	Transportation of things	1	1	1	1	0
23.1	Rental payments to GSA	357	325	325	275	(50)
23.2	Rental payments to others	0	0	$0	0	0
23.3	Communications, utilities and miscellaneous charges	86	51	51	51	0
24	Printing and reproduction	40	40	40	5	(35)
25.1	Advisory and assistance services	59	86	86	100	14
25.2	Other services	447	1,927	1,927	1,126	(801)
25.3	Purchases of goods and services from Government accounts	4,083	4,200	4,200	4,000	(200)
25.7	Operation and maintenance of equipment	0	0	0	0	0
26	Supplies and materials	48	30	30	30	0
31	Equipment	338	0	0	0	0
41	Grants, subsidies and contributions	0	0	0	0	0
94	Expenditure transfer	664,399	35,648	35,648	20,000	(15,648)
99	**TOTAL OBLIGATIONS**	$677,045	$50,250	$50,250	$32,527	($17,723)
	Prior Year Recoveries/Refunds	(1,639)				
	Unobligated balances from Prior Years	(157,257)	(147,731)	(147,731)		
	Unobligated balance EOY	147,731	118,901	118,901		
	Unobligated balance, expiring					
	Total Mandatory Budget Authority	$665,880	$21,420	$21,420	$0	($17,723)

Exhibit 16

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

Personnel Data	2016 Actual	2017 Annualized CR	2018 Base	2018 President's Budget	2018 Increase/ (Decrease)
Full-Time Equivalent Employment:					
Full-time permanent	56	78	78	68	(10)
Other than full-time permanent	0	0	0	0	0
Total	56	78	78	68	(10)
Authorized Positions:					
Full-time permanent	56	78	78	68	(10)
Other than full-time permanent	0	0	0	0	0
Total	56	78	78	68	(10)

Exhibit 6

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

Comparison by sub-program		2016 Actual		2017 Annualized CR		2018 Base		2018 President's Budget		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Reimbursable projects											
First Responder Network	Pos/BA	0	$0	0	$0	0	$0	0	$0	0	$0
Authority	FTE/Obl.	0	0	0	0	0	0	121	50,000	121	50,000
Total, Reimbursable Obligations.........	Pos/BA	0	0							0	0
	FTE/Obl.	0	0	0	0	0	0	121	50,000	121	50,000

Exhibit 6

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

Comparison by sub-program		2016 Estimate		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Reimbursable projects											
State and Local Implementation	Pos/BA	0	$0	0	$0	0	$0	0	$0	0	$0
Grant Fund Administration	FTE/Obl.	7	1,734	7	2,957	7	2,957	7	1,766	0	(1,191)
Total, Reimbursable Obligations............	Pos/BA	7	1,734							0	0
	FTE/Obl.	7	1,734	7	2,957	7	2,957	7	1,766	0	(1,191)

Exhibit 6

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

Comparison by sub-program		2016 Actual		2017 Annualized CR		2018 Base		2018 Estimate		2018 Increase/(Decrease)	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Reimbursable projects											
Network Construction Fund											
First Responder Network	Pos/BA	0	$0	0	$0	0	$0	0	$0	0	$0
Authority	FTE/Obl.	112	93,790	179	6,574,058	179	6,574,058	48	20,000	(131)	(6,554,058)
NTIA/Opt-OUT	Pos/BA			0	$0	0	$0	0	$0	0	$0
	FTE/Obl.	3	1,365	4	3,583	4	3,583	3	2,006	(1)	(1,577)
Total, Reimbursable Obligations............	Pos/BA	0	0							0	0
	FTE/Obl.	115	95,155	183	6,577,641	183	6,577,641	51	22,006	(132)	(6,555,635)

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FY 2018 Performance Planning and FY 2016 Report Backup

National Telecommunications and Information Administration

Status of FY 2016 Indicators

- Exceeded
- Met
- TBD

Actual Trends of Indicators

- Positive
- Stable
- Negative
- Varying
- Not Enough Data
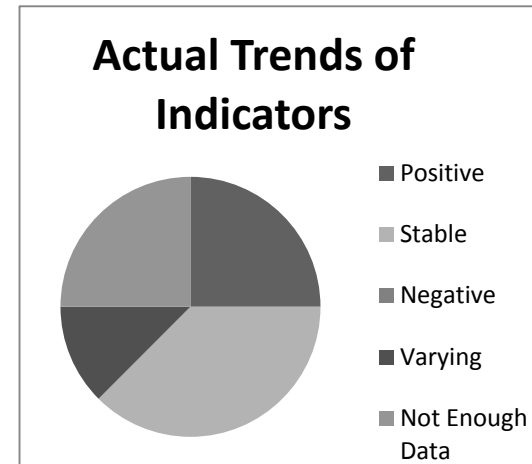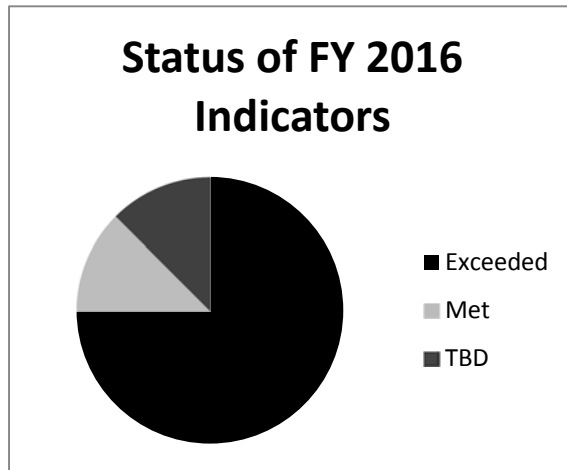
Performance Indicator Information

Summary of Performance

- Of the eight FY 2016 indicators, six actuals (75%) exceeded their targets, one actual (12.5%) met its target, and one actual (12.5%) is not yet available.
- There were six indicators that had trends (more than three years of data).
- Of those indicators with trends, two (33%) had positive trends; three (50%) had stable trends, and one (17%) had a varying trend. NTIA did not have any negative trends.

Strategic Goal #1: Trade and Investment: Expand the U.S. economy through exports and inward foreign investment that lead to more and better American jobs

Objective #1.1   Increase opportunities for U.S. companies by opening markets globally

Summary of FY 2016 Indicator Performance

Indicator	Target	Actual	Status	Trend
Percentage of NTIA positions substantially adopted or successful at international meetings	75% of NTIA positions substantially adopted/ successful at international meetings	Exceeded target of 75 % by meeting 95% of NTIA positions substantially adopted/ successful at international meetings	Exceeded	Stable

Detailed Indicator Plans and Performance

Recurring Indicators

Indicator		**Percentage of NTIA positions substantially adopted or successful at international meetings**							
Category		Other							
Type		Intermediate Outcome							
Description		NTIA will 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 multilateral meetings, multi-stakeholder meetings, and regional communications conferences and meetings.							
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018

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	Exceeded target of 75 % by meeting 95% of NTIA positions substantially adopted/ successful at international meetings	>80% of NTIA positions substantially adopted/ successful at international meetings	>80% of NTIA positions substantially adopted/ successful at international meetings	Exceeded target of 75 % by meeting 95% of NTIA positions substantially adopted/ successful at international meetings	Exceeded target of 75 % by meeting 95% of NTIA positions substantially adopted/ successful at international meetings	Exceeded target of 75 % by meeting 95% of NTIA positions substantially adopted/ successful at international meetings		
Status		Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Stable							

Explanation (if not met in FY 2016)	None.
Actions to be taken / Future Plans	None.
Adjustments to targets	None.
Notes	None.
Information Gaps	None.

Strategic Goal #2: Innovation: Foster a more innovative U.S. economy—one that is better at inventing, improving, and commercializing products and technologies

Objective #2.2: Strengthen the nation's digital economy

Summary of FY 2016 Indicator Performance

Indicator	Target	Actual	Status	Trend
Spectrum identified for commercial broadband use	Meet 66% of annual milestones regarding the identification of 500 MHz for wireless broadband	Exceeded goal of 66% by achieving 100% of annual milestones regarding the identification of 500 MHz for wireless broadband	Exceeded	Stable
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 (forums and proceedings)	6 public forums and proceedings	10 multistakeholder meetings	Exceeded	Stable
Number of times research publications are downloaded annually	7,500	8,800	Exceeded	Positive
Successfully completed deliverables under reimbursable agreements (on time, on budget, and accepted)	>95%	98%	Exceeded	Positive
Number of government and private test-bed facilities partnering with the Center for Advanced Communications (CAC), including through the National Advanced Spectrum and Communications Test Network (NASCTN)	2	4	Exceeded	Not Enough Data
Communities to which NTIA provides technical assistance	250 communities	419	Exceeded	Not Enough Data
Delivery by FirstNet and acceptance of each state's network plan or, alternatively, FCC approval of a	Issue RFPs	Developed and issued final NPSBN RFP and	Met	Variable

state's plan required for the implementation of the Public Safety Broadband Network	continued conducting evaluation of responses received to RFP		

Detailed Indicator Plans and Performance

Recurring Indicators

Indicator	**Amount of federal and non-federal spectrum identified for repurposing for commercial broadband use**					
Category	Key					
Type	Output					
Description	NTIA is undertaking tasks in collaboration with the Federal Communications Commission (FCC), to make available a total of 500 MHz (in bandwidth) of spectrum to support wireless broadband services or products by 2020. NTIA, with input from other Federal agencies and the FCC, developed a Ten-Year Plan and Timetable, identifying over 2,200 MHz of spectrum for evaluation. As this work has progressed, the band analysis process continues, but much of the effort has turned toward implementation of bands that NTIA and/or the FCC have identified. The combination of the ongoing analysis and implementation of band-repurposing 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.					
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Target	Meet 66% of annual milestones regarding the identification of 500 MHz for wireless broadband	Meet 66% of annual milestones regarding the identification of 500 MHz for wireless broadband	Meet 66% of annual milestones regarding the identification of 500 MHz for wireless broadband	Meet 66% of annual milestones regarding the identification of 500 MHz for wireless broadband	Meet 66% of annual milestones regarding the identification of 500 MHz for wireless broadband	Meet 66% of annual milestones regarding the identification of 500 MHz for wireless broadband
Actual	Exceeded goal of 66% by achieving 100% of annual milestones regarding the identification of	Exceeded goal of 66% by achieving 100% of annual milestones regarding the identification of	Exceeded goal of 66% by achieving 80% of annual milestones regarding the identification of	Exceeded goal of 66% by achieving 100% of annual milestones regarding the identification of		

	500 MHz for wireless broadband	500 MHz for wireless broadband	500 MHz for wireless broadband	500 MHz for wireless broadband		
Status	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Stable					
Explanation (if not met in FY 2016)	None.					
Actions to be taken / Future Plans	None.					
Adjustments to targets	None.					
Notes	None.					
Information Gaps	None.					

Indicator	**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 (forums and proceedings)**						
Category	Other						
Type	Intermediate Outcome						
Description	Stakeholders from industry, consumer groups, government, academia, and the technical community will work toward 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 will ensure the process is open, transparent, and consensus-based, leading to the achievement of consensus on at least one policy issue by the end of FY 2016.						
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
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
Actual				9 multistakeholder meetings	10 multistakeholder meetings	10 multistakeholder meetings		
Status				Exceeded	Exceeded	Exceeded		
Trend	Stable						

Explanation (if not met in FY 2016)	None.
Actions to be taken / Future Plans	None.
Adjustments to targets	None.
Notes	None.
Information Gaps	None.

Indicator	**Number of times research publications are downloaded annually**							
Category	Other							
Type	Output							
Description	Telecommunications engineering research publications 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 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Target				7,000	7,300	7,500	8,500	9,000
Actual				7,707	8,960	8,800		
Status				Exceeded	Exceeded	Exceeded		
Trend	Positive							
Explanation (if not met in FY 2016)	None.							
Actions to be taken / Future Plans	None.							
Adjustments to targets	Targets adjusted upward to align with trend.							
Notes	None.							
Information Gaps	None.							

Indicator	**Successfully completed deliverables under reimbursable agreements (on time, on budget, and accepted)**
Category	Other
Type	Process

	NTIA's laboratory performs research on a cost-reimbursable basis for other Federal agencies under interagency agreements (IAAs) and for private entities under CRADAs. As a proxy for customer satisfaction with research performed under an aggregate of unique agreements, the laboratory tracks as "Met/Not Met" three success parameters for each deliverable under all agreements: on time, on budget, and accepted. The metric reports the percent of total parameters (total number of deliverables under all MOUs × three parameters for each) that are reported as "Met."							
Description								
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Target				>95%	>95%	>95%	>95%	>95%
Actual				98%	99%	98%		
Status				Exceeded	Exceeded	Exceeded		
Trend	Positive							

Explanation (if not met in FY 2016)	None.
Actions to be taken / Future Plans	None.
Adjustments to targets	None.
Notes	None.
Information Gaps	None.

Indicator	**Number of government and private test-bed facilities partnering with the Center for Advanced Communications (CAC), including through the National Advanced Spectrum and Communications Test Network (NASCTN)**							
Category	Supporting							
Type	Output							
Description	By 2017, the CAC (a joint effort of NIST and NTIA) will become a single point of contact for engaging industry and other government agencies on advanced communications technologies. The CAC will increase its partnerships, in particular, in the area of testing, validation, and conformity assessment. NASCTN, a function of the CAC, includes other federal government partners in addition to NIST and NTIA.							
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Target					2	2	5	6
Actual					0	4		
Status					Not Met	Exceeded		
Trend	Not enough data							

Explanation (if not met in FY 2016)	
Actions to be taken / Future Plans	None.
Adjustments to targets	None.
Notes	The CAC, as an umbrella, endeavored in FY 2016 to be a single point of contact, in the face of more prominent promotion of NASCTN by NIST and DOD (a partner in NASCTN but not in CAC). Therefore, the indicator has been updated to reference NASCTN.
Information Gaps	None.

Indicator	**Communities to which NTIA provides technical assistance**							
Category	Other							
Type	Output							
Description	Among the communities that were not able to receive NTIA assistance during the BTOP grant period, various communities now will be able to 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 still can assist now that grant funding no longer exists.							
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Target					175 communities*	250 communities*	250 communities*	325 communities*
Actual					337 communities	419 communities		
Status					Exceeded	Exceeded		
* Not cumulative								
Trend	Not enough data							
Explanation (if not met in FY 2016)	None.							
Actions to be taken/ Future Plans	Collection of data							
Adjustments to targets	None.							
Notes	None.							
Information Gaps	None.							

Indicator	**Delivery by FirstNet and acceptance of each state's network plan or, alternatively, FCC approval of a state's plan required for the implementation of the Public Safety Broadband Network**							
Category	Other							
Type	Outcome							
Description	Under Title IV Subtitle B of the Middle Class Tax Relief and Job Creation Act of 2012, FirstNet must deliver to each state governor (or his designee) a plan for the construction, operation, maintenance and improvement out of the nationwide, interoperable broadband network in the state upon completion of a Request for Proposal (RFP) process. Upon delivery of the plan, each State and territory must choose whether to participate in the network deployment as proposed by FirstNet or conduct its own deployment of a radio access network in the State (opt-out). States seeking to opt-out must first obtain permission to do so by the Federal Communications Commission. If successful in opting out, these states must still comply with network standards developed by FirstNet.							
	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Target	N/A	N/A	Issue RFPs	Issue RFPs	RFP Development and Consultation with Regional, State, Tribal and Local Jurisdictions	Issue RFPs	Complete RFP Process, Award NPSBN Contract, Issue State Plans to 56 U.S. States and Territories	Monitor and Assist in Deployment of NPSBN
Actual	N/A	N/A	Issuance of 11 Requests for Information (RFIs).	Consultation with Regional, State, Tribal and Local Jurisdictions initiated. Two additional RFIs, including the key RFI for Comprehensive Network Solution(s), and the Draft	Draft RFP and Special Notice released, Operational Architecture released. Special Notice and Cyber Security appendix released. Completed first round consultations with 50 of the 56	Developed and issued final NPSBN RFP and continued conducting evaluation of responses received to RFP		

				Comprehensive Statement of Objectives (SOO) were issued.	States and Territories.				
Status			Not Met	Not Met	Met	Met			
Trend	Variable								
Explanation (if not met in FY 2016)									
Actions to be taken / Future Plans	Complete the evaluation of RFPs issued in FY 2016.								
Adjustments to targets	None.								
Notes	None.								
Information Gaps	None.								

Other Indicators

None

Resource Requirements Table

	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Actual	FY 2017 CR Ann	Increase/ Decrease	FY 2018 Request
Performance Objective 1.1. Increase opportunities for U.S. companies by opening markets globally.											
Salaries & expenses	**2,141**	**2,385**	**2,746**	**2,996**	**2,572**	**1,417**	**3,797**	**7,004**	**4,299**	**69**	**4,368**
Domestic and international policies	2,141	2,385	2,746	2,996	2,572	1,417	3,797	7,004	4,299	69	4,368
Subtotal, Objective 1.1	**2,141**	**2,385**	**2,746**	**2,996**	**2,572**	**1,417**	**3,797**	**7,004**	**4,299**	**69**	**4,368**
FTE	**10**	**11**	**12**	**13**	**14**	**11**	**15**	**15**	**13**	**0**	**13**
Performance Objective 2.2. Strengthen the Nation's digital economy.											
Salaries & expenses	**50,631**	**55,467**	**89,370**	**81,657**	**77,093**	**84,605**	**98,291**	**84,708**	**106,459**	**(30,464)**	**75,995**
Domestic and international policies	2,140	2,385	2,745	2,995	2,571	4,721	4,458	10,051	5,726	(1,317)	4,409
Spectrum management	32,191	35,870	45,245	37,228	34,963	40,304	52,276	42,665	57,029	(14,794)	42,235
Advanced Communications Research	14,159	14,827	16,838	14,048	12,531	15,239	24,547	18,522	31,882	(12,877)	19,005
Broadband Programs	0	0	21,796	24,390	24,456	24,341	17,010	13,470	11,822	(1,476)	10,346
Digital Television Transition and Public Safety Fund	593,842	54,059	57,955	18,555	0	0	0	0	0	0	0
Broadband Technology Opportunities Program (ARRA)	77,477	4,287,827	0	0	0	0	0	0	0	0	0
Grants	325	4,248,380	0	0	0	0	0	0	0	0	0
Program management	77,152	39,447	0	0	0	0	0	0	0	0	0
Digital To Analog Converter Box Program (ARRA)	418,341	1,258	0	0	0	0	0	0	0	0	0
Public Telecommunications Facilities, Planning, and Construction	20,943	22,914	1,210	1,298	526	347	1,023	0	0	0	0
Grants	19,005	21,182	0	0	0	0	0	0	0	0	0
Program management	1,938	1,732	1,210	1,298	526	347	1,023	0	0	0	0
Information Infrastructure Grants	205	101	170	64	55	223	407	0	0	0	0
Grants	0	0	0	0	0	0	0	0	0	0	0
Program management	205	101	170	64	55	223	407	0	0	0	0
Subtotal, Objective 2.3	**532,674**	**4,329,411**	**41,501**	**43,462**	**38,826**	**85,176**	**99,721**	**84,708**	**106,459**	**(30,464)**	**75,995**
FTE	**252**	**287**	**273**	**256**	**243**	**240**	**291**	**256**	**317**	**(8)**	**309**
Total Discretionary	**567,597**	**4,367,567**	**90,750**	**83,019**	**77,674**	**86,593**	**103,518**	**84,708**	**110,758**	**1,412**	**80,363**
Direct	534,814	4,331,796	44,246	46,457	41,397	44,905	44,309	41,722	39,426	1,412	36,000
Reimbursable	32,783	35,771	46,504	36,562	36,277	41,688	59,209	42,986	71,332	0	44,363
Mandatory	**593,842**	**54,059**	**57,955**	**18,555**							
Total Funding	**1,161,439**	**4,421,626**	**148,705**	**101,574**	**77,674**	**86,593**	**103,518**	**91,784**	**95,585**	**1,412**	**96,997**
Total FTE	**262**	**298**	**285**	**269**	**257**	**251**	**306**	**271**	**330**	**(8)**	**322**