

**Before the
NATIONAL TELECOMMUNICATIONS AND INFORMATION
ADMINISTRATION
Washington, D.C. 22030**

In the Matter of)
)
Developing a Sustainable Spectrum) Docket No. 181130999–8999–01
)
Strategy for America's Future)

**COMMENTS OF
THE FREE STATE FOUNDATION***

I. Introduction and Summary

These comments are submitted by the Free State Foundation (FSF) to the National Telecommunications and Information Administration (NTIA) in response to its request for comments for "Developing a Sustainable Spectrum Strategy for America’s Future."¹ In October 2018, President Donald Trump issued a memorandum asking NTIA, in consultation with the Office of Management and Budget (OMB), the Office of Science and Technology Policy (OSTP), and the Federal Communications Commission (FCC), to submit to the President a long-term National Spectrum Strategy.

According to the President's memorandum, the strategy should include legislative, regulatory, or other policy recommendations to “increase spectrum access for all users, including on a shared basis, through transparency of spectrum use and improved cooperation and collaboration between Federal and non-Federal spectrum stakeholders.”² In its request, NTIA is seeking comment regarding incentives and enforcement mechanisms to promote efficient and effective spectrum use.

We commend President Trump for focusing his administration on the importance of developing a strategy to promote the efficient use of the spectrum resource and NTIA for the way it is promptly beginning to implement the presidential direction.

Especially with the proliferation of video applications and on-demand services, mobile traffic in the United States is projected to grow fivefold from 2017 to 2022.³ Commercial

* These comments express the views of Randolph May, President of the Free State Foundation, Michael Horney, Research Fellow, and Gregory Vogt, Visiting Fellow. The views expressed do not necessarily represent the views of others associated with the Free State Foundation. The Free State Foundation is a nonpartisan, non-profit free market-oriented think tank.

¹ “Developing a Sustainable Spectrum Strategy for America’s Future,” Department of Commerce, National Telecommunications and Information Administration, Request for Comments, Federal Register Vol. 83, No. 245, pages 65640 – 65641, (December 21, 2018).

² Presidential Memorandum on Developing a Sustainable Spectrum Strategy for America’s Future, (October 25, 2018), available at: <https://www.whitehouse.gov/presidential-actions/presidential-memorandum-developing-sustainable-spectrum-strategy-americas-future/>.

³ Michael Horney, “Video Data Is the Leading Contributor to Rapid Traffic Growth,” FSF Blog, (December 6, 2018), available at: <https://freestatefoundation.blogspot.com/2018/12/video-data-is-leading-contributor-to.html>.

licensed spectrum is the lifeblood of mobile and wireless broadband services, and the assignment and allocation of additional spectrum is necessary to keep up with consumer demand. Despite the FCC's recent efforts to assign and allocate additional spectrum for commercial use, a significant portion of the most valuable spectrum is held by federal agencies and a significant portion of it remains unused or underutilized.

When federal agencies retain unused or underutilized spectrum, this creates a situation with the potential for experiencing a substantial "opportunity cost" for the United States economy. In the context of these comments, opportunity cost means the loss of potential benefits when a more costly alternative regarding spectrum usage is chosen over a less costly one. Allocating unused federally-held spectrum for commercial use would generate billions of dollars in FCC auction revenue and would facilitate the creation of necessary infrastructure investment for next-generation wireless innovations, including specifically 5G deployment. Additionally, the revenues generated from these auctions may be invested in federal programs that positively impact American citizens in a variety of ways.

These comments contain six different policy recommendations. Some of these may overlap, at least in part, in the sense that, if adopted, others may be less important or less relevant. We acknowledge such overlap. But taken together, collectively, the recommendations form a basis for implementing new policies and processes that give federal agencies more information about the value of their spectrum holdings and more incentives to relinquish unused or underutilized spectrum.

If these recommendations are adopted, they would provide a sound basis for establishing a program for shifting unused or underutilized spectrum from federal users to commercial users, thereby creating a larger pool of spectrum holdings for the development of innovative new technologies and services, while, at the same time, ensuring that federal agencies have the spectrum they need to meet essential needs.

Here are our general recommendations:

- *NTIA Should Issue an Annual Report Calculating the Market Value of Federal Government Spectrum*
- *The OMB Should Have a Role in Auditing Federal Spectrum Holdings*
- *The Spectrum Relocation Fund Should Become a Spectrum Incentive Fund*
- *Agencies Should Be Assessed Spectrum Fees*
- *Allow Agencies to Use Spectrum Holdings to Offset Budget Appropriations*
- *Increase the Transparency and Accountability of Government Spectrum Decisions*

The above recommendations are focused primarily on general policies and processes to improve management of government-held spectrum to achieve more efficient use of this valuable resource. They are not focused on specific bands. So, for example, we do not include a recommendation here endorsing the AIRWAVES Act that was introduced in the last session of Congress, even though it had many commendable features. One of the most commendable AIRWAVES Act feature is the establishment of a timeline for auctioning certain identifiable spectrum bands. This creation of a predictable spectrum pipeline based on deadlines is important because predictability is necessary for building

and deploying complex wireless networks in an efficient and effective fashion. To the maximum extent possible, predictability – and transparency, which goes hand-in-glove with predictability – should be important features of all spectrum management policies.

II. The Opportunity Cost of Unused Federal Spectrum

At the outset it is important to acknowledge that federal agencies should have sufficient spectrum to carry out effectively necessary government services. However, it is in no way suggestive of a "moral failing" or malfeasance of any kind to acknowledge that there is a natural tendency of federal agency spectrum users to "hoard" unused spectrum because they have little incentive to relinquish it.⁴ This creates a situation with the potential for a substantial "opportunity cost," which, in the context of these comments, means the loss of potential benefits when a more costly alternative regarding the use of spectrum is chosen over a less costly one. When federal agencies hold onto unused or underutilized spectrum, the U.S. economy suffers in two ways from the opportunity cost incurred. First, spectrum is extremely valuable in the commercial market and it provides critical infrastructure for next-generation wireless technologies. And second, when federally-held spectrum is relinquished and auctioned off to commercial users by the FCC, the auctions raise significant government revenue that can be used to positively impact American citizens.

In May 2015, the economic value of 645.5 megahertz of licensed spectrum was \$455 billion.⁵ And a 2012 White House report (the most recent available data) estimated that the federal government occupied about 60% of the spectrum in the range of 225 MHz and 3.7 GHz,⁶ which is approximately 2,417 megahertz.⁷ In other words, if this spectrum was auctioned off to commercial users, it would generate about \$1.7 trillion (2015 dollars) in economic activity.

Moreover, this estimate is likely conservative given that the United States is on the cusp of the next-generation wireless revolution with 5G networks. This next generation of wireless network infrastructure will deliver speeds at least 10 times faster than 4G and possibly up to 100 times faster. 5G wireless technology is projected to create \$275 billion in additional investment, 3 million new jobs, and \$500 billion in gross domestic product.⁸ The faster speeds and lower latency of 5G technology will create life-changing benefits

⁴ Thomas Lenard, Lawrence White, and James Riso, "Increasing Spectrum for Broadband: What Are the Options?," Technology Policy Institute, (February 2010), available at: <https://techpolicyinstitute.org/wp-content/uploads/2010/02/increasing-spectrum-for-broadb-2007661.pdf>.

⁵ Coleman Bazelon and Guilia McHenry, "Mobile Broadband Spectrum: A Vital Resource for the U.S. Economy," The Brattle Group, (May 11, 2015), available at: <https://ecfsapi.fcc.gov/file/60001117200.pdf>.

⁶ "Report to the President: Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth," Executive Office to the President, President's Council of Advisors on Science and Technology, (July 2012), available at: https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/pcast_spectrum_report_final_july_20_2012.pdf.

⁷ Michael O'Rielly, "Enact More 'Sticks': Spectrum Fees for Government Users," FCC Blog, (September 8, 2015), available at: <https://www.fcc.gov/news-events/blog/2015/09/08/enacting-more-sticks-spectrum-fees-government-users>.

⁸ Michael Horney, "5G Deployment Projected to Create 3 Million Jobs and \$500 Billion in GDP," FSF Blog, (January 26, 2017), available at: <https://freestatefoundation.blogspot.com/2017/01/5g-deployment-projected-to-create-3.html>.

like high-speed video surveillance, vehicle-to-vehicle communications, and robust telemedicine services.

Furthermore, using FCC auctions to reallocate unused federally-held spectrum to commercial users would generate significant government revenue. Unused spectrum produces zero commercial economic benefits and zero government benefits. Because spectrum is very valuable for providing mobile and fixed wireless services, federal agencies could be compensated handsomely for spectrum holdings that are not needed for government services.

But federal agencies are not subjected to calculation of opportunity costs because they do not operate in a market environment or confront price signals associated with market conditions. Therefore, they have little incentive to relinquish their unused or underutilized spectrum.⁹ Absent an environment that creates incentives, federal agencies often have a natural tendency to waste or use inefficiently valuable resources, like budgeted funds or spectrum holdings. This is likely because government officials fear that if they relinquish those resources in one year, they will not receive them in the following year. On the other hand, through licenses granted by the FCC, commercial users of spectrum typically are confronted with opportunity costs because they pay a market price for their spectrum. They then have the option to use spectrum for varying purposes, sell it to other users, and/or experiment with new technologies.

If federal agencies were confronted with calculating the opportunity costs associated with their spectrum management decisions, either through fees assessed for holding spectrum or receipt of an increase in funds for relinquishing spectrum, it is likely valuable spectrum would be reallocated from federal users to commercial users more rapidly. All else equal, incentivizing federal agencies to relinquish unused or underutilized spectrum increases the supply of spectrum for commercial use, thus lowering its price. Of course, lowering the price of licensed spectrum will increase the quantity demanded by commercial users. In other words, by developing a sustainable spectrum strategy that encourages the more efficient use of spectrum at the federal level, the Trump Administration and Congress will create additional opportunities to increase broadband capital investment and innovation in next-generation services.

III. Recommendations for Freeing Up Excessive Spectrum Held by Federal Agencies

NTIA Should Issue an Annual Report Calculating the Market Value of Federal Government Spectrum

If federal administrators had more information regarding the market value of their agency's spectrum holdings, they might be more inclined to relinquish unused or underutilized spectrum. In March 2018, Congress passed the RAY BAUM'S Act.¹⁰ This law, among other things, requires NTIA to submit to Congress a report that includes

⁹ Lenard, White, and Riso, "Increasing Spectrum for Broadband: What Are the Options?"

¹⁰ Repack Airwaves Yielding Better Access for Users of Modern Service Act of 2018, H.R.4986, 115th Congress, (2018), available at: <https://www.congress.gov/bill/115th-congress/house-bill/4986/text/toc-H56A59C14DBB14D2DBF434DC5999713E9>.

legislative or regulatory recommendations to incentivize federal agencies to relinquish or share federal spectrum for the purpose of allowing commercial wireless broadband services to operate on that federal spectrum.

In November 2018, Senator Mike Lee (R-UT) introduced the “Government Spectrum Valuation Act of 2018,” which, if passed, would have required NTIA, in consultation with OMB, to calculate on an annual basis the market value of electromagnetic spectrum assigned or otherwise allocated to each federal agency.¹¹ This calculation should go hand-in-hand with the report required by the RAY BAUM’s Act because it can provide valuable information to policymakers in fashioning effective incentives to repurpose spectrum for commercial use.

Each year, NTIA, in consultation with OMB, should provide Congress and federal agencies with spectrum holdings an updated report of the federal government’s spectrum inventory, including the amount and market value of the spectrum held by each agency. The report also should list unused and underutilized frequencies held by federal agencies, and it should provide legislative and regulatory recommendations to transfer these underutilized frequencies from federal users to commercial users. These annual updates will provide federal agencies with necessary information about management of their spectrum holdings. And it will give Congress important information about legislative initiatives that could be employed to spur a shift of unused or underutilized spectrum from federal users to commercial users.

Although President Trump did not specifically require this type of reporting in his memorandum, NTIA and OMB should perform these analyses and undertake these recommendations as part of its National Spectrum Strategy. It may be advisable for President Trump to issue an executive order requiring NTIA, in consultation with OMB, to develop these reporting requirements.

The OMB Should Have a Role in Auditing Federal Spectrum Holdings

In 2011, NTIA’s Commerce Spectrum Management Advisory Committee (CMAC) published a report in which it proposed strengthening the OMB Circular A-11 budget process by asking federal agencies to include in their budget requests an evaluation of their spectrum usage to determine if the spectrum is being used efficiently.¹² OMB incorporated these changes into Circular A-11 in 2012. In Sections 31.12 and 51.18 of Circular A-11,¹³ OMB requires federal agencies to submit as part of their budget requests an annual account of the agency’s use of its spectrum holdings and identify any spectrum

¹¹ Government Spectrum Valuation Act of 2018, S.3618, 115th Congress, (2018), available at: <https://www.congress.gov/bill/115th-congress/senate-bill/3617/text>.

¹² “Incentives Subcommittee Report,” Commerce Spectrum Management Advisory Committee, NTIA, (adopted January 11, 2011), available at: https://www.ntia.doc.gov/files/ntia/publications/incentivessubcomm_report_final_01112011.pdf.

¹³ Circular No. A-11, Preparation, Submission, and Execution of the Budget, Executive Office of the President, Office of Management and Budget, (July 2016), available at: https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/a11_current_year/a11_2016.pdf.

frequencies that might be available for sharing.¹⁴ However, OMB should have a role, in conjunction with NTIA's spectrum management duties, in auditing each federal agency's spectrum holdings.

President Trump should issue an executive order giving OMB the authority to audit federal agencies' spectrum holdings. During its budget process, OMB should perform some evaluation of each agency's spectrum holdings, even if on a spot audit basis, for the purpose of helping NTIA identify unused or underutilized spectrum that can be repurposed and auctioned by the FCC for use by the private sector on a licensed basis. While there certainly is a role for some amount of unlicensed spectrum in an overall spectrum strategy, primary emphasis should be on the identification of spectrum that can be auctioned on a licensed basis. The revenue raised from such auctions can then be included in the President's budget and in each congressional budget resolution.¹⁵ In order to provide an incentive for a "hard look" by the agencies, in conjunction with NTIA and OMB oversight, the auction revenues could then be allocated back to those respective agencies or for other important services.

The Spectrum Relocation Fund Should Become a Spectrum Incentive Fund

The Spectrum Relocation Fund (SRF), a fund administered by OMB, reimburses agencies for the costs incurred in relocating from one spectrum frequency to another or for sharing its spectrum frequencies with commercial users. However, because the SRF simply reimburses costs, it provides little incentive for agencies to engage in relocation, especially considering that it takes time for OMB to reimburse a federal agency.¹⁶

In April 2017, Representative Brett Guthrie (R-KY) introduced the "Federal Spectrum Incentive Act of 2017," which would have allowed federal agencies that utilize spectrum to participate in the incentive auction program.¹⁷ Under this proposal, revenue raised from auctions in which federal agencies relinquished spectrum would have been deposited into the "Federal Spectrum Incentive Fund," managed by OMB. That revenue then would have been transferred to eligible federal agencies which relinquished spectrum. A federal agency would have received 1% of the proceeds from the spectrum it relinquishes for auction if it discontinued operation on an eligible frequency without relocation to another frequency or if the agency relocated operations to another frequency and engaged in spectrum sharing with another federal agency.

Using this proposed legislation as a model for how the Spectrum Incentive Fund should operate, OMB should expand the functions of the SRF to allocate a greater percentage of the auction proceeds to federal agencies that relinquish valuable spectrum in addition to reimbursing the costs of relocation. If federal administrators were aware of the market

¹⁴ Karen D. Gordon, et al., "A Review of Approaches to Sharing or Relinquishing Agency-Assigned Spectrum," IDA Science & Technology Policy Institute, (January 2014), available at: <https://www.ida.org/idamedia/Corporate/Files/Publications/STPI/Pubs/p5102final.pdf>.

¹⁵ Jeffrey A. Eisenach, "Spectrum Reallocation and the National Broadband Plan," Federal Communications Law Journal: Vol. 64: Iss. 1, Article 4, (2011), available at: <https://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=1606&context=fclj>.

¹⁶ Gordon, et al., "A Review of Approaches to Sharing or Relinquishing Agency-Assigned Spectrum."

¹⁷ Federal Spectrum Incentive Act of 2017, H.R.1888, 115th Congress, (2017), available at: <https://www.congress.gov/bill/115th-congress/house-bill/1888>.

value of their agency's spectrum holdings and could estimate how much revenue those holdings would generate in an FCC auction, agencies should be inclined to relinquish unused spectrum for a percentage of that revenue.

Indeed, FCC Commissioner Rosenworcel has proposed, among others, that government agencies could be given a significant incentive to relinquish inefficiently used spectrum by conducting an incentive auction, patterned after the incentive auction that transferred over-the-air broadcast TV spectrum to commercial wireless use.¹⁸ The general consensus is that the incentive auction was moderately successful and thus worthy of consideration in the government context. For the incentive to actually work, government agencies that participate in an incentive auction would need to be rewarded with a significant percentage of the funds without simply losing other budget appropriations. One percent is likely not enough to motivate agency managers to relinquish a valuable resource that they now often view as "free". Of course, the process would have to be carefully overseen by Congress in order to ensure that legislative priorities were followed.

President Trump should issue an executive order expanding the functions of the SRF and direct NTIA and OMB to work together to determine the appropriate percentage of auction revenues agencies should receive in exchange for their relinquished spectrum holdings.

Agencies Should Be Assessed Spectrum Fees

In a September 2015 blog, FCC Commissioner Michael O’Rielly proposed the establishment of agency spectrum fees to discourage government agencies from hoarding spectrum that is not used and therefore not needed.¹⁹ Because agencies are subject to budget caps, implementing agency spectrum fees would encourage federal administrators to properly evaluate the amount of spectrum their agency needs to deliver its services effectively. Commissioner O’Rielly stated:

The budgetary mechanism for implementing these fees on government users presents some challenges but is also resolvable. Accepting the position that NTIA accurately knows how much spectrum each agency holds, even spectrum that is used for classified functions, simple math produces the annual fee owed by an agency (i.e., price per megahertz times spectrum allotments times any reduction for sharing). From that amount, an agency's annual budgetary appropriation level

¹⁸ Statement of Commissioner Jessica Rosenworcel Federal Communications Commission Before the United States Senate Committee on Commerce, Science & Transportation “Wireless Broadband and the Future of Spectrum Policy” (Jul. 29, 2015), available at: https://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0729/DOC-334645A1.pdf. See also Gregory J. Vogt, “Avoiding a Train Wreck: Giving Government a Market Incentive to Vacate Spectrum,” Perspectives from FSF Scholars Vol. 9, No. 26 (August 5, 2015), available at: http://freestatefoundation.org/images/Avoiding_a_Train_Wreck_-_Giving_Government_a_Market_Incentive_to_Vacate_Spectrum_080415.pdf.

¹⁹ Michael O’Rielly, “Enact More ‘Sticks’: Spectrum Fees for Government Users.”

would be automatically reduced accordingly, via a sequestration-like structure, in that fiscal year.

NTIA considered implementing agency spectrum fees in a 2011 CMASC report:

One step towards greater efficiency of spectrum usage would be for the federal government to apply a simple fee on spectrum. The fee would have the effect of providing an incentive for those who value their assigned spectrum – or portions of it – little if at all to reduce or abandon their spectrum holdings or to use them more efficiently. It could also provide incentives for future spectrum-using programs planned by government agencies to give greater consideration to efficient use in the choice of technologies, systems or services.²⁰

NTIA could impose an appropriate fee on federal agencies based on the amount of spectrum each agency is holding. Then, OMB could subtract the fee amount from each agency's overall budget appropriation. Depending on how much an agency's budget decreases due to the implementation of spectrum fees, agency administrators may well be discouraged from "hoarding" spectrum that is not used or is underutilized.

Because Congress would need to approve of these budget appropriations as part of the federal budget process, Congress should pass legislation requiring NTIA to impose agency spectrum fees or include this requirement in its next reauthorization of NTIA.

Allow Agencies to Use Spectrum Holdings to Offset Budget Appropriations

Along the same lines as the Spectrum Incentive Fund, if federal administrators were aware of the market value of their agency's spectrum holdings and could determine how much revenue those holdings would generate in an FCC auction, agencies might be inclined to relinquish unused spectrum for an increase in their budget appropriations. In a September 2017 blog, Commissioner O'Rielly offered another proposal which would permit federal agencies to use their spectrum holdings to offset annual budget caps. Federal agencies should be allowed to substitute the market value of their surrendered spectrum to offset budget cuts or to expand their spending options.²¹

Commissioner O'Rielly also provided an example of how this would help the Department of Defense (DoD):

This option may be most attractive for the DoD, which faces direct budget caps imposed by law. In operation, it would force its leadership to evaluate all its budget priorities and operations against the others, including whether net savings could be achieved by vacating or sharing spectrum with the private sector. In some cases, DoD might be able to use more efficient technology to reduce its spectrum footprint and still generate net savings. For example, what if DoD's Office of Spectrum Policy and International Engagements might determine that the cost of making particular radar facilities more frequency agile would be more

²⁰ "Incentives Subcommittee Report," page 3.

²¹ Michael O'Rielly, "How to Free Up Government Held Spectrum in the Face of Increasing Budgetary Pressure," FCC Blog, (September 6, 2017), available at: <https://www.fcc.gov/news-events/blog/2017/09/06/how-free-government-held-spectrum-face-increasing-budgetary-pressure>.

than offset by the budgetary relief received from the resulting cleared spectrum. Importantly, the benefits to the DoD would be immediate.

In the budget requests submitted to OMB, federal agencies should identify unused or underutilized spectrum frequencies and offer them for commercial use. Subsequently, OMB would then reward the agencies with increased budget authority for the projected market value of those respective frequencies. Because Congress would need to approve of these increases in budget appropriations in its congressional budget resolutions, Congress should pass legislation granting OMB the authority to offset an agency's relinquished spectrum holdings with increased budget appropriations.

Increase the Transparency and Accountability of Government Spectrum Decisions

In the past, it is well known that the decision to repurpose government spectrum for commercial use is an extremely lengthy process. Reports show that it has taken an average of 13 years from the time a decision is made to relinquish spectrum until spectrum is actually placed in the hands of a commercial user.²² Although part of the reason for such delays can be attributed to uncertain or protracted procedural processes, there are often long delays where government decisions appear to the public to simply be on a blank screen of government indecision. Numerous examples abound of such seemingly inexplicable government inaction.²³

Providing greater transparency into the process, -- what proposals are being considered, by what agencies, on what timeframe, how to submit further information to aid in those decisions -- would substantially improve these processes. Creating greater accountability through such improved transparency, and creating self-imposed deadlines for action, would make these government spectrum users more accountable to the public and would improve the expected time frame of taking action.

IV. Conclusion

The Trump Administration and Congress should consider these recommendations as they

²² CTIA previously filed a July 2015 study demonstrating this time frame with the Federal Communications Commission, available at <https://ecfsapi.fcc.gov/file/60001121340.pdf>. The Free State Foundation has urged prompt spectrum reallocation decisions and implementation. See also Randolph J. May & Gregory J. Vogt, "Focusing on Infrastructure Development: Completing the Incomplete Obama Administration Spectrum Report Card," Perspectives from FSF Scholars Vol. 11, No. 24, (December 13, 2016), available at http://freestatefoundation.org/images/Focusing_on_Communications_Infrastructure_Development_121216.pdf.

²³ One example of the inordinate delay in assessing potential reallocation of a portion of 5.9 GHz, currently allocated to the Dedicated Short-range Communications Service. See, e.g., Michael O'Rielly, "Statement of Commissioner Michael O'Rielly on 5.9 GHz Phase I Testing Data," (October 29, 2018) available at <https://docs.fcc.gov/public/attachments/DOC-354831A1.pdf>.

move forward with developing a National Spectrum Strategy.

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