

***CENTER FOR SPACE
POLICY AND STRATEGY***

JUNE 2025

A COMPREHENSIVE GUIDE TO THE U.S. FEDERAL CIVIL SPACE BUDGET

**LINDSAY DEMARCHI
THE AEROSPACE CORPORATION**

DR. LINDSAY DEMARCHI

Dr. Lindsay DeMarchi is a policy analyst in the Center for Space Policy and Strategy at The Aerospace Corporation. Her expertise centers around civil space, interests of the public good, and related intersections and opportunities in a burgeoning commercial space sector. Prior to joining Aerospace, DeMarchi was a congressional fellow in the United States Senate covering space, transportation, and natural resource policy topics. She led the development of legislation on space launch licensing, space debris, light pollution from satellites, and commercial low Earth orbit (LEO) destinations. DeMarchi earned a bachelor's degree in physics and astronomy from Colgate University, a master's degree in physics from Syracuse University, and a master's degree and a doctorate in astronomy from Northwestern University.

ABOUT THE CENTER FOR SPACE POLICY AND STRATEGY

The Center for Space Policy and Strategy is dedicated to shaping the future by providing nonpartisan research and strategic analysis to decisionmakers. The center is part of The Aerospace Corporation, a nonprofit organization that advises the government on complex space enterprise and systems engineering problems.

The views expressed in this publication are solely those of the author(s), and do not necessarily reflect those of The Aerospace Corporation, its management, or its customers.

Contact us at www.aerospace.org/policy or policy@aero.org



Summary

This paper presents an overview of the U.S. federal civil space budget between FY23 and proposed spending in FY25,* providing a foundational reference dataset for civil space budget analyses. Projects that support, enable, or leverage space activities for civil purposes are found in more than 100 individual line items spread across 17 federal departments and agencies and are funded by 4 different appropriations bills.† Across all these elements, civil space-related appropriations total roughly \$44 billion in FY25, of which NASA constitutes about 58 percent (Figure 1).‡

To better view the cross-cutting nature of space missions and the support that enables them, the second half of this report introduces a novel representation of the civil space budget by organizing the data into six national priority areas:

- ◆ American Leadership and Manufacturing
- ◆ Workforce Development
- ◆ Fundamental Science
- ◆ Efficiency, Improvements, and Growth
- ◆ Homeland Security
- ◆ Infrastructure, Energy, and Resiliency
- ◆ Remote Sensing Applications (Figure 2)

This organization of the data highlights the ubiquity of space-related activity throughout diverse sectors to reach the same common goal.

Given the significant changes underway in the federal government’s structure and budget, the Center for Policy and Strategy at The Aerospace Corporation will revise and update this analysis as those changes are finalized, and we welcome feedback from other analysts to refine the categorization. All the budget data discussed in this paper is also available as a separate Excel file at https://csp.s.aerospace.org/sites/default/files/2025-06/U.S.FederalCivilSpaceBudgetCompanionSpreadsheet_0.zip.

* Instead of adopting regular appropriations for FY25, Congress enacted a full-year continuing resolution based primarily on FY24 appropriations levels. This paper utilizes FY25 agency requests.

† This study defines “civil space” to encompass all activity outside defense or intelligence purposes.

‡ Please note that, due to the level of detail available in budget requests, some line items used in this estimate are not solely devoted to space-related activity and in other cases line-item values were not found. With the same caveats, the total in FY24 was about \$41 billion; the FY23 total was about \$43 billion.

CIVIL SPACE BY DEPARTMENT AND AGENCY IN FY25

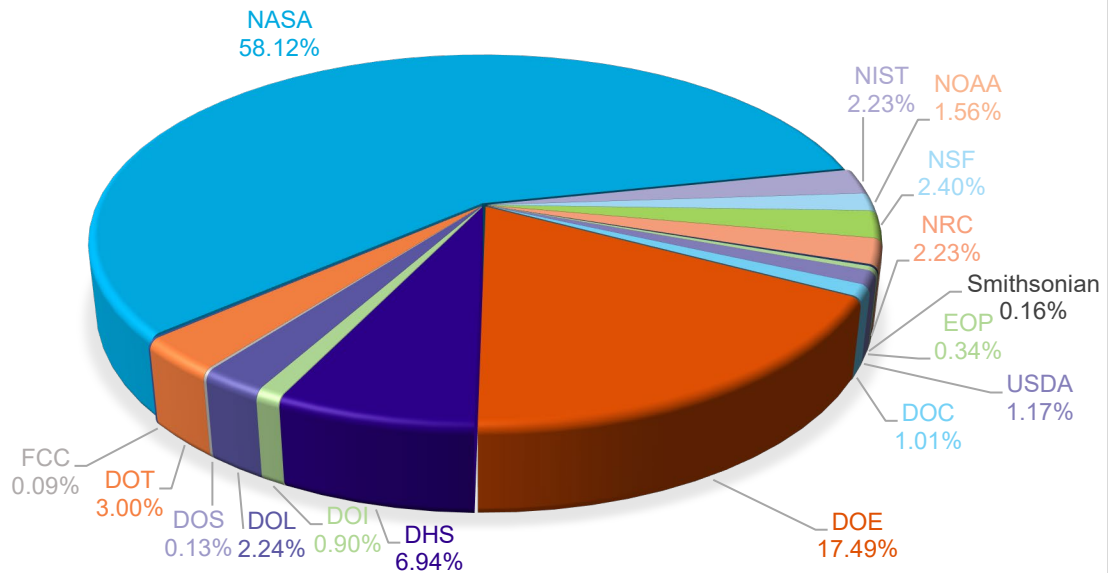


Figure 1: The federal civil space budget for FY25 organized by department and agency. Please note, due to the level of detail available in budget requests, some line items used in this estimate are not solely devoted to space-related activity and, in other cases, line-item values were not found.

CIVIL SPACE BY NATIONAL PRIORITY IN FY25

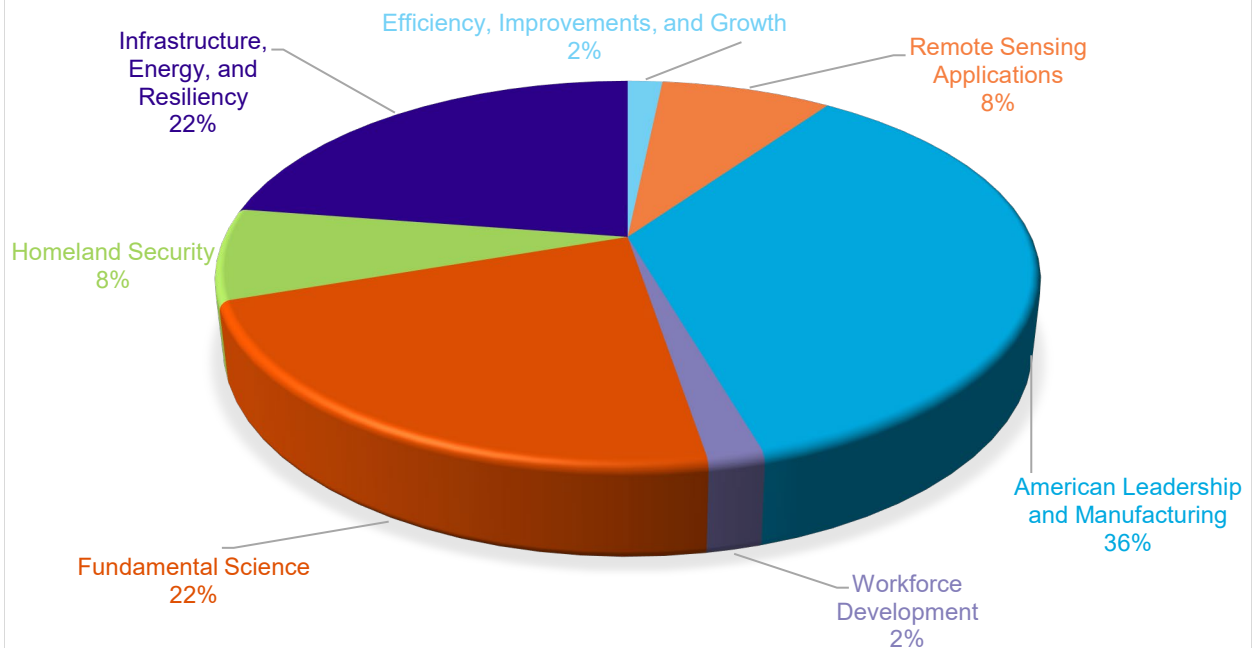


Figure 2: The federal civil space budget for FY25 organized by national priority. Please note, due to the level of detail available in budget requests, some line items used in this estimate are not solely devoted to space-related activity and, in other cases, line-item values were not found.

Contents

Introduction.....	4
Methodology: Compiling and Interpreting Budgetary Information	6
How Much of a Line Item Represents Space?	8
Accounting for Inflation.....	8
What to Expect in This Paper	8
Civil Space Budget by Department and Agency.....	9
Executive Office of the President (EOP).....	9
Department of Agriculture (USDA)	10
Department of Commerce (DOC)	11
Department of Energy (DOE).....	12
Department of Homeland Security (DHS)	13
Department of the Interior (DOI)	14
Department of Labor (DOL).....	15
Department of State (DOS)	16
Department of Transportation (DOT).....	17
Federal Communications Commission (FCC).....	19
National Aeronautics and Space Administration (NASA)	20
National Institute of Standards and Technology (NIST).....	22
National Oceanic and Atmospheric Administration (NOAA).....	23
National Science Foundation (NSF).....	24
National Telecommunications and Information Administration (NTIA).....	26
The Nuclear Regulatory Commission (NRC).....	27
The Smithsonian Institution.....	28
Civil Space by National Priority	29
American Leadership and Manufacturing	29
Workforce Development	31
Fundamental Science.....	32
Efficiency, Improvements, and Growth.....	33
Homeland Security	34
Infrastructure, Energy, and Resiliency	35
Remote Sensing Applications.....	37
Acronyms.....	39
Acknowledgments.....	40

Introduction

The term civil space is generally understood among the public and policymakers to refer to non-national security agencies with direct missions to space, such as the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA). Yet, the Department of Transportation (DOT) and the Department of Labor (DOL) are equally inextricable from civil space capabilities because they support the space industry workforce and ensure the safe transportation of critical supply chain materials. The Department of Agriculture (USDA) and the Smithsonian Institution, meanwhile, make extensive use of data that can only be acquired from space in their transdisciplinary public projects. Departments such as the Department of Interior (DOI) and the Department of Energy (DOE), too, rely heavily on space data to achieve their missions, while the Executive Office of the President (EOP), Federal Aviation Administration (FAA), and Federal Communications Commission (FCC) craft policy and regulations that direct and enable space activities.

This paper broadens the definition of civil space to include activities that support, enable, or leverage space through direct and indirect means. The growing number of civil space departments and agencies, as highlighted in Figure 3, is one way of measuring space's increased national importance. The ubiquitous use of space is also a result of capabilities becoming more accessible, allowing department agendas to incorporate space as a tool rather than endeavor a space-centric, long-term, strategic mission.^{*} As a result, the emerging civil space enterprise resembles a complex food chain, with embedded interdependencies between agencies.[†] This paper builds upon previous work that has identified some areas of civil space appropriations,¹ defense space appropriations,² and individual agency budget trends over time^{3, 4} by providing snapshots of each agency's appropriations requests and discussing its line items' relevance to civil space under this new definition.

^{*} For a comprehensive overview in strategic foresight methodologies applied to space, see <https://csps.aerospace.org/papers/project-north-star-strategic-foresight-us-grand-strategy> and tools developed in <https://csps.aerospace.org/papers/strategic-foresight-space-enterprise>

[†] See <https://csps.aerospace.org/papers/framing-space-agenda-through-strategic-foresight> for applying foresighting to interconnected themes and issues across space priority areas.

The Government of the United States

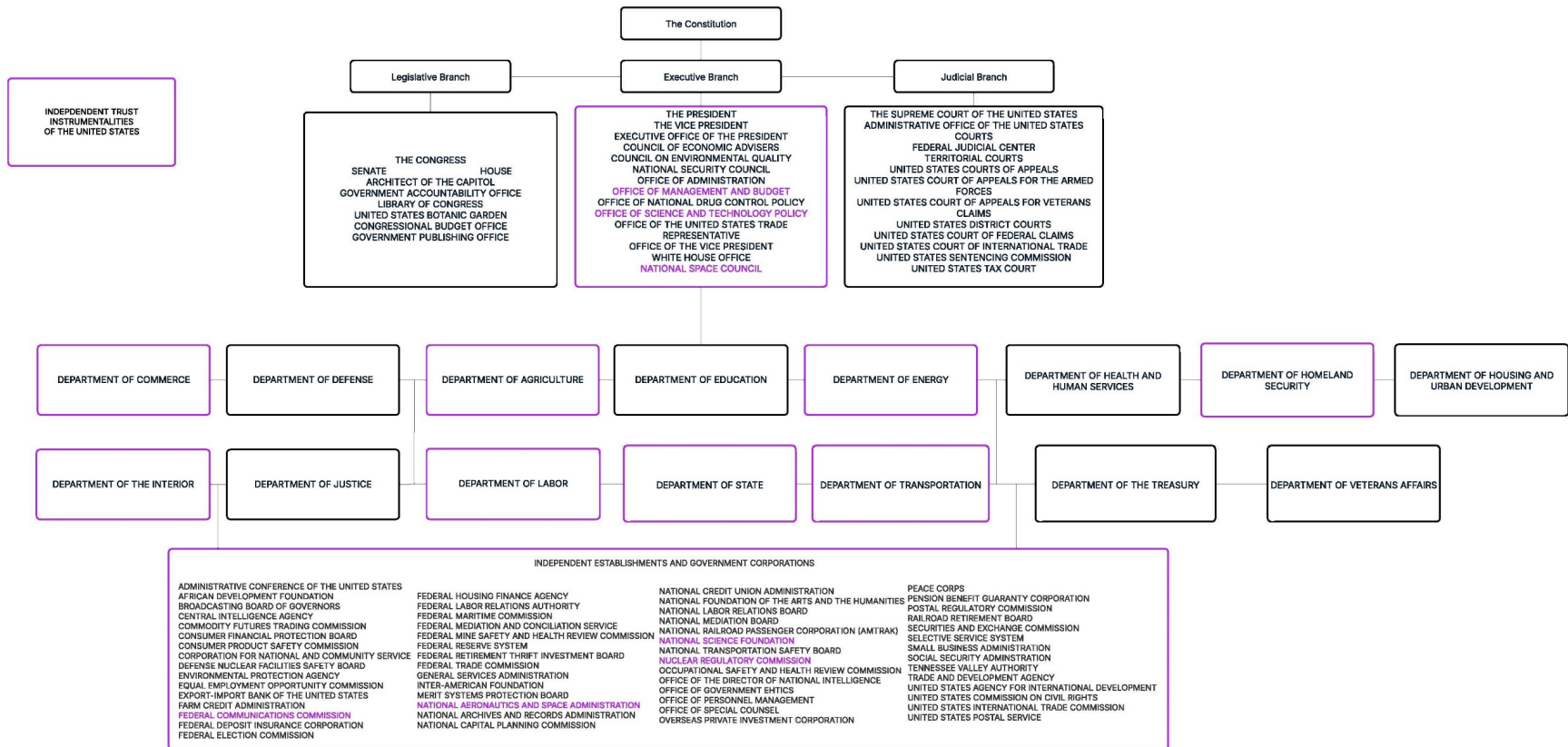


Figure 3: An overview of the organizational structure of the U.S. government. Boxes highlighted in purple indicate departments and independent agencies with programs that are supported, enabled, or leveraged by civil space programs and line items. Chart adapted from the General Services Administration.⁵

An outcome of space's increased prominence is its relevance in unexpected places that have become vital for maintaining a balance of innovation, quality of life, public safety, and economic prosperity. As a means of identifying this trend, this paper presents a novel view of the federal civil space budget that groups the dataset of more than 100 individual line items into non-space categories associated with current national priorities. These categories are:

- ◆ American Leadership and Manufacturing
- ◆ Workforce Development
- ◆ Fundamental Science
- ◆ Efficiency, Improvements, and Growth
- ◆ Homeland Security
- ◆ Infrastructure, Energy, and Resiliency
- ◆ Remote Sensing

Such a categorization offers a new perspective on the connections between federal investments in space to livelihoods, manufacturing, security, and resources, better reflecting the widespread use of space and its value to the American people.

Methodology: Compiling and Interpreting Budgetary Information

The Office of Management and Budget (OMB) provides some guidance on how agencies should organize their annual President's Budget Requests. However, agencies often include additional information based on mission needs and accumulated guidance from the various appropriations subcommittees reviewing their requests. This results in assorted levels of granularity among all federal budgetary submissions, and direct line-item comparisons between agencies becomes a challenge. The top

image in Figure 4 is an example of depth specific to the National Science Foundation (NSF) in its FY24 President's Budget Request, where the NSF denotes individual facilities supporting major projects in addition to the projects' overall proposed funding.

To a similar effect, agencies' requests following continuing resolutions (CRs) have an added layer of diversity in reporting that further complicates direct comparisons of project funding. In response to the CR in 2024, some agencies reported the amount *spent* in 2023 in their FY25 budget request documents, while others recorded the *appropriated* (or "*enacted*") amount for FY23. Still, others reported the "*base*" dollar amounts, or bottom lines necessary to continue base operations (Figure 4).^{*} Where possible, this paper footnotes which values are used if they are not reported as "*requested*."

As a result of the variance in reporting among President's Budget Requests, this analysis preferentially reports dollar amounts from appropriations bills and CRs as the common mechanism among diverse sources. Unfortunately, this can be at the expense of detail—the text of congressional spending bills does not go into the same level of detail explicating individual budget line items (Figure 4). As a result, one must infer between the President's Budget Requests and congressional bills how these dollar amounts are distributed to programs in practice within the agencies and departments. Where possible, this analysis references the location of each line item in the respective President's Budget Requests. Some agencies, such as NASA, additionally received emergency funding in 2024.⁶ Tracking all related emergency funding is beyond the scope of this paper.

^{*} In simpler words: Some agencies looked back on the year and reported what they spent, independent of what they had originally asked of Congress. Others reported the amounts they had originally requested from Congress. Additional agencies reported the amounts Congress gave them at the start of the previous fiscal year. Still others reported the bare minimum necessary for their agency to exist.

MAJOR FACILITIES FUNDING, BY PROJECT (Dollars in Millions)					
	FY 2023 Base Plan	FY 2024 (TBD)	FY 2025 Request	Change over FY 2023 Base Plan	
				Amount	Percent
Operations and Maintenance of Major Facilities	\$996.74	-	\$1,120.33	\$123.59	12.4%
National Ecological Observatory Network (NEON)	71.71	-	82.02	10.31	14.4%
Biological Sciences	\$71.71	-	\$82.02	\$10.31	14.4%
Academic Research Fleet ¹	136.09	-	151.33	15.24	11.2%
National Center for Atmospheric Research (NCAR) FFRDC	116.20	-	124.59	8.39	7.2%
National Geophysical Facility (NGF) ²	37.92	-	45.29	7.37	19.4%
Geodetic Facility for the Advancement of GEoscience (GAGE) ²	14.55	-	8.55	-6.00	-41.2%
Seismological Facility for the Advancement of GEoscience (SAGE) ²	23.37	-	13.25	-10.12	-43.3%
NGF O&M ²	-	-	23.49	23.49	N/A
Ocean Observatories Initiative (OOI) ¹	42.02	-	47.76	5.74	13.7%
U.S. Sub-seafloor Sampling (S3P) (Formerly IODP)	50.40	-	55.51	5.11	10.1%
Geosciences	\$382.63	-	\$424.48	\$41.85	10.9%
Green Bank Observatory (GBO) FFRDC ³	10.83	-	9.68	-1.15	-10.6%
Large Hadron Collider (LHC) - ATLAS and CMS	20.50	-	20.50	-	-
Laser Interferometer Gravitational Wave Observatory (LIGO)	45.00	-	49.00	4.00	8.9%
National High Magnetic Field Laboratory (NHMFL) ³	39.91	-	39.13	-0.78	-2.0%
National Radio Astronomy Observatory (NRAO) FFRDC ³	93.66	-	96.71	3.05	3.3%
NRAO O&M ^{3,4}	43.03	-	43.00	-0.03	-0.1%
Atacama Large Millimeter Array (ALMA) O&M	50.63	-	53.71	3.08	6.1%
National Solar Observatory (NSO) FFRDC ³	26.56	-	34.24	7.68	28.9%
NSO O&M	5.88	-	6.24	0.36	6.1%
Daniel K. Inouye Solar Telescope (DKIST) ³	20.68	-	28.00	7.32	35.4%
NSF's National Optical-Infrared Astronomy Research Laboratory FFRDC ³	73.57	-	86.40	12.83	17.4%
NOIRLab O&M (Mid-Scale Observatories & Community Science and Data Center) ^{3,5}	28.49	-	24.82	-3.67	-12.9%
GEMINI Observatory O&M	22.98	-	25.49	2.51	10.9%
Vera C. Rubin Observatory O&M	22.10	-	36.09	13.99	63.3%
Mathematical and Physical Sciences	\$310.03	-	\$335.66	\$25.63	8.3%
Antarctic Facilities and Operations (AFO)	224.71	-	269.94	45.23	20.1%
IceCube Neutrino Observatory (ICNO)	7.66	-	8.23	0.57	7.4%
Office of Polar Programs	\$232.37	-	\$278.17	\$45.80	19.7%
Major Research Facilities Construction Investments	\$216.66	-	\$345.00	\$128.34	59.2%
R&RA Design Stage Activities⁶	\$30.43	-	\$46.00	\$15.57	51.2%
Major Research Equipment and Facilities Construction (MREFC)	\$186.23	-	\$299.00	\$112.77	60.6%
Total, Major Research Facilities	\$1,213.40	-	\$1,465.33	\$251.93	20.8%

National Science Foundation					
Research and related activities 1/.....	6,931,136	8,915,900	7,067,190	+136,054	-1,848,710
Defense function.....	90,000	102,000	109,310	+19,310	+7,310
Subtotal.....	7,021,136	9,017,900	7,176,500	+155,364	-1,841,400
Major Research Equipment and Facilities Construction..	187,230	304,670	- - -	-187,230	-304,670
Major Research Equipment and Facilities Construction (emergency).....	- - -	- - -	234,000	+234,000	+234,000
Education and Human Resources 1/.....	1,154,000	1,496,180	1,172,000	+18,000	-324,180
Agency Operations and Award Management.....	448,000	503,870	448,000	- - -	-55,870
Office of the National Science Board.....	5,090	5,250	5,090	- - -	-160
Office of Inspector General.....	23,393	26,810	24,410	+1,017	-2,400
Total, National Science Foundation.....	8,838,849	11,354,680	9,060,000	+221,151	-2,294,680
=====					

Figure 4: An example of differences in granularity among budget documents from which data has been taken for this study. Top image: an example of budgetary detail in the FY24 NSF President's Budget Request.⁷ Bottom image: budgetary detail in the NSF section of the FY24 CR.⁸ Note that the level of detail in the President's Budget Request is not present in the final appropriations bill.

How Much of a Line Item Represents Space?

This reference dataset contains more than 100 individual line items from the total federal budget. The degree to which each budget line item represents space activity varies. For example, the FAA's *Advanced Technology Development and Prototyping* contains some individual space-related projects, while NASA's *Deep Space Exploration Systems* is entirely devoted to space activity. For comprehensiveness and completeness, all line items in this paper are calculated and summed according to the detail offered by appropriations budget requests put forth by each agency. It is beyond the scope of this publication to calculate the budget on a more granular project-by-project basis. However, descriptions of each project's relevancy to civil space are provided in each section.

The intent of this referential dataset is to begin a broader discussion of the direct and indirect relationships civil space budget line items have to broader national priorities. For example, NASA's *Heliophysics* can be seen as fundamental science research or critical to infrastructure resiliency in preparing for solar weather. The reader is encouraged to experiment with other forms of estimating category totals using the spreadsheets published along with this paper.

Accounting for Inflation

A consideration for any budget analysis is whether to account for inflation when presenting historical data. This paper uses *current dollars*, or the actual dollar amount provided that fiscal year, and therefore does not adjust for inflation. To calculate

the inflation-corrected value for FY25, please refer to Table 10.1 of the Historical Tables published by the Office of Management and Budget.⁹

What to Expect in This Paper

The first half of this paper presents the federal civil space budget across departments and agencies that have submitted their own reports to Congress, listed in alphabetical order. Each entry includes the relevant appropriations bill that funds the department or agency, the establishing legislation for the department or agency (not including subsequent changes), a brief description of the department or agency, and its connection to civil space. Some agency section titles are independent agencies, while others are represented separately for submitting their own reports to Congress but technically exist within departments. Those sections denote the department under which the agency lives. Each section contains a table of curated line items that ultimately tally the amounts appropriated from FY23 to the requested amounts of FY25. The totals per table estimate civil space contributions contributed over all line items, except where noted.

The second half of this paper reorganizes the same federal civil space budget information into a set of categories that reflects national priorities and spans multiple departments and agencies or includes different parts of an agency's budget. Each section contains a description of the category, and its tables have an additional column to denote what agency the line item is from. Citations for all values in these sections can be found in their original department or agency tables.

Civil Space Budget by Department and Agency

Executive Office of the President (EOP)

***Appropriations bill: Commerce, Justice,
and Science (CJS)***

***Establishing legislation: The Reorganization Act
of 1939, Reorganization Plan Number 1¹⁰***

The EOP mission is to provide support to the president. On space, the EOP serves critical leadership roles in civil space, both in orchestrating the budgetary process through the OMB and providing guidance in space policy. The National

Space Council and the Office of Science and Technology Policy (OSTP) puts forth presidential policy recommendations, executive orders, and strategies for the executive branch to follow and guide national priorities. In particular, the OSTP crafts policy and analysis for the president related to cutting-edge technological issues such as quantum information, artificial intelligence, biotechnology, and space.

Line Item	FY25	FY24 ¹¹	FY23 ^{*,12}
National Space Council	2 ¹³	1.965	1.965
Office of Science and Technology Policy (OSTP)	8 ¹⁴	7.965	7.965
OMB	138.3 ¹⁵	128.035 ¹⁶	128.035 ¹⁷
Civil Space Estimate:	148.3	137.695	137.695

AMOUNTS IN MILLIONS.

* Unless otherwise noted, values are enacted.

Department of Agriculture (USDA)

Appropriations bill: Agriculture, Rural Development, Food and Drug Administration, and Related Agencies

Establishing legislation: The Department of Agriculture Organic Act¹⁸

The USDA's mission is to guide agriculture, nutrition, natural resources, and public policy based

on agricultural data and management. The USDA supports farming, forestry, and ranching, all while leveraging satellite-provided data. In particular, the National Agricultural Statistics Service (NASS) can carry out its function largely due to space-based remote sensing data, as well as the analyses performed by Forest and Rangeland Research.

Line Item	FY25	FY24	FY23
National Agricultural Statistics Service (NASS)	196 ¹⁹	187.513 ²⁰	211 ^{*, 21}
Forest and Rangeland Research	315.6 ²²	300. ²³	307 ^{†, 24}
Civil Space Estimate:	511.6	487.513	518

AMOUNTS IN MILLIONS.

* Actual spending.

† Actual spending.

Department of Commerce (DOC)

Appropriations bill: Commerce, Justice, and Science

*Establishing legislation: S.359—An Act to Establish the Department of Commerce and Labor*²⁵

The primary mission of the DOC is to enhance and support job creation and economic growth in the United States by supporting commercial activity. The DOC, while supporting other significant space-related agencies such as NOAA and the Office of Space Commerce (OSC) (whose entries appear later in this section), also conducts space-related activities that affect trade, the economy, and the space workforce. For example, the Bureau of Economic Analysis (BEA) has recently added space as one of the sectors of the U.S. economy on which it publishes annual statistics.²⁶

The DOC also advocates for the U.S. space industry. For example, the International Trade Admin-

istration (ITA) “promotes U.S. aerospace companies exporting to international markets.”²⁷ In particular, the ITA advocacy center, within its Global Markets division (which enforces export controls on commercial space), seeks to advance U.S. leadership in the global space economy, and in FY23 managed 27 cases related to “launch services, satellite manufacturing, satellite telecommunications services, sensors, ground station equipment, and related goods and services” with a total value of approximately \$8.8 billion.²⁸

Similarly, the Export Administration division within the Bureau of Industry and Security included commercial and civil space in its report to Congress by continuing efforts on a “multi-year industrial assessment to evaluate the current health and competitiveness of the civil segment of the U.S. space industrial base.”

Line Item	FY25 *	FY24 †	FY23 ‡
The International Trade Administration (ITA)			
Global Markets ²⁹	387.539	384.714	373.132
Bureau of Economic Analysis ³⁰	52.262	51.61	50.303
Bureau of Industry and Security			
Export Administration ³¹	Not Listed	81.043	76.028
Civil Space Estimate:	439.801	517.367	499.463

AMOUNTS IN MILLIONS.

* Base budget.

† Values not listed in the 2024 CR, see row information for citations.

‡ Values not listed in the 2024 CR, see row information for citations. FY23 numbers report actual spending.

Department of Energy (DOE)

Appropriations bill: Energy and Water

Development and Related Agencies

Establishing legislation: The Department of Energy Organization Act³²

The primary mission of the DOE is to enhance the energy security of the United States through technological innovation and steward-responsible nuclear management. In particular, the DOE Office of Science takes advantage of the fact that stars, accretion disks, and black holes probe extreme cases of matter in the universe and provide excellent test

laboratories for fusion and fission. Consequently, the DOE provides Earth-based research on astrophysical phenomena, and in turn uses space-based science to improve life on Earth. In order to conduct research, the DOE also expands fundamental computing capabilities and our understanding of basic physics that affects everyday life. The DOE also ensures such knowledge benefits society in workforce development, offers safeguards and security, and responsibly provides safe and updated infrastructure for its facilities.

Line Item	FY25 ³³	FY24 ³⁴	FY23 ^{*, 35}
Office of Science (Total)	8,583	8,240	8,100
Accelerator R&D and Production	31	29	27.436
Workforce Development for Teachers and Scientists	43	40	42
Isotope R&D and Production	184	130.193	109.451
Safeguards and Security	195	190	184.099
Science Laboratories Infrastructure	295	208.907	280.7
Program Direction	246	226.831	211.211
Fusion Energy Sciences	844.5	790	763.222
Nuclear Physics	833	804	805.196
Advanced Scientific Computing Research	1,153	1,016	1,068
High Energy Physics	1,231	1,200	1,166
Basic Energy Sciences	2,582	2,606.25	2,534
Civil Space Estimate:	7,637.5	7,241.181	7,191.315

AMOUNTS IN MILLIONS.

* Unless otherwise noted, values are enacted.

Department of Homeland Security (DHS)

Appropriations bill: Department of Homeland Security

Establishing legislation: The Department of Homeland Security Act³⁶

The primary objective of the Department of Homeland Security is to protect the United States domestically through “customs, border, immigration enforcement, emergency response to natural and manmade disasters, antiterrorism work, and cybersecurity.”³⁷ Within the DHS is the Cybersecurity and Infrastructure Security Agency (CISA), which protects U.S. space infrastructure resilience by monitoring space weather and space-based positioning, navigation, and timing (PNT).

Additionally, the *Air Security* project within Air, Land, and Port of Entry (POE) bridges capabilities between land, air, and space by enabling commercial satellite-based communications. As the U.S. Maritime Transportation System (MTS) has grown to include commercial space launches, its budget has expanded.³⁸ Additionally, the DHS FY25 report to Congress suggests DHS enforcement agencies seek to expand legacy communications systems in the Arctic with the capability and capacity to leverage commercial and civil space-based capabilities to “maritime regions devoid of infrastructure.”³⁹

Line Item	FY25	FY24	FY23
CISA⁴⁰	3,009	2,907	2,907
Border Security Thrust Area			
Air, Land, and Port of Entry (POE)			
Air Security ⁴¹	14	14	14
Maritime Safety and Security			
Port and Waterway Resiliency ⁴²	0.5	—	—
Remote Maritime Technologies ⁴³	9.6	9.6	9.6
Civil Space Estimate:	3,033.1	2,930.6	2,930.6

AMOUNTS IN MILLIONS.

Department of the Interior (DOI)

Appropriations bill: Department of the Interior, Environment, and Related Agencies

Establishing legislation: An Act to Establish the Home Department, and to Provide for the Treasury Department an Assistant Secretary of the Treasury, and a Commissioner of the Customs⁴⁴

The guiding mission of the DOI is to manage domestic natural resources and safeguard cultural heritage. The DOI, like NOAA, is responsible for large contributions in financing, planning, and managing national and global remote sensing capabilities. The United States Geological Survey (USGS) conducts science for imaging land development, including the purchase of—and support to—commercial data services, and main-

tains the Landsat civil remote sensing satellite program⁴⁵ The next Landsat mission, *Landsat Next*, is set to launch in late 2030 and will be jointly operated with NASA to continue the world's longest space-based record of Earth's land surface. Additionally, the National Park Service contains the Natural Sounds and Night Skies Division within the Natural Resource Stewardship and Science Directorate. This division's unique task is to preserve natural darkness in the parks and allow park guests to experience the stars.

Of note in the FY25 budget is the start of a commercial satellite data pilot project. Other line items, such as *National Land Use Data Products*, are the analysis and interpretation of data acquired by remote sensing.

Line Item	FY25 ⁴⁶	FY24 ⁴⁷	FY23 ^{*, 48}
Reported USGS Core Science Systems (Total)	313.016 ⁴⁹	273.221	284.607
Reported USGS National Land Imaging Program (Total)	143.8 ⁴⁹	115.071	115.921
Reported Satellite Operations (Total)	110.507 ⁵⁰	95.334	92.184
Sustainable Land Imaging Development - Landsat Next	103.334	91.334 ⁵¹	0 ⁵²
Commercial Satellite Data Pilot	5	0 ⁵³	0 ⁵⁴
Baseline Capacity - 2024 Fixed Costs	1.047	0 ⁵⁵	0 ⁵⁶
Reported Science Research and Investigations (Total)	33.293	23.737 ⁵⁷	0 ⁵⁸
Remote Sensing State Grants	1.250	1.465 ⁵⁹	0 ⁶⁰
Enhancing Landscape Measurements, Data, and Analysis	3.7	0 ⁶¹	0 ⁶²
National Land Use Data Products	1.5	0 ⁶³	0 ⁶⁴
Natural Capital Accounting	3.22	0.22 ⁶⁵	0 ⁶⁶
Baseline Capacity - 2024 Fixed Costs	1.036	0 ⁶⁷	0 ⁶⁸
National Park Service			
Park Management			
Resource Stewardship			
Natural Resource Stewardship ⁶⁹	273	272	250 [†]
Civil Space Estimate:	393.087	365.019	250

AMOUNTS IN MILLIONS.

* Enacted amounts.

† Actual spending.

Department of Labor (DOL)

***Appropriations bill: Departments of Labor, Health and Human Services, and Education
Establishing legislation: The Act of March 4, 1913 and 29 USC Ch. 12⁷⁰***

Overall, the mission of the DOL is to promote the welfare of U.S. wage earners and to support job seekers and retirees. The DOL supports space activities through establishing terrestrial manufacturing standards and by publishing statistics on the health of the space economy. For example, the Occupational Safety and Health Administration (OSHA) sets standards and conducts workplace investigations, which are critical for minimizing the

risk of potentially dangerous activities such as moving suspended heavy objects, transporting and loading rocket fuel and cryogenics, handling radioactive material, and handling large, pressurized cannisters.^{71,72,73} OSHA's predicted contribution to the overall civil space budget is small; however, an exact estimate of its statistical relevance is incomplete as some of the largest space manufacturers have a six-year reporting gap to OSHA.⁷⁴ The health and growth of the overall workforce can be estimated from the Bureau of Labor Statistics studies and maintenance of the space commercial enterprise.⁷⁵

Line Item	FY25	FY24	FY23 *
OSHA ⁷⁶	655.5	632.3	632.3
Bureau of Labor Statistics ⁷⁷	321	314	312
Civil Space Estimate:	976.5	946.3	944.3

AMOUNTS IN MILLIONS.

* Actual spending reported.

Department of State (DOS)

Appropriations bill: State, Foreign Operations, and Related Programs

Establishing legislation: An Act for Establishing an Executive Department, to be Denominated the Department of Foreign Affairs⁷⁸

The DOS guides U.S. foreign policy such that the interests and security of Americans are represented abroad. Related to space, the DOS represents the United States in bilateral space relationships with other countries and in multilateral institutions such as the United Nations. The DOS enforces

international trade compliance and technology controls upstream in all areas of the space supply chain by ensuring joint missions with other countries comply with international information and technology sharing laws. The DOS secures downstream sharing via the Bureau of Political-Military Affairs (PM). The Directorate of Defense Trade Controls (DDTC) within the PM verify that space technology, craft components, and cargo with defense applications abide by International Traffic in Arms Regulations (ITAR).

Line Item	FY25 ⁷⁹	FY24 ^{†, 80}	FY23 ^{†, 81}
State Oceans and International Environmental and Scientific Affairs (OES) [‡]	21.949	17.192 ^{§, 82}	15.192
Bureau of Arms Control, Deterrence, and Stability (ADS)	17.783	14.961	14.961
Bureau of Political-Military Affairs (PM)	15.9	13.6	10.6
Civil Space Estimate:	55.632	45.753	40.753

AMOUNTS IN MILLIONS.

* Following line items do not appear explicitly in *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.

[†] Actual spending reported. Line items are not listed explicitly in *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.

[‡] Includes the Office of Space Affairs.

[§] Does not appear explicitly in *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.

Department of Transportation (DOT)

Appropriations bill: Transportation, Housing, and Urban Development

Establishing legislation: The Department of Transportation Act⁸³

The DOT is responsible for ensuring Americans have safe, efficient, reliable transportation within the country. In terms of civil space, the DOT provides oversight of space activities on the ground and as they transit the national airspace during launch and reentry.

On the ground, the Pipeline and Hazardous Materials Safety Administration regulates the transportation of hazardous materials to space manufacturing sites and the finished products (which are often large or hazardous) to launch sites.⁸⁴

The FAA's Office of Commercial Space (FAA/AST) protects public safety during launch and reentry and prevents collisions between air and space traffic. To this end, the FAA Office of Policy, International Affairs, and Environment coordinates national airway closures during commercial space launches. Funding for the Commercial Space Transportation Safety Program has increased over

time despite the encompassing budget for Research Engineering and Development decreasing.⁸⁵ These last two activities have expanded much in the last few years to accommodate the growing number of commercial space launch and reentry activities. According to the DOT budget request,⁸⁶ FY23 saw a "record-breaking number of requests for new authorizations." License modifications also broke a record in FY23 at 40 requests that fiscal year, which "exceeded the prior record by over 20%." AST also conducted 752 safety inspections in FY23 that resulted in another record-breaking number of operator noncompliance incidents and operator procedural errors, as well as seven concurrent mishap investigations.⁸⁷ AST anticipates the number of new authorizations will continue to increase, as many more commercial space launch vehicles are being developed.

Also due to the increased number of commercial space launches, the Air Traffic Organization (ATO) has added a new line item in 2025 for commercial space operations, and the budgetary increase to NextGen, the modernized air traffic management system, includes Enterprise Operational Performance Analysis to accommodate commercial space transportation.

Line Item	FY25	FY24 ⁸⁸	FY23 ^{†, 89}
Federal Aviation Administration			
Office of Chief Counsel	74.03	55.78 ^{†, 90}	55.78 ^{†, 91}
Office of Policy, International Affairs, and Environment	104.5 ⁹²	90.4 ⁹³	90.4 ⁹⁴
Wide Area Augmentation System (WAAS) for GPS	91.8	92.1	73.2
Research, Engineering, and Development (Total)	250 ^{§, 95}	280 ^{**, 96}	255 ^{††, 97}
Commercial Space Transportation Safety Program	5.4 ⁹⁸	2 ⁹⁹	4.708 ¹⁰⁰
NAS			
Air Traffic Control Facilities and Equipment			
Commercial Space Integration	4.5 ¹⁰¹	1	5 ^{††, 102}
Office of Commercial Space Transportation (AST) Operations	57.1 ¹⁰³	42.018	37.854
Next Generation Air Transportation System (NextGen)	73.556	65.581 ¹⁰⁴	65.581
Facilities and Equipment			
Advanced Technology Development and Prototyping ^{§§}	31.9	31.9125 ¹⁰⁵	29.45
Air Traffic Organization (ATO)			
Commercial Space Operations	21	Not listed	Not listed
Pipeline and Hazardous Materials Safety Administration	600.624 ^{***, 106}	519.382 ^{†††, 107}	519.382 ^{†††, 108}
PNT, GNSS, GPS¹⁰⁹	3	20	20
Civil Space Estimate:^{§§§}	1,312.01	1,198.174	1,151.643

AMOUNTS IN MILLIONS.

* Unless otherwise noted, values are enacted.

† Not listed in FY24 consolidated appropriations.

‡ Not listed in FY24 consolidated appropriations.

§ Total is the Request + Infrastructure Investment and Jobs Act (IIJA) Supplemental.

** Total Budgetary Resources (Actual + IIJA Supplemental).

†† Total Budgetary Resources (Actual + IIJA Supplemental).

‡‡ Actual spending.

§§ Activity Task C Operations Concept Validation and Infrastructure Evaluation includes \$3 million for projects that include commercial space in national airway systems.

*** Total is the Request + IIJA Supplemental.

††† Total Budgetary Resources (CR+ IIJA Supplemental).

‡‡‡ Total Budgetary Resources (Actual + IIJA Supplemental).

§§§ Calculation includes section totals and individual line items.

Federal Communications Commission (FCC)

Appropriations bill: Financial Services and

General Government, previously CJS ¹¹⁰

Establishing legislation: The Communications Act of 1934¹¹¹

Department: N/A (Independent Agency)

The Federal Communications Commission (FCC) is an independent regulatory agency with oversight of telecommunications. The FCC Space Bureau, established in 2023, is responsible for “developing, recommending, and administering policies, rules, standards, and procedures for the authorization and regulation of domestic and international satellite systems.”¹¹² While mainly focused on use of radio frequency spectrum by satellites and ground stations, the FCC Space Bureau also has a requirement to protect the public interest and therefore has also created rules to mitigate risks from space debris, satellite collisions, and atmospheric reentry of the satellites it licenses.¹¹³ To complement this work, the Office of International

Affairs represents the spectrum interests of the United States in international fora.¹¹⁴

Furthermore, the FCC Space Bureau organizes coordination agreements with the NSF and satellite licensees to mitigate damaging effects of unintentional light and radio interference with astronomical observatories managed by the NSF, which has led to cutting-edge innovations in satellite technology such as precise radio beaming¹¹⁵ and light shielding.¹¹⁶

The Office of Engineering and Technology within the FCC has been developing new space communications abilities, “conducting engineering and technical analyses in advanced phases of terrestrial and space communications and special projects to obtain theoretical and experimental data on new or improved spectrum access and sharing techniques.”¹¹⁷

Line Item	FY25	FY24	FY23 *
Office of Engineering and Technology	16.650 ¹¹⁸	15.600 ¹¹⁹	14.501 ¹²⁰
Space Bureau	12.172 ¹²¹	11.125 ¹²²	4.896 ¹²³
Office of International Affairs (OIA)	10.152 ¹²⁴	9.594 ¹²⁵	4.620 ¹²⁶
Civil Space Estimate:	38.974	36.319	24.017

AMOUNTS IN MILLIONS.

* Actual spending.

National Aeronautics and Space Administration (NASA)

Appropriations bill: Commerce, Justice, and Science

Establishing legislation: The National Aeronautics and Space Act of 1958¹²⁷

Department: N/A (Independent Agency)

The primary mission of NASA is space-based, which is to innovate technology that enables space exploration and expands human knowledge of the cosmos. As a result, NASA contains the largest number of line items related to civil space and is worthy of its own dedicated discussion beyond the overview scope of this paper. Detailed studies have been conducted,¹²⁸ as well as one that includes recent supplementary funding outside the appropriations bill.¹²⁹ Where available for individual line items, supplementary funding has been included in the table below to provide a more realistic sense of historic spending. As the scope of this paper is the civil space budget, the table on the next page does not include the NASA funding for the aeronautics part of its mission.

Many line items for NASA have changed names over the last few years. For example, the *Space Launch System* (SLS) was originally under *Exploration/Deep Space Exploration Systems*, but in FY25 its budget is a part of the *Moon to Mars Transportation System*. Additionally, many line items related to the Artemis Mission are found under *Moon to Mars* program headers. The *Artemis Mission* contains several phases for each

technological benchmark. The program has spread across multiple appropriations cycles but appears under the same name, *Artemis Mission*. For additional details and an updated status of the mission, please visit the Artemis section of: <https://www.nasa.gov/nasa-missions/>.

Mission Services and Capabilities (MSaC) supports all NASA projects through overhead responsibilities, such as financial management, technology services, legal assistance, procurement, and small business initiatives. Additionally, technology maturation and small business innovation research are included in the *Space Technology (Total)* budget line.¹³⁰

As civil space has matured, the NASA budget also includes commercial LEO development partnerships, dedicated to incorporating commercial innovation and developing a “robust commercial space economy” while also ensuring NASA can meet its mission needs. A primary example of this is the *Commercial LEO Development* program to support privately managed space stations after the International Space Station is decommissioned.¹³¹ Similarly, *Space Transportation* budget line funds the development of commercial capabilities for the safe, reliable, and affordable transport of astronauts and cargo to and from LEO, as well as the deorbiting of the ISS.¹³² *Deep Space Exploration* empowers commercial capabilities to explore the lunar surface and create habitats.¹³³

Line Item	FY25 ¹³⁴	FY24 ^{*, 135}	FY23 ^{†, 136}
Deep Space Exploration Systems (Total)	7,618.2	7,666 ^{‡, 137}	7,468.850
Moon to Mars Transportation System	4,213.0	4,533	4,738
Moon to Mars Lunar Systems Development	3,288.1	Not listed	2,600
Human Exploration Requirements and Architecture	117.1	Not listed	100.5
Space Operations (Total)	4,389.7	4,220 ^{§, 138}	4,250
International Space Station	1,269.6	Not listed	1,286.2 ¹³⁹
Space Transportation	1,862.1	Not listed	1,759.6 ¹⁴⁰
Space and Flight Support (SFS)	1,088.4	Not listed	983.4 ¹⁴¹
Commercial LEO Development	169.6	228	224.3
Exploration Operations	—	Not listed	13.2
Space Technology (Total)	1,181.8	1,100	1,193
Science (Total)	7,565.7	7,334	7,791.5 ¹⁴²
Earth Science	2,378.7	2,195	2,195
Planetary Science	2,731.5	2717	3,216.5 ¹⁴³
Astrophysics	1,578.1	1530	1,510.0
Heliophysics	1,578.1	805	805.0
Biological and Physical Sciences	90.8	88	85.0
STEM Engagement (Total)	143	143	143.5 ¹⁴⁴
Safety, Security, and Mission Services (Total)	3,044.4	3,129	3,129
Mission Services and Capabilities	2,058.1	Not listed	2,067.4 ¹⁴⁵
Engineering, Safety, and Operations	986.3	Not listed	1,069.1 ¹⁴⁶
Construction and Environmental Compliance and Restoration (Total)	424.1	300	604
Construction of Facilities	344.7	—	346.2 ¹⁴⁷
Environmental Compliance and Restoration	79.4	—	76.2 ¹⁴⁸
Inspector General (Total)	50.5	48	47.6
NASA Reported Total ^{**}:	25,383.7	24,875	25,573 ^{††}

AMOUNTS IN MILLIONS.

* Enacted amounts.

† Enacted amounts.

‡ According to Lindbergh 2024, “Includes 3.133B appropriated to Exploration account by PL 118-42 without specified purpose.”

§ According to Lindbergh 2024, “Includes 2.136B appropriated to space operations account by PL 118-42 without specified purpose.”

** Includes Aeronautics, not included in this civil space study.

†† According to Lindbergh 2024, “Includes 556.4M in emergency supplemental funding provided in Division N of PL 117-328.”

National Institute of Standards and Technology (NIST)

Appropriations bill: Commerce, Justice, and Science

Establishing legislation: An Act to establish the National Bureau of Standards¹⁴⁹

Department: DOC

NIST is a government agency with deep expertise in creating industry standards and standards of measurement to promote U.S. innovation and

competitiveness. As commercial space develops and civil space capability expands, there is a growing need to establish technical standards and research for a space-based future. NIST's civil space functions include developing domestic standards and representing U.S. interests in international standards bodies. NIST staff also directly support the work of the Office of Space Commerce to promote U.S. commercial space.

Line Item	FY25 ¹⁵⁰	FY24 ¹⁵¹	FY23 ^{*, 152}
STRS Scientific and Technical Research and Services	975	1,080	953
Standards Coordination and Special Programs [†]	Not listed	Not listed	Not listed
Civil Space Estimate:	975	1,080	953

AMOUNTS IN MILLIONS.

* Enacted amounts.

† Includes staff who support the Office of Space Commerce.

National Oceanic and Atmospheric Administration (NOAA)

Appropriations bill: Commerce, Justice, and Science

Establishing legislation: The Reorganization Plan No. 4 of 1970¹⁵³

Department: DOC

NOAA has the responsibility of researching, analyzing, and disseminating knowledge as it relates to weather, climate, oceans, and the atmosphere. NOAA primarily engages with civil space through its remote sensing projects in NESDIS (National Environmental Satellite, Data, and Information Service) and the Earth observations group, U.S. Group on Earth Observations (USGEO).

Additionally, NOAA utilizes space-based navigation and observation capabilities critical for operations in the ocean. NOAA also houses the Office of Space Commerce, which is developing a space situational awareness tool called the *Traffic Coordination System for Space* (TraCSS) and is providing oversight of commercial space activities, especially through its Commercial Remote Sensing Regulatory Affairs (CRSRA) office.

One recent change is the discontinuation of the *NESDIS Community Project*, which was a one-time congressionally directed project provided in the FY23-enacted bill.¹⁵⁴

Line Item	FY25 ¹⁵⁵	FY24 ¹⁵⁶	FY23 ¹⁵⁷
NESDIS (Total)	397.51	380.765	375.537 ¹⁵⁸
NESDIS Environmental Satellite Observing Systems (Total)	324	310.765	304
NESDIS Office of Satellite and Product Operations	262	250.165	245.9
NESDIS Product Development, Readiness, and Application	61	59.850	57.5
NESDIS US Group on Earth Observations (USGEO)	1	0.750	0.75
NESDIS National Centers for Environmental Information (Total)	73	70	71.4
NESDIS NOAA Community Project Funding/NOAA Special Projects (Total)	0	0	2.5
Mission Support			
Office of Space Commerce	75.638 ¹⁵⁹	65	70 ¹⁶⁰
National Ocean Service (NOS) Navigation, Observations, and Positioning			
National Geodetic Survey (NGS)*	207.7 ¹⁶¹	257.702	259.7 ¹⁶²
Civil Space Estimate:	680.848	703.467	707.75

AMOUNTS IN MILLIONS.

* Maintains the Continuously Operating Reference Stations (CORS).

National Science Foundation (NSF)

Appropriations bill: Commerce, Justice, and Science

Establishing legislation: the National Science Foundation Act of 1950¹⁶³

Department: N/A (Independent Agency)

The National Science Foundation (NSF) issues grants to conduct scientific research. This includes both analyzing data of astrophysical phenomena and operating major observatories in the United States, as well as international research outposts such as in Antarctica and Chile. The impact of the NSF reaches all areas of science, and therefore includes significant space and space-adjacent activity, such as space weather studies through the National Geophysical Facility (NGF), with the “aim of increasing resilience to such natural hazards.”¹⁶⁴ Additionally, NSF manages the *National Center for Atmospheric Research* (NCAR), which researches the Earth-Sun system, and the *National Optical-Infrared Astronomy Research Laboratory* (NOIRLab), which contains cutting-edge astronomical endeavors such as the *Gemini Observatory* and the upcoming *Vera C. Rubin Observatory*.

Much of the NSF mission area spans artificial intelligence, biotechnology, and microelectronics,

not always related to astronomy, space, or physics. Within the NSF budget request, there were no major educational or STEM programs that focused solely on space, physics, or astronomy. As such, STEM-related investments and education have been omitted from this list.

The NSF additionally has several divisions under the Mathematical and Physical Sciences (MPS) Directorate that relate to space. In particular, astronomical sciences (AST) and physics (PHY) bear a direct relation to civil space. The table highlights several civil-space related projects within the NSF that receive funding from a combination of divisions that include AST and PHY that contribute to research, education, and infrastructure. The topline totals for each division are included for completeness but are not incorporated into the calculated total to avoid double-counting these contributions to specific projects. For a comprehensive breakdown of facilities and their contributions across all NSF divisions, see Summary Tables – 18 in the NSF Request to Congress.¹⁶⁵

Line Item	FY25	FY24 ¹⁶⁶	FY23
GEO Division AGS (Atmospheric and Geospace Sciences) Research, Education, and Infrastructure (Total)	293.80 ¹⁶⁷	Not listed	289.71 ¹⁶⁸
MPS Division AST—Research, Education, and Infrastructure (Total)	318.53 ¹⁶⁹	Not listed	288.21 ¹⁷⁰
MPS Division PHY—Research, Education, and Infrastructure (Total)	312.90 ¹⁷¹	Not listed	308.65 ¹⁷²
Advanced Wireless Funding*	167.90 ¹⁷³	Not listed	154.02 ¹⁷⁴
Total Obligations for NGF (formerly GAGE and SAGE)	45.29 ¹⁷⁵	Not listed	37.92 ¹⁷⁶
Spectrum Innovation Initiative	17 ¹⁷⁷	Not listed	17 ¹⁷⁸
Green Bank Observatory	9.68 ¹⁷⁹	Not listed	10.83 ¹⁸⁰
National Center for Atmospheric Research (NCAR)	124.59 ¹⁸¹	Not listed	116.20 ¹⁸²
IceCube Neutrino Observatory	8.23 ¹⁸³	Not listed	7.66 ¹⁸⁴
Laser Interferometer Gravitational-Wave Observatory	49 ¹⁸⁵	Not listed	45 ¹⁸⁶
NOIRLab	86.40 ¹⁸⁷	Not listed	73.57 ¹⁸⁸
National Radio Astronomy Observatory	96.71 ¹⁸⁹	Not listed	93.66 ¹⁹⁰
Antarctic Facilities and Operations	269.94 ¹⁹¹	Not listed	224.71 ¹⁹²
National Solar Observatory	34.24 ¹⁹³	Not listed	26.56 ¹⁹⁴
Vera C. Rubin Observatory (Construction)	7.61 ¹⁹⁵	Not listed	15 ¹⁹⁶
Other Research Infrastructure†	131.62 ¹⁹⁷	Not listed	130.21 ¹⁹⁸
Civil Space Estimate:‡	1,048.21	Not listed	952.34

AMOUNTS IN MILLIONS.

* Cross-cutting topic that includes MPS funding and no GEO funding.

† Includes Center for High Energy X-ray Science (CHEXS) and support for the Arecibo Observatory.

‡ Does not include MPS and GEO totals to avoid double-counting facilities and interdisciplinary topics.

National Telecommunications and Information Administration (NTIA)

Appropriations bill: Commerce, Justice, and Science

Established by: Executive Order 12046¹⁹⁹

Department: DOC

The NTIA regulates spectrum for government space missions in tandem with the FCC, which regulates private sector spectrum use. The NTIA's advanced

communications research builds on decades of research by the NTIA's labs in Boulder, CO that model and analyze spectrum occupancy and evaluate the Spectrum Access System and Environmental Sensing Capability (SAS/ESC) to better predict impacts for commercial providers. Both line items in the NTIA's budget faced a decrease in FY25, following a large increase from FY23 to FY24.

Line Item	FY25	FY24 [*]	FY23 ^{†,‡}
Advanced Communications Research	14.4 ²⁰⁰	17.2 ²⁰¹	11.6 ²⁰²
Spectrum Management	11 ²⁰³	16.9 ²⁰⁴	3.3 ²⁰⁵
Civil Space Estimate:	25.4	34.1	14.9

AMOUNTS IN MILLIONS.

^{*} Following line items do not appear explicitly in *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.

[†] Actual spending.

[‡] Following line items do not appear explicitly in *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.

The Nuclear Regulatory Commission (NRC)

***Appropriations bill: Energy and
Water Development***

***Establishing legislation: The Energy
Reorganization Act of 1974²⁰⁶***

Department: N/A (Independent Agency)

The NRC has the primary mission of both licensing and regulating radioactive materials under civilian use, in addition to protecting the health and safety of the public and environment as they relate to use of nuclear materials. It is also a member of the

Interagency Nuclear Safety Review Board (INSRB), who evaluates the safety of government space missions that have nuclear sources onboard.²⁰⁷ The NRC ensures that, with the civilian use of radioactive materials, there is still a protection of public health and safety and promotion of common defense and security. Most notably, the INSRB was responsible for a safety analysis of the Mars 2020 Perseverance rover, which had a radioisotope generator onboard.²⁰⁸

Line Item	FY25	FY24	FY23
Nuclear Regulatory Commission (Total) ²⁰⁹	974.946	927.153	881.466 *

AMOUNTS IN MILLIONS.

* Actual spending.

The Smithsonian Institution

Appropriations bill: Department of the Interior, Environment, and Related Agencies

Establishing legislation: An Act to Establish the “Smithsonian Institution for the Increase and Diffusion of Knowledge among Men”²¹⁰

Department: Independent Trust Instrumentality of the United States

The Smithsonian Institution was founded with the primary purposes of both increasing and disseminating knowledge. Related to civil space, the Smithsonian Institution’s mission is to inspire visitors with our planet’s uniqueness in the universe

and to encourage future generations to seek careers in the space workforce. The mission of the Smithsonian Institution builds on scientific data from space missions and disseminates that data into publicly accessible language. In recent years, the *Smithsonian Astrophysical Observatory* and the *Air and Space Museum* have requested budget increases for important facilities upgrades and to support programming celebrating the history and growth of the U.S. space program and new commercial space activities, while the *Universe Center* has decreased in budget.

Line Item	FY25	FY24 ²¹¹	FY23 ^{*, 212}
Major Scientific Instrumentation (Standalone)	4.1 ²¹³	4.118	4.118
National Air and Space Museum	23.7 ²¹⁴	22.380	22.380
Smithsonian Astrophysical Observatory (SAO)	27.743 ²¹⁵	26.412	26.412
Facilities Capital			
Smithsonian Astrophysical Observatory [†]	5 ²¹⁶	Not listed	1.8 ²¹⁷
Air and Space Museum [‡]	8 ²¹⁸	Not listed	5.5 [§]
Enhanced Research			
Universe Center	0.182 ²¹⁹	Not listed	0.184 ²²⁰
Civil Space Estimate:	68.725	52.91	60.39

AMOUNTS IN MILLIONS.

* Enacted amounts.

[†] Separate from SAO total. FY25 budget request includes facilities planning and design while FY23 request does not include facilities planning and design.

[‡] Separate from museum total.

[§] FY25 budget request includes facilities planning and design while FY23 does not include facilities planning and design.

Civil Space by National Priority

The following section lists the same budget information as before but grouped by categories of national priorities that span multiple departments and agencies or include different parts of an agency's budget. Although some budget lines may qualify for more than one category, each is represented only once, based on the analyst's judgment of the category to which it contributes the most.

American Leadership and Manufacturing

The United States has placed a high priority on expanding domestic manufacturing and creating secure and stable supply chains domestically and abroad. These efforts enable greater control over production processes and supply chains, ensure quality standards and reduce reliance on foreign sources, and contribute to national economic resilience and growth. Similarly, upholding strong safety and product standards (such as adequate training requirements) and ensuring safe working conditions through OSHA contributes to sustainable economic growth while lowering healthcare costs.

In particular, NASA's *Mission Services and Capabilities* (MSaC) offers a comprehensive suite of support services crucial to enabling challenging and complex space operations. Similarly, NASA's

Deep Space Exploration funds the domestic manufacturing of lunar systems and physical architecture for space exploration.

American Leadership and Manufacturing also includes efforts to bolster small businesses and domestic suppliers throughout the entire value chain while protecting national security through export controls on critical defense technologies. U.S. manufacturing interests are represented abroad in international fora by several agencies, such as the DOS, FCC, and NTIA, which helps ensure U.S. leadership in international institutions that develop interoperability and safety standards, assign radio frequency spectrum allocations that are vital to many space capabilities, and ensure the long term sustainability of space activities. Federal investments in emerging technologies and incentives for their wider adoption enables the United States to maintain a competitive advantage in the global market; the development and deployment of these technologies is ushered by the ITA and FCC.

Line Item	Agency	FY25	FY24	FY23
State Oceans and International Environmental and Scientific Affairs (OES)	DOS	21.949	17.192	15.192
OSHA	DOL	655.5	632.3	632.3
Safety, Security, and Mission Services (Total)	NASA	3,044.4	3,129	3,129
Mission Services and Capabilities	NASA	2,058.1	Not listed	2,067.4
Engineering, Safety, and Operations	NASA	986.3	Not listed	1069.1
Deep Space Exploration Systems (Total)	NASA	7,618.2	7,666	7,468.850
Moon to Mars Transportation System	NASA	4,213.0	4,533	4,738
Moon to Mars Lunar Systems Development	NASA	3,288.1	Not listed	2,600
Human Exploration Requirements and Architecture	NASA	117.1	Not listed	100.5
STRS Scientific and Technical Research and Services	NIST	975	1,080	953
Standards Coordination and Special Programs	NIST	Not listed	Not listed	Not listed
Bureau of Industry and Security	DOC			
Export Administration	DOC	Not reported	81.043	76.028
The International Trade Administration (ITA)	DOC			
Global Markets	DOC	387.539	384.714	373.13
Mission Support	NOAA			
Office of Space Commerce	NOAA	75.638	65	70
Office of Engineering and Technology	FCC	16.650	15.600	14.501
Office of International Affairs (OIA)	FCC	10.152	9.594	4.620
Advanced Communications Research	NTIA	14.4	17.2	11.6
Office of Science	DOE			
Accelerator R&D and Production	DOE	31	29	27.436
Advanced Scientific Computing Research	DOE	1,153	1,016	1,068
Isotope R&D and Production	DOE	184	130.193	109.451
Advanced Wireless Funding	NSF	167.90	Not listed	154.02
Space Operations	NASA			
Commercial LEO Development	NASA	169.6	228	224.3
Space Technology (Total)	NASA	1,181.8	1,100	1,193
Federal Aviation Administration	DOT			
NAS	DOT			
Air Traffic Control Facilities and Equipment	DOT			
Commercial Space Integration	DOT	4.5	1	5
Reported USGS Core Science Systems	DOI			
Reported USGS National Land Imaging Program	DOI			
Commercial Satellite Data Pilot	DOI	5	0	0
Civil Space Estimate*		15,716.23	15,601.836	15,529.43

AMOUNTS IN MILLIONS.

* This estimate includes office total budgets and individual line items. Some lines were not reported for FY25.

Workforce Development

Achieving preeminence in space activities necessitates a highly trained, skilled, and dedicated workforce. Cultivating this talent pool requires leveraging educational initiatives such as those championed by NASA and the Smithsonian Institution, which inspire and engage the nation's youth with science, technology, engineering, and mathematics (STEM) education. These STEM programs not only foster scientific literacy but also instill a sense of national purpose and ambition regarding space exploration.

The economic potential of space development relies on creating high-skilled, well-paying jobs that are accessible to the broader population across the country. Investment in this employment pipeline

fosters a growing labor force that will contribute to the burgeoning space supply chain, participating directly in the exploration and utilization of this final frontier.

Quantifying the success and vitality of these endeavors requires ongoing monitoring and analysis. The Bureau of Labor Statistics provides valuable data on workforce trends, while the National Science Foundation plays a crucial role in fostering education through programs like Spectrum Innovation. These initiatives focus on equipping the workforce with the skills necessary to navigate the evolving technological landscape, including spectrum management and sharing techniques, as demand for radio frequencies intensifies across various sectors.

Line Item	Agency	FY25	FY24	FY23
Bureau of Labor Statistics	DOL	321	314	312
STEM Engagement (Total)	NASA	143	143	143.5
National Air and Space Museum	Smithsonian	23.7	22.380	22.380
Facilities Capital	Smithsonian			
Air and Space Museum	Smithsonian	8	Not listed	5.5
Office of Science	DOE			
Workforce Development for Teachers and Scientists	DOE	43	40	42
Spectrum Innovation Initiative	NSF	17	Not listed	17
National Park Service	DOI			
Park Management	DOI			
Resource Stewardship	DOI			
Natural Resource Stewardship	DOI	273	272	250
Civil Space Estimate:		828.7	791.38	792.38

AMOUNTS IN MILLIONS.

Fundamental Science

Establishing a long track record of major scientific breakthroughs that lead to successful commercial applications and societal benefits begins with sustained, long-term investments in fundamental scientific research. As this baseline grows, so does the potential for innovative applications of scientific advancement that make companies throughout the United States more competitive and, at the same time, increase their ability to deliver new and improved benefits to the American people.

A large portion of the most important space research happens on Earth. For decades, the desire to travel to remote destinations in the solar system was fueled by research conducted in terrestrial observatories through funding from NASA and the NSF and disseminated by the Smithsonian Institution. Today, new advancements in nuclear propulsions to make those dreams manifest are supported by the DOE.

Line Item	Agency	FY25	FY24	FY23
Major Scientific Instrumentation (Standalone)	Smithsonian	4.1	4.118	4.118
Smithsonian Astrophysical Observatory (SAO)	Smithsonian	27.743	26.412	26.412
Facilities Capital	Smithsonian			
Smithsonian Astrophysical Observatory	Smithsonian	5	Not listed	1.8
Enhanced Research	Smithsonian			
Universe Center	Smithsonian	0.182	Not listed	0.184
Office of Science	DOE			
High Energy Physics	DOE	1,231	1,200	1,166
Basic Energy Sciences	DOE	2,582	2,606.25	2,534
IceCube Neutrino Observatory Funding	NSF	8.23	Not listed	7.66
Laser Interferometer Gravitational-Wave Observatory Funding	NSF	49	Not listed	45
Vera C. Rubin Observatory (Construction)	NSF	7.61	Not listed	15
Green Bank Observatory	NSF	9.68	Not listed	10.83
NOIRLab	NSF	86.40	Not listed	73.57
Other Research Infrastructure	NSF	131.62	Not listed	130.21
Science	NASA			
Planetary Science	NASA	2,731.5	2,717	3,216.5
Astrophysics	NASA	1,578.1	1530	1,510
Biological and Physical Sciences	NASA	90.8	88	85.0
Space Operations	NASA			
International Space Station	NASA	1,269.6	Not listed	1,286.2
Exploration Operations	NASA	—	Not listed	13.2
Civil Space Estimate*:		9,812.565	8,171	10,125.684

AMOUNTS IN MILLIONS.

* This estimate includes office total budgets and individual line items. Some lines were not reported for FY25.

Efficiency, Improvements, and Growth

Government efficiency hinges on the timely implementation of programs authorized and funded by congressional appropriations. In this manner, fiscal responsibility takes on a comprehensive, enterprise-wide perspective that accounts for the costs of *ending* programs as well as continuing them. With a holistic view of government operations (performed in the executive office of the president and informed by the Bureau of Economic Analysis), calculated adjustments can be implemented with minimal disruption to overall operations, refining

processes and improving outcomes without drastic overhauls that would risk destabilizing essential government functions and require expensive reversals.

Improvements are carried out through program directors and chief counsel at different agencies within the space sector, such as the DOT and DOE, and growth into new sectors moves forward by adopting new technologies* and facilitating commercial space operations within the DOT.

Line Item	Agency	FY25	FY24	FY23
Office of Management and Budget (OMB)	Executive Office of the President	138.3	128.035	128.035
Bureau of Economic Analysis	DOC	52.262	51.61	50.303
National Space Council	Executive Office of the President	2	1.965	1.965
Office of Science and Technology Policy (OSTP)	Executive Office of the President	8	7.965	7.965
Federal Aviation Administration	DOT			
Next Generation Air Transportation System (NextGen)	DOT	73.556	65.581	65.581
Office of Chief Counsel	DOT	74.03	55.78	55.78
Office of Policy, International Affairs, and Environment	DOT	104.5	90.4	90.4
Air Traffic Organization (ATO)	DOT			
Commercial Space Operations	DOT	21	Not listed	Not listed
Office of Science	DOE			
Program Direction	DOE	246	226.83	211.211
Civil Space Estimate:		719.648	628.167	611.24

AMOUNTS IN MILLIONS.

* New technologies, by nature, can introduce uncertainties for long-term planning and policy. For a discussion of cutting-edge technology adaptation and long-term support, see <https://csps.aerospace.org/papers/strategic-foresight-addressing-uncertainty-long-term-strategic-planning>.

Homeland Security

Homeland security encompasses safeguarding vital infrastructure, ensuring public safety, and mitigating risks posed by various actors and events. While the Department of Defense (DOD) plays a significant role in national defense, homeland security prioritizes functions that are important for national security but are beyond the scope of traditional military operations. This includes the protection of critical civilian assets and applications from dual-use systems such as GPS, cybersecurity, and disaster response.

The greatest financial contribution to this category is the DHS agency Cybersecurity and Infrastructure Security Agency (CISA), which focuses on protecting U.S. dams, reservoirs, factories, emergency services, and communications

infrastructure from cyber and physical threats, including those in space that monitor weather and navigation. In addition to contributions by the DHS, homeland security as a category also benefits from the actions of the State Department. The State Department similarly takes on roles that liaise between the United States and foreign actors through means of commerce and international cooperation.

Furthermore, NSF initiatives like the *Global Aerospace Geodetic Experiment* (GAGE) and the *Seismic Array for Global Earth Observation* (SAGE), which monitor GPS (along with NOAA's *National Geodetic Survey* (NGS)) and seismic activity respectively, provide a scaffolding of scientific data to mitigate potential threats from human actors and risks posed by natural disasters.²²¹

Line Item	Agency	FY25	FY24	FY23
CISA	DHS	3,009	2,907	2,907
Bureau of Arms Control, Deterrence, and Stability (ADS)	State	17.783	14.961	14.961
Bureau of Political-Military Affairs (PM)	State	15.9	13.6	10.6
National Ocean Service (NOS) Navigation, Observations, and Positioning	NOAA			
National Geodetic Survey (NGS)	NOAA	207.7	257.702	259.7
Total Obligations for NGF (formerly GAGE and SAGE)	NSF	45.29	Not listed	37.92
PNT, GNSS, and GPS	DOT	3	20	20
Wide Area Augmentation System for GPS	DOT	91.8	92.1	73.2
Civil Space Estimate:		3,390.47	3,305.363	3,323.401

AMOUNTS IN MILLIONS.

Infrastructure, Energy, and Resiliency

Sending astronauts, specialized equipment, and robotic spacecraft into the harsh space environment requires planning, oversight, and cooperation from diverse sectors on the ground. Multiple agencies and departments contribute to a reliable infrastructure for civil space, ensure the energy is available to power each stage of the process, and maintain a resilient presence in space. Infrastructure itself includes launch, communications, and space propulsion, and power systems.

Getting a payload into space and keeping it operational requires infrastructure on the ground

and in orbit. Movement of components, assemblies, and finished products through the entire manufacturing process requires careful transportation along waterways, airways, and roadways. Once in space, the ability to predict and prepare for solar weather events is essential to operational resilience. These natural phenomena are monitored and studied by the NASA *Heliophysics* division and the NSF *National Solar Observatory*.

Line Item	Agency	FY25	FY24	FY23
Border Security Thrust Area	DHS			
Maritime Safety and Security	DHS			
Remote Maritime Technologies	DHS	9.6	9.6	9.6
Port and Waterway Resiliency	DHS	0.5	—	—
Air, Land, and Port of Entry (POE)	DHS			
Air Security	DHS	14	14	14
Nuclear Regulatory Commission (Total)	NRC	974.946	927.153	881.466
Space Bureau	FCC	12.172	11.125	4.896
Spectrum Management	NTIA	11	16.9	3.3
Office of Science	DOE			
Fusion Energy Sciences	DOE	844.5	790	763.222
Nuclear Physics	DOE	833	804	805.196
Science Laboratories Infrastructure	DOE	295	208.907	280.7
National Solar Observatory	NSF	34.24	Not listed	26.56
Antarctic Facilities and Operations	NSF	269.94	Not listed	224.71
National Radio Astronomy Observatory	NSF	96.71	Not listed	93.66
Science	NASA			
Heliophysics	NASA	1,578.1	805	805.0
Space Operations	NASA			
Space Transportation	NASA	1,862.1	Not listed	1,759.6
Space and Flight Support (SFS)	NASA	1,088.4	Not listed	983.4
Construction and Environmental Compliance and Restoration (Total)	NASA	424.1	300	604
Construction of Facilities	NASA	344.7	—	346.2
Environmental Compliance and Restoration	NASA	79.4	—	76.2
Safeguards and Security	DOE	195	190	184.099
Pipeline and Hazardous Materials Safety Administration	DOT	600.624	519.382	519.382
Federal Aviation Administration	DOT			
Facilities and Equipment	DOT			
Advanced Technology Development and Prototyping	DOT	31.9	31.9125	29.45
Research, Engineering, and Development (Total)	DOT	250	280	255
Commercial Space Transportation Safety Program	DOT	5.4	2	4.708
AST Operations	DOT	57.1	42.018	37.854
Civil Space Estimate:		9,912.43	4,951.998	8,712.203

AMOUNTS IN MILLIONS.

Remote Sensing Applications

Remote sensing is more than funding the launch and operation of satellites. Just as important, or even more so, are the programs that fund the application of remote sensing data, which protect and enhance a growing range of other sectors such as forestry, agriculture, transportation, and weather forecasting. In particular, the growing demand for remote sensing data allows for private companies to offer

services in this emerging market, offering data analyses and interpretations that further allow for better protecting the nation's natural resources and critical infrastructure, such as water and air quality, as well as defending our resources from methane leaks, wildfires, and other threats. Access to high-resolution, fast-turnaround remote sensing data saves valuable time and money, and pinpoints geographical locations of conflicts or damage.

Line Item	Agency	FY25	FY24	FY23
NESDIS (Total)	NOAA	397.51	380.765	375.537
NESDIS Environmental Satellite Observing Systems (Total)	NOAA	324	310.765	304
NESDIS Office of Satellite and Product Operations	NOAA	262	250.165	245.9
NESDIS Product Development, Readiness, and Application	NOAA	61	59.850	57.5
NESDIS US Group on Earth Observations (USGEO)	NOAA	1	0.750	0.75
NESDIS National Centers for Environmental Information (Total)	NOAA	73	70	71.4
NESDIS NOAA Community Project Funding/NOAA Special Projects (Total)	NOAA	0	0	2.5
National Agricultural Statistics Service (NASS)	USDA	196	187.513	211
Forest and Rangeland Research	USDA	315.6	300	307
Science	NASA			
Earth Science	NASA	2,378.7	2,195	2,195
Reported USGS Core Science Systems	DOI			
Reported USGS National Land Imaging Program	DOI			
Reported Science Research and Investigations (Total)	DOI	33.293	23.737	0
Remote Sensing State Grants	DOI	1.250	1.465	0
Enhancing Landscape Measurements, Data, and Analysis	DOI	3.7	0	0
National Land Use Data Products	DOI	1.5	0	0
Natural Capital Accounting	DOI	3.22	0.22	0
Baseline Capacity - 2024 Fixed Costs	DOI	1.036	0	0
Reported Satellite Operations (Total)	DOI			
Sustainable Land Imaging Development - Landsat Next	DOI	103.334	91.334	0
Baseline Capacity - 2024 Fixed Costs	DOI	1.047	0	0
NCAR	NSF	124.59	Not listed	116.20
Civil Space Estimate:*		3,550.074	3,178.349	3,204.737

AMOUNTS IN MILLIONS.

* Calculation includes office totals and individual line items.

Acronyms

ADS	Bureau of Arms Control, Deterrence, and Stability	NASS	National Agricultural Statistics Service
AGS	Atmospheric and Geospace Sciences	NCAR	National Center for Atmospheric Research
AST	Office of Commercial Space (FAA)	NESDIS	National Environmental Satellite, Data, and Information Service
AST	Astronomical Sciences (NSF)	NextGen	Next Generation (Communications)
ATO	Air Traffic Organization	NGF	National Geophysical Facility
BEA	Bureau of Economic Analysis	NGS	National Geodetic Survey
CHEXS	Center for High Energy X-ray Science	NIST	National Institute of Standards and Technology
CISA	Cybersecurity and Infrastructure Security Agency	NOAA	National Ocean and Atmospheric Administration
CJS	Commerce, Justice, and Science (appropriations bill)	NOIRLab	National Optical-Infrared Astronomy Research Laboratory
CORS	Continuously Operating Reference Stations	NOS	National Ocean Service
CR	Continuing Resolution	NRC	Nuclear Regulatory Commission
CRSRA	Commercial Remote Sensing Regulatory Affairs	NSF	National Science Foundation
DDTC	Directorate of Defense Trade Controls	NTIA	National Telecommunications and Information Administration
DHS	Department of Homeland Security	OES	Oceans and International Environmental and Scientific Affairs
DOC	Department of Commerce	OIA	Office of International Affairs
DOD	Department of Defense	OMB	Office of Management and Budget
DOE	Department of Energy	OSC	Office of Space Commerce
DOI	Department of the Interior	OSHA	Occupational Safety and Health Administration
DOL	Department of Labor	OSTP	Office of Science and Technology Policy
DOS	Department of State	PHY	Physics
DOT	Department of Transportation	PM	Bureau of Political-Military Affairs
EOP	Executive Office of the President	PNT	Positioning, Navigation, and Timing
FAA	The Federal Aviation Administration	POE	Port of Entry
FCC	Federal Communications Commission	SAGE	Seismic Array for Global Earth Observation
FY	Fiscal Year	SAO	Smithsonian Astrophysical Observatory
GAGE	Global Aerospace Geodetic Experiment	SAS/ESC	Spectrum Access System and Environmental Sensing Capability
GNSS	Global Navigation Satellite System	SFS	Space and Flight Support
GPS	Global Positioning Satellite	STEM	Science, Technology, Engineering, and Mathematics
IJA	Infrastructure Investment and Jobs Act	TraCSS	Traffic Coordination System for Space
INSRB	Interagency Nuclear Safety Review Board	USDA	United States Department of Agriculture
ISS	International Space Station	USGEO	US Group on Earth Observations
ITA	International Trade Administration	USGS	United States Geological Survey
ITAR	International Traffic in Arms Regulations	WAAS	Wide Area Augmentation System
LEO	Low Earth Orbit		
MPS	Mathematical and Physical Sciences		
MSaC	NASA's Mission Services and Capabilities		
MTS	U.S. Maritime Transportation System		
NASA	National Aeronautics and Space Administration		

Acknowledgments

The author would like to sincerely thank and acknowledge several individuals for their contributions to this study. Madeleine Chang, through the Center for Strategic and International Studies, developed a civil space primer that provided a significant foundation for this paper. Rachel Lindbergh at the Congressional Research Service cited every dollar of NASA funding across several bills and mission name changes over the

years. Casey Dreier, from the Planetary Society, served as a peer reviewer to this paper and offered insightful changes that enhanced the value and applicability of this work. Brian Weeden at The Aerospace Corporation contributed to several iterations of this paper with substantial guidance, suggestions, and strategy. The Aerospace Corporation's Technical Publications Department editors suggested enhancements to the paper's applicability and readability.

References

- ¹ Chang, Madeleine. “U.S. Civil Space Primer - Aerospace Security.” Aerospace Security, 6 May 2024, aerospace.csis.org/u-s-civil-space-primer/.
- ² Wilson, Sam. “FY 2025 Defense Space Budget: Continued Emphasis on Proliferation under a More Constrained Top-Line | Aerospace Center for Space Policy and Strategy.” *Aerospace.org*, 6 June 2024, csps.aerospace.org/papers/fy-2025-defense-space-budget-continued-emphasis-proliferation-under-more-constrained-top. Accessed 22 Apr. 2025.
- ³ Dreier, Casey. “Your Guide to NASA’s Budget.” The Planetary Society, The Planetary Society, 2023, www.planetary.org/space-policy/nasa-budget.
- ⁴ Lindbergh, Rachel. NASA Appropriations and Authorizations: A Fact Sheet. 26 Sept. 2024, <https://www.congress.gov/crs-product/R43419>.
- ⁵ Lindbergh, Rachel. NASA Appropriations and Authorizations: A Fact Sheet. 26 Sept. 2024, <https://www.congress.gov/crs-product/R43419>.
- ⁶ Lindbergh, Rachel. NASA Appropriations and Authorizations: A Fact Sheet. 26 Sept. 2024, <https://www.congress.gov/crs-product/R43419>.
- ⁷ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure-55. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ⁸ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Pg. 562. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ⁹ U.S. Office of Management and Budget. “Budget FY 2025 - Table 10.1 - Gross Domestic Product and Deflators Used in the Historical Tables: 1940-2029.” Govinfo.gov, 11 Mar. 2024, www.govinfo.gov/app/details/BUDGET-2025-TAB/BUDGET-2025-TAB-11-1. Accessed 19 Mar. 2025.
- ¹⁰ U.S. Social Security Administration. “President Presents Plan No. I to Carry out the Provisions of the Reorganization Act” www.ssa.gov/history/pdf/fdr.pdf.
- ¹¹ Unless otherwise specified, data from *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Page 561. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ¹² Unless otherwise specified values are from: *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Page 561. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ¹³ Executive Office of the President. “Congressional Budget Submission Fiscal Year 2025.” Pg. 164. bidenwhitehouse.archives.gov/wp-content/uploads/2024/03/FY-2025-Executive-Office-of-the-President-Congressional-Budget-Submission.pdf.
- ¹⁴ Executive Office of the President. “Congressional Budget Submission Fiscal Year 2025.” Pg. 164. bidenwhitehouse.archives.gov/wp-content/uploads/2024/03/FY-2025-Executive-Office-of-the-President-Congressional-Budget-Submission.pdf.
- ¹⁵ Executive Office of the President. “Congressional Budget Submission Fiscal Year 2025.” Pg. 93. bidenwhitehouse.archives.gov/wp-content/uploads/2024/03/FY-2025-Executive-Office-of-the-President-Congressional-Budget-Submission.pdf.
- ¹⁶ Executive Office of the President. “Congressional Budget Submission Fiscal Year 2025.” Pg. 93. bidenwhitehouse.archives.gov/wp-content/uploads/2024/03/FY-2025-Executive-Office-of-the-President-Congressional-Budget-Submission.pdf.
- ¹⁷ Executive Office of the President. “Congressional Budget Submission Fiscal Year 2025.” Pg. 93. bidenwhitehouse.archives.gov/wp-content/uploads/2024/03/FY-2025-Executive-Office-of-the-President-Congressional-Budget-Submission.pdf.
- ¹⁸ “7 USC 2201: Establishment of Department.” House.gov, uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title7-section2201&num=0&edition=prelim. Accessed 19 Mar. 2025.
- ¹⁹ United States Department of Agriculture. *FY 2025 Budget Summary Contents*. Pg. 99. 2024. <https://www.usda.gov/sites/default/files/documents/2025-usda-budget-summary.pdf>.
- ²⁰ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Page 199. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ²¹ United States Department of Agriculture. *FY 2025 Budget Summary Contents*. Pg. 99. 2024. <https://www.usda.gov/sites/default/files/documents/2025-usda-budget-summary.pdf>.

- ²² United States Department of Agriculture. *FY 2025 Budget Summary Contents*. Pg. 74. 2024. <https://www.usda.gov/sites/default/files/documents/2025-usda-budget-summary.pdf>.
- ²³ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Page 907. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ²⁴ United States Department of Agriculture. *FY 2025 Budget Summary Contents*. Pg. 72. 2024. <https://www.usda.gov/sites/default/files/documents/2025-usda-budget-summary.pdf>.
- ²⁵ Library of Congress. *Fifty-Seventh Congress. Sess. LI. CHS. 546-548,552*. Pg. 825. [maint.loc.gov/law/help/statutes-at-large/57th-congress/session-2/c57s2ch552.pdf](https://www.maint.loc.gov/law/help/statutes-at-large/57th-congress/session-2/c57s2ch552.pdf).
- ²⁶ Highfill, Tina. “Space Economy | U.S. Bureau of Economic Analysis (BEA).” www.bea.gov, June 2024, www.bea.gov/data/special-topics/space-economy.
- ²⁷ International Trade Administration. *Budget Estimates Fiscal Year 2025 Congressional Budget Submission*. 2024. <https://www.commerce.gov/sites/default/files/2024-03/ITA-FY2025-Congressional-Budget-Submission.pdf>.
- ²⁸ International Trade Administration. *Budget Estimates Fiscal Year 2025 Congressional Budget Submission*. Pg. APPR-6. 2024. <https://www.commerce.gov/sites/default/files/2024-03/ITA-FY2025-Congressional-Budget-Submission.pdf>.
- ²⁹ All information in this row is from International Trade Administration. *Budget Estimates Fiscal Year 2025 Congressional Budget Submission*. Pg. Table ITA-105. 2024. <https://www.commerce.gov/sites/default/files/2024-03/ITA-FY2025-Congressional-Budget-Submission.pdf>.
- ³⁰ All information in this row is from International Trade Administration. *Budget Estimates Fiscal Year 2025 Congressional Budget Submission*. Pg. Table BEA-29. 2024. <https://www.commerce.gov/sites/default/files/2024-03/ITA-FY2025-Congressional-Budget-Submission.pdf>.
- ³¹ All information in this row is from International Trade Administration. *Budget Estimates Fiscal Year 2025 Congressional Budget Submission*. Pg. Table BIS-45. 2024. <https://www.commerce.gov/sites/default/files/2024-03/ITA-FY2025-Congressional-Budget-Submission.pdf>.
- ³² United States, Congress, Senate, Senate-Governmental Affairs. *Department of Energy Organization Act*. Government Publishing Office, 8 Apr. 1977 <https://www.congress.gov/bill/95th-congress/senate-bill/826>. 95th Congress.
- ³³ Column from Department of Energy. *Department of Energy FY 2025 Budget in Brief FY 2025 Congressional Justification Budget in Brief FY 2025 Congressional Justification*. Pg. 25. Mar. 2024, www.energy.gov/sites/default/files/2024-03/doe-fy-2025-budget-in-brief-v2.pdf.
- ³⁴ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Pgs. 703—708. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ³⁵ Unless otherwise noted, line items are from: *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Pgs. 703—708. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ³⁶ Department of Homeland Security. *Homeland Security Act of 2002*. 16 Jan 2003, www.dhs.gov/homeland-security-act-2002.
- ³⁷ USAGov. “U.S. Department of Homeland Security | USAGov.” www.usa.gov, 2024, www.usa.gov/agencies/U-S-Department-of-Homeland-Security.
- ³⁸ Department of Homeland Security. *Science and Technology Directorate Budget Overview*. Pg. S&T – R&D – 64. 2024, www.dhs.gov/sites/default/files/2024-04/2024_0308_science_and_technology.pdf.
- ³⁹ Department of Homeland Security. *Science and Technology Directorate Budget Overview*. Pg. S&T – R&D – 66. 2024, www.dhs.gov/sites/default/files/2024-04/2024_0308_science_and_technology.pdf.
- ⁴⁰ Entire row from: Department of Homeland Security. *Cybersecurity and Infrastructure Security Agency Budget Overview*. Pg. CISA-8. 2024, https://www.dhs.gov/sites/default/files/2024-04/2024_0318_cybersecurity_and_infrastructure_security_agency.pdf.
- ⁴¹ Entire row from: Department of Homeland Security. *Science and Technology Directorate Budget Overview*. Pg. S&T – R&D – 15. 2024, www.dhs.gov/sites/default/files/2024-04/2024_0308_science_and_technology.pdf.
- ⁴² Entire row from: Department of Homeland Security. *Science and Technology Directorate Budget Overview*. Pg. S&T – R&D – 16. 2024, www.dhs.gov/sites/default/files/2024-04/2024_0308_science_and_technology.pdf.

- ⁴³ Entire row from: Department of Homeland Security. *Science and Technology Directorate Budget Overview*. Pg. S&T – R&D – 16. 2024, www.dhs.gov/sites/default/files/2024-04/2024_0308_science_and_technology.pdf.
- ⁴⁴ *An Act to Establish the Home Department, and to Provide for the Treasury Department an Assistant Secretary of the Treasury, and a Commissioner of the Customs*. 3 Mar. 1849. 30th Congress, Session 2. <https://www.govinfo.gov/content/pkg/STATUTE-9/pdf/STATUTE-9-Pg395.pdf#page=1>.
- ⁴⁵ Landsat Missions. “Landsat next | U.S. Geological Survey.” www.usgs.gov, www.usgs.gov/landsat-missions/landsat-next.
- ⁴⁶ Unless otherwise noted, entries are from U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁴⁷ Unless noted otherwise, entries are from *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ⁴⁸ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ⁴⁹ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 121. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵⁰ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 121. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵¹ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵² U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵³ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵⁴ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵⁵ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵⁶ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵⁷ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵⁸ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁵⁹ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶⁰ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶¹ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.

- Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶² U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶³ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶⁴ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶⁵ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶⁶ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶⁷ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶⁸ U. S. Geological Survey. “Department of the Interior Budget Justifications and Performance Information Fiscal Year 2025.” Pg. 137. *U.S. Department of the Interior*, 27 Mar. 2024. www.doi.gov/media/document/fy-2025-u-s-geological-survey-greenbook.
- ⁶⁹ U.S. National Park Service. “Budget Justifications and Performance Information.” Pg. ONPS-9. *U.S. Department of the Interior*, <https://www.doi.gov/sites/default/files/documents/2024-03/fy2025-508-nps-greenbook.pdf>.
- ⁷⁰ “29 USC Ch. 12: Department of Labor.” *Uscode.house.gov*, uscode.house.gov/view.xhtml?path=/prelim@title29/chapter12&edition=prelim.
- ⁷¹ See, for example: “Description for 3761: Guided Missiles and Space Vehicles | Occupational Safety and Health Administration.” *Osha.gov*, 2025, www.osha.gov/sic-manual/3761.
- ⁷² “Inspection Detail | Occupational Safety and Health Administration Osha.gov.” *Osha.gov*, 2022, www.osha.gov/ords/imis/establishment.inspection_detail?id=1579779.015.
- ⁷³ Cleave, Kris Van, and Michael Kaplan. “Boeing Whistleblower Sounds Alarm over Safety at Satellite Factory: ‘They’re Not Gonna Listen to Me until Somebody Dies.’” *Cbsnews.com*, CBS News, 5 Dec. 2024, www.cbsnews.com/news/boeing-whistleblower-sounds-alarm-over-safety-at-satellite-factory/.
- ⁷⁴ Taylor, Marisa. “At SpaceX, Worker Injuries Soar in Elon Musk’s Rush to Mars.” *Reuters*, 10 Nov. 2023, www.reuters.com/investigates/special-report/spacex-musk-safety/.
- ⁷⁵ Bureau of Labor Statistics. “Find Your Place in Space.” *DOL Blog*, 5 Apr. 2024, blog.dol.gov/2024/04/05/find-your-place-in-space.
- ⁷⁶ Entire row is from: Occupational Safety and Health Administration. *FY 2025 Congressional Budget Justification Occupational Safety and Health Administration*. Pgs. OSHA-7 – 8. 2024. <https://www.dol.gov/sites/dolgov/files/general/budget/2025/CBJ-2025-V2-12.pdf>.
- ⁷⁷ Entire row is from: Department of Labor. *FY 2025 Congressional Budget Justification Bureau of Labor Statistics*. Pg. BLS-36. 2024. <https://www.dol.gov/sites/dolgov/files/general/budget/2025/CBJ-2025-V3-01.pdf>.
- ⁷⁸ *An Act for Establishing an Executive Department, to Be Denominated the Department of Foreign Affairs*. www.govinfo.gov/app/details/STATUTE-1/STATUTE-1-Pg28. 1st Congress, 1st Session, 1789.
- ⁷⁹ Department of State. *Congressional Budget Justification Department of State, Foreign Operations, and Related Programs*. Pgs. 33—34. Apr. 2024, www.state.gov/wp-content/uploads/2024/04/FY25-Congressional-Budget-Justification-FINAL_03052024.pdf.
- ⁸⁰ Department of State. *Congressional Budget Justification Department of State, Foreign Operations, and Related Programs*. Pgs. 33—34. Apr. 2024, www.state.gov/wp-content/uploads/2024/04/FY25-Congressional-Budget-Justification-FINAL_03052024.pdf.

- ⁸¹ Department of State. *Congressional Budget Justification Department of State, Foreign Operations, and Related Programs*. Pgs. 33—34. Apr. 2024, www.state.gov/wp-content/uploads/2024/04/FY25-Congressional-Budget-Justification-FINAL_03052024.pdf.
- ⁸² Department of State. *Congressional Budget Justification Department of State, Foreign Operations, and Related Programs*. Pgs. 34. Apr. 2024, www.state.gov/wp-content/uploads/2024/04/FY25-Congressional-Budget-Justification-FINAL_03052024.pdf.
- ⁸³ *Federal Register: Transportation Department*. www.federalregister.gov/agencies/transportation-department.
- ⁸⁴ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 53. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁸⁵ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 21. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁸⁶ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 24. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁸⁷ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 24. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁸⁸ Unless otherwise noted values are from *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ⁸⁹ Unless otherwise noted, values are from: *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ⁹⁰ Dept. of Transportation. *FY 2025 Budget Highlights*. Pg. operations-staff offices p. 25. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹¹ Department of Transportation. *FY 2025 Budget Highlights*. Pg. operations-staff offices page 25. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹² Department of Transportation. *FY 2025 Budget Highlights*. Pg. operations-staff offices page 25. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹³ Department of Transportation. *FY 2025 Budget Highlights*. Pg. operations-staff offices page 25. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹⁴ Department of Transportation. *FY 2025 Budget Highlights*. Pg. operations-staff offices page 25. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹⁵ Department of Transportation. *FY 2025 Budget Highlights*. Pgs. 9 and 15. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹⁶ Department of Transportation. *FY 2025 Budget Highlights*. Pgs. 9 and 15. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹⁷ Department of Transportation. *FY 2025 Budget Highlights*. Pgs. 9 and 15. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹⁸ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 21 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ⁹⁹ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 21 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ¹⁰⁰ *Consolidated Appropriations Act H.R. 2617 /Public Law 117–328*. Pg. 2825. 2023. *Book 2 of 2 Divisions G–N*. <https://www.govinfo.gov/content/pkg/CPRT-117HPRT50348/pdf/CPRT-117HPRT50348.pdf>.
- ¹⁰¹ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 22. 2024. https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.

- 024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ¹⁰² Department of Transportation. *FY 2025 Budget Highlights*. Pg. 22. 2024.
https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ¹⁰³ Department of Transportation. *FY 2025 Budget Highlights*. Pg. (AST) – 5. 2024.
https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ¹⁰⁴ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*.
www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ¹⁰⁵ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*.
www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ¹⁰⁶ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 52. 2024.
https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ¹⁰⁷ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 52. 2024.
https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ¹⁰⁸ Department of Transportation. *FY 2025 Budget Highlights*. Pg. 52. 2024.
https://www.transportation.gov/sites/dot.gov/files/2024-03/DOT_Budget_Highlights_FY_2025_508.pdf.
- ¹⁰⁹ Department of Transportation. *Budget Estimates Fiscal Year 2025*. Pg. Section 2 / Exhibit II-5.RT Summary. 2024,
[www.transportation.gov/sites/dot.gov/files/2024-03/OST_FY_2025_Congressional_Justification\(3.8.2024\).pdf](http://www.transportation.gov/sites/dot.gov/files/2024-03/OST_FY_2025_Congressional_Justification(3.8.2024).pdf).
- ¹¹⁰ Figliola, Patricia Moloney. “The Federal Communications Commission: Structure, Operations, and Budget.” *Congress.gov*, 2025, crsreports.congress.gov/product/pdf/R/R45699. Accessed 28 Mar. 2025.
- ¹¹¹ Bureau of Justice Assistance. *The Communications Act of 1934*. bja.ojp.gov/program/it/privacy-civil-liberties/authorities/statutes/1288.
- ¹¹² Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 117. Mar. 2024,
docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹¹³ FCC Space Bureau. “Orbital Debris.” *Fcc.gov*, 2024, www.fcc.gov/space/orbital-debris.
- ¹¹⁴ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 71. Mar. 2024,
docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹¹⁵ Nhan, Bang D, et al. “Toward Spectrum Coexistence: First Demonstration of the Effectiveness of Boresight Avoidance between the NRAO Green Bank Telescope and Starlink Satellites.” *The Astrophysical Journal Letters*, vol. 971, no. 2, 1 Aug. 2024, pp. L49–L49, <https://doi.org/10.3847/2041-8213/ad6b24>. Accessed 28 Mar. 2025.
- ¹¹⁶ Young, Monica. “Details of SpaceX’s Starlink ‘VisorSat’ Revealed.” *Sky & Telescope*, 8 May 2020, skyandtelescope.org/astronomy-news/details-spacex-starlink-visorsat/.
- ¹¹⁷ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 131. Mar. 2024,
docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹¹⁸ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 130. Mar. 2024,
docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹¹⁹ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 130. Mar. 2024,
docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹²⁰ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 130. Mar. 2024,
docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹²¹ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 117. Mar. 2024,
docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹²² Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 117. Mar. 2024,
docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹²³ Federal Communications Commission. *Federal Communications Commission Budget Estimates to*

- Congress*. Pg. 117. Mar. 2024, docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹²⁴ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 135. Mar. 2024, docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹²⁵ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 135. Mar. 2024, docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹²⁶ Federal Communications Commission. *Federal Communications Commission Budget Estimates to Congress*. Pg. 135. Mar. 2024, docs.fcc.gov/public/attachments/DOC-401057A1.pdf.
- ¹²⁷ NASA. “National Aeronautics and Space Act of 1958 (Unamended).” *NASA*, 29 July 1958, www.nasa.gov/history/national-aeronautics-and-space-act-of-1958-unamended/.
- ¹²⁸ Dreier, Casey. “Your Guide to NASA’s Budget.” The Planetary Society, The Planetary Society, 2023, www.planetary.org/space-policy/nasa-budget.
- ¹²⁹ Lindbergh, Rachel. NASA Appropriations and Authorizations: A Fact Sheet. 26 Sept. 2024, <https://www.congress.gov/crs-product/R43419>.
- ¹³⁰ National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹³¹ National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹³² National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹³³ National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹³⁴ Unless specified, all values in this column are from “FY 2025 Budget Request - NASA.” *NASA*, www.nasa.gov/fy-2025-budget-request/.
- ¹³⁵ Unless otherwise stated, all values are from: Lindbergh, Rachel. NASA Appropriations and Authorizations: A Fact Sheet. 26 Sept. 2024, <https://www.congress.gov/crs-product/R43419>.
- ¹³⁶ Unless otherwise specified, using data from Lindbergh, Rachel. NASA Appropriations and Authorizations: A Fact Sheet. 26 Sept. 2024, <https://www.congress.gov/crs-product/R43419>.
- ¹³⁷ Lindbergh, Rachel. NASA Appropriations and Authorizations: A Fact Sheet. 26 Sept. 2024, <https://www.congress.gov/crs-product/R43419>.
- ¹³⁸ Lindbergh, Rachel. NASA Appropriations and Authorizations: A Fact Sheet. 26 Sept. 2024, <https://www.congress.gov/crs-product/R43419>.
- ¹³⁹ National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴⁰ “National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴¹ National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴² “National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴³ “National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴⁴ “National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴⁵ “National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴⁶ “National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴⁷ “National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴⁸ National Aeronautics and Space Administration. “FY 2025 Budget Request - NASA.” *NASA*, 11 Mar. 2024, www.nasa.gov/fy-2025-budget-request/.
- ¹⁴⁹ *An Act to Establish the National Bureau of Standards*. 1 Mar. 1901, uscode.house.gov/statviewer.htm?volume=31&page=1449.
- ¹⁵⁰ National Institute of Standards and Technology. *Fiscal Year 2025 Budget Submission to Congress*. Pg. NIST-2 2024, www.commerce.gov/sites/default/files/2024-03/NIST-NTIS-FY2025-Congressional-Budget-Submission.pdf.
- ¹⁵¹ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Pg. 551. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ¹⁵² *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Pg. 551.

- www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ¹⁵³ “NOAA Central Library.” *Archive.org*, 10 Dec. 2007, web.archive.org/web/20170427161928/www.lib.noaa.gov/noaainfo/heritage/ReorganizationPlan4.html. Accessed 28 Mar. 2025.
- ¹⁵⁴ National Oceanic and Atmospheric Administration. *National Oceanic and Atmospheric Administration Budget Estimates Fiscal Year 2025*. Pg. NOS-4 . 2024. https://www.noaa.gov/sites/default/files/2024-03/NOAA_FY25_Congressional_Justification.pdf.
- ¹⁵⁵ All values, unless listed otherwise, from National Oceanic and Atmospheric Administration. *National Oceanic and Atmospheric Administration Budget Estimates Fiscal Year 2025*. Pg. Control Table 5. 2024. https://www.noaa.gov/sites/default/files/2024-03/NOAA_FY25_Congressional_Justification.pdf.
- ¹⁵⁶ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Pg. 411. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ¹⁵⁷ All values, unless listed otherwise, from National Oceanic and Atmospheric Administration. *National Oceanic and Atmospheric Administration Budget Estimates Fiscal Year 2024*. Pg. Control Table 5. 2023. https://www.noaa.gov/sites/default/files/2023-04/NOAA_FY24_CJ.pdf.
- ¹⁵⁸ *Consolidated Appropriations Act H.R. 2617 /Public Law 117–328*. Pg. 271. 2023. *Book 1 of 2 Divisions A–F*. <https://www.govinfo.gov/content/pkg/CPRT-117HPRT50347/pdf/CPRT-117HPRT50347.pdf>.
- ¹⁵⁹ National Oceanic and Atmospheric Administration. *National Oceanic and Atmospheric Administration Budget Estimates Fiscal Year 2025*. Pg. Control Table 6. 2024. https://www.noaa.gov/sites/default/files/2024-03/NOAA_FY25_Congressional_Justification.pdf.
- ¹⁶⁰ National Oceanic and Atmospheric Administration. *National Oceanic and Atmospheric Administration Budget Estimates Fiscal Year 2025*. Pg. Control Table 6. 2024. https://www.noaa.gov/sites/default/files/2024-03/NOAA_FY25_Congressional_Justification.pdf.
- ¹⁶¹ National Oceanic and Atmospheric Administration. *2025 NOAA Budget Summary*. Pg. 17. 2024, www.noaa.gov/sites/default/files/2024-04/NOAA_Blue_Book_FY25_Budget_Summary.pdf.
- ¹⁶² National Oceanic and Atmospheric Administration. *2024 NOAA Budget Summary*. Pg. 80. 2023, https://www.noaa.gov/sites/default/files/2023-05/NOAA_Blue_Book_2024.pdf.
- ¹⁶³ *National Science Foundation Act of 1950*. 1950, nsf.gov-resources.nsf.gov/2023-04/NSF_act_1950_legislation.pdf.
- ¹⁶⁴ National Science Foundation. “Division of Atmospheric and Geospace Sciences (GEO/AGS).” *NSF - National Science Foundation*, 14 Mar. 2025, www.nsf.gov/geo/ags. Accessed 28 Mar. 2025.
- ¹⁶⁵ National Science Foundation. *FY 2025 Budget Request to Congress*. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁶⁶ *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. Pg. 562. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ¹⁶⁷ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. GEO-5. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁶⁸ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. GEO-5. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁶⁹ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. MPS-5. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁷⁰ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. MPS-5. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁷¹ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. MPS-5. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.

- ¹⁷²National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. MPS-5. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
 - ¹⁷³National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Emerging Industries – 11. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
 - ¹⁷⁴National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Emerging Industries – 11. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
 - ¹⁷⁵National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 78. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
 - ¹⁷⁶National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 78. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
 - ¹⁷⁷National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Cross-Theme Topics – 31. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
 - ¹⁷⁸National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Cross-Theme Topics – 31. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
 - ¹⁷⁹National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 91. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
 - ¹⁸⁰National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 91. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.

- resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹⁰ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 98. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹¹ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 59. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹² National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 59. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹³ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 102. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹⁴ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 102. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹⁵ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 40. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹⁶ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 40. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹⁷ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Summary Tables 18. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹⁸ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Summary Tables 18. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.
- ¹⁹⁹ National Archives. “Executive Orders.” *National Archives*, 15 Aug. 2016, www.archives.gov/federal-register/codification/executive-order/12046.html. Accessed 28 Mar. 2025.
- ²⁰⁰ National Telecommunications and Information Administration. *FY 2025 Budget as Presented to Congress*. Pg NTIA-39. March 2024. <https://www.commerce.gov/sites/default/files/2024-03/NTIA-FY2025-Congressional-Budget-Submission.pdf>.
- ²⁰¹ National Telecommunications and Information Administration. *FY 2025 Budget as Presented to Congress*. Pg NTIA-39. March 2024. <https://www.commerce.gov/sites/default/files/2024-03/NTIA-FY2025-Congressional-Budget-Submission.pdf>.
- ²⁰² National Telecommunications and Information Administration. *FY 2025 Budget as Presented to Congress*. Pg NTIA-39. March 2024. <https://www.commerce.gov/sites/default/files/2024-03/NTIA-FY2025-Congressional-Budget-Submission.pdf>.
- ²⁰³ National Telecommunications and Information Administration. *FY 2025 Budget as Presented to Congress*. Pg NTIA-31. March 2024. <https://www.commerce.gov/sites/default/files/2024-03/NTIA-FY2025-Congressional-Budget-Submission.pdf>.
- ²⁰⁴ National Telecommunications and Information Administration. *FY 2025 Budget as Presented to Congress*. Pg NTIA-31. March 2024. <https://www.commerce.gov/sites/default/files/2024-03/NTIA-FY2025-Congressional-Budget-Submission.pdf>.
- ²⁰⁵ National Telecommunications and Information Administration. *FY 2025 Budget as Presented to Congress*. Pg NTIA-31. March 2024. <https://www.commerce.gov/sites/default/files/2024-03/NTIA-FY2025-Congressional-Budget-Submission.pdf>.
- ²⁰⁶ Holifield, Chet. *Energy Reorganization Act of 1974*. 15 Nov. 1973. H.R.11510. <https://www.congress.gov/bill/93rd-congress/house-bill/11510>.
- ²⁰⁷ “Strategic Planning.” *NRC Web*, 9 May 2022, www.nrc.gov/about-nrc/plans-performance/strategic-planning.html.

- ²⁰⁸ Chang, Madeleine. “U.S. Civil Space Primer - Aerospace Security.” Aerospace Security, 6 May 2024, aerospace.csis.org/u-s-civil-space-primer/.
- ²⁰⁹ Row from: Nuclear Regulatory Commission. *Performance Budget/Congressional Budget Justification (NUREG-1100)*. Volume 40. 2025, www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1100/index.html.
- ²¹⁰ Smithsonian Institution Archives. “29th Congress, 1st Session.” [https://Siarchives.si.edu](https://siarchives.si.edu), The Smithsonian Institution, siarchives.si.edu/sites/default/files/pdfs/9_Stat_102.pdf.
- ²¹¹ Unless otherwise noted, values from *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ²¹² Unless otherwise noted, values from *Consolidated Appropriations Act H.R. 4366/Public Law 118–42 Book 1 of 2 Divisions A–F*. www.govinfo.gov/content/pkg/CPRT-118HPRT56550/pdf/CPRT-118HPRT56550.pdf.
- ²¹³ Smithsonian Institution. *Fiscal Year 2025 Budget Justification to Congress*. Pg. 50. Mar. 2024, www.si.edu/sites/default/files/about/fy2025-budgetrequestcongress.pdf.
- ²¹⁴ Smithsonian Institution. *Fiscal Year 2025 Budget Justification to Congress*. Pg. 10. Mar. 2024, www.si.edu/sites/default/files/about/fy2025-budgetrequestcongress.pdf.
- ²¹⁵ Smithsonian Institution. *Fiscal Year 2025 Budget Justification to Congress*. Pg. 43. Mar. 2024, www.si.edu/sites/default/files/about/fy2025-budgetrequestcongress.pdf.
- ²¹⁶ Institution. *Fiscal Year 2025 Budget Justification to Congress*. Pg. 197. Mar. 2024, www.si.edu/sites/default/files/about/fy2025-budgetrequestcongress.pdf.
- ²¹⁷ Smithsonian Institution. *Fiscal Year 2025 Budget Justification to Congress*. Pg. 197. Mar. 2024, www.si.edu/sites/default/files/about/fy2025-budgetrequestcongress.pdf.
- ²¹⁸ Smithsonian Institution. *Fiscal Year 2025 Budget Justification to Congress*. Pgs. 236, 238. Mar. 2024, www.si.edu/sites/default/files/about/fy2025-budgetrequestcongress.pdf.
- ²¹⁹ Smithsonian Institution. *Fiscal Year 2025 Budget Justification to Congress*. Pgs. 32. Mar. 2024, www.si.edu/sites/default/files/about/fy2025-budgetrequestcongress.pdf.
- ²²⁰ Smithsonian Institution. *Fiscal Year 2025 Budget Justification to Congress*. Pgs. 32. Mar. 2024, www.si.edu/sites/default/files/about/fy2025-budgetrequestcongress.pdf.
- ²²¹ National Science Foundation. *FY 2025 Budget Request to Congress*. Pg. Research Infrastructure – 76. 11 Mar. 2024. https://nsf.gov-resources.nsf.gov/files/00_NSF_FY25_CJ_Entire%20Rollup_web.pdf?VersionId=cbkdqD_UMweHEIsZwPjtVgcQRwMccgvu.