

# R&D Funding Breakdown

## CHIPS and Science Act

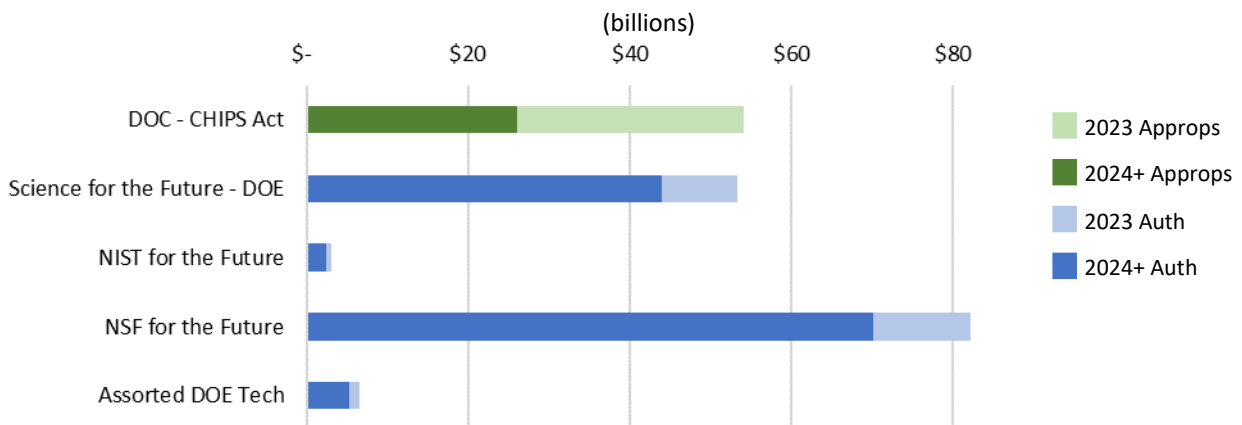
ALESSANDRA ZIMMERMANN | R&D BUDGET AND POLICY PROGRAM | AUGUST 26, 2022

Not all dollar signs written by Congress can be spent—the federal budget is established by two main designations: authorization and appropriation. Authorizations are the process by which Congress allows for changes in or the creation of new programs. Authorized funds identify the amounts that *can* be spent on specific line items, not necessarily how much *will* actually be spent. **Authorizers set the policy for writing the check.**

Appropriated funds identify how much the agencies are allowed to spend. They represent the funds that agencies can transfer out of the Treasury, and are mostly declared in budget bills produced by the Appropriations Committees, though other legislation will sometimes have its own appropriations. **Appropriators write the check.**

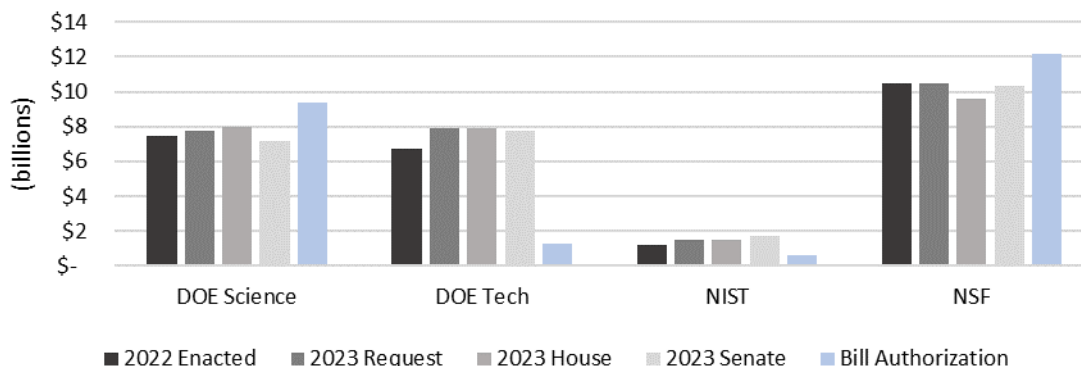
The CHIPS and Science Act is comprised of an appropriations section (CHIPS) that allocates funding for the semiconductor industry and related agencies to begin spending, and an authorization section (Science) that sets policy for what research agencies may spend if given appropriations. The following is the appropriations and authorizations that were included in The CHIPS and Science Act (Public Law 117-167). More detail on what specifically is outlined in the bill is available in the following pages.

### Authorized Funding by Section



The authorized funds listed in the graph above will need to be fulfilled through the appropriations cycle. The graph below shows the proposed funding of the relevant agencies in this appropriations cycle. More detail on R&D appropriations can be found on our dashboard at [aaas.org/rd](https://aaas.org/rd).

### CHIPS and Science vs the Budget





The following tables include the section of the bill that the item was pulled from, a description of the item, the total amount of funding appropriated or authorized, and the amount authorized for the 2023 fiscal year. The last column indicates if this funding is provided to an existing program or if it additionally established a new item.

Authorization				
Section	Item	Total Amount (millions)	2023 Amount (millions)	Funding Status
<b>Science for the Future—DOE</b>		<b>\$ 53,607</b>	<b>\$ 9,423</b>	
10102	Improvements to research facilities	\$ 14,682	\$ 2,685	Expansion
10102	Basic research in artificial photosynthesis	\$ 250	\$ 50	Expansion
10102	Basic research in biochemistry, replication of natural photosynthesis, and related processes	\$ 250	\$ 50	Expansion
10102	Basic research in multivalent ion materials in electric energy storage systems	\$ 250	\$ 50	Expansion
10102	Electrochemistry modeling and simulation	\$ 250	\$ 50	Expansion
10102	Mesoscale electrochemistry	\$ 100	\$ 20	Expansion
10102	Program to bridge barriers in nuclear basic research	\$ 250	\$ 50	New
10102	Carry out the carbon research provisions	\$ 250	\$ 50	New
10103	Low-Dose Radiation Research Program	\$ 250	\$ 50	Expansion
10103	Biological and Environmental Research Program	\$ 5,032	\$ 885	Expansion
10104	Advanced Scientific Computing Research Program	\$ 6,347	\$ 1,127	Expansion
10104	QUEST program	\$ 166	\$ 30	New
10105	Fusion materials research and development	\$ 250	\$ 50	Expansion
10105	Design and roadmap of a pilot fusion plant	\$ 310	\$ 35	New
10105	Material Plasma Exposure Experiment*	\$ 26	\$ 21.90	New
10105	Fusion Energy Sciences Program	\$ 5,283	\$ 1,025	Expansion
10105	Construction of the ITER international fusion project	\$ 1,994	\$ 379	Expansion
10105	High Energy Physics Program	\$ 6,929	\$ 1,159	Expansion
10107	Construction of the Electron-Ion Collider	\$ 1,088	\$ 90	New
10107	Nuclear Physics Program	\$ 5,316	\$ 840	Expansion
10108	Science Laboratory Infrastructure Program	\$ 550	\$ 110	New
10109	Accelerator Research and Development	\$ 107	\$ 19	New
10110	Isotope Program Advisory Committee	\$ 932	\$ 175	New
10110	Constructions of a radioisotope processing facility	\$ 336	\$ 31	New
10110	Stable isotope production and research center	\$ 198	\$ 74	New
10111	Collaboration between K-12 and Higher Ed educators and the National Laboratories	\$ 40	\$ 8	New
10112	High intensity laser research initiative	\$ 750	\$ 50	New
10112	Biological Threat Preparedness Research Initiative	\$ 250	\$ 50	New
10112	Midscale instrumentation and research equipment program	\$ 750	\$150	New
10112	Office of Science	\$ 46	\$ 9	Expansion
10113	DOE's EPSCoR program	\$ 375	\$ 50	Expansion
<b>NIST for the Future</b>		<b>\$ 3,059</b>	<b>\$ 612</b>	
10211	Hollings Manufacturing Extension Partnership	\$ 2,230	\$ 446	Expansion
10211	Manufacturing USA	\$ 829	\$ 166	Expansion
<b>NSF for the Future</b>		<b>\$ 82,250</b>	<b>\$ 12,147</b>	
10601	Early-career research fellowship program	\$ 1,250	\$ 250	New
10303	Technology, Innovation and Partnerships Directorate	\$ 81,000	\$ 11,897	New

\*- appropriated 2 years instead of 5

Authorization (continued)				
Section	Item	Total Amount (millions)	2023 Amount (millions)	Funding Status
<b>Energy Security and Innovation—DOE</b>		<b>\$ 401</b>	<b>\$ 8</b>	
10691	Foundation for Energy Security and Innovation	\$ 40.5	\$ 8	New
<b>Energizing Technology Transfer—DOE</b>		<b>\$ 504</b>	<b>\$ 101</b>	
10713	National clean energy incubator program	\$ 75	\$ 15	New
10714	Clean energy technology university prize competition.	\$ 5	\$ 1	New
10715	Clean energy technology transfer coordination	\$ 15	\$ 3	Expansion
10716	Lab partnering service pilot program.	\$ 18.5	\$ 3.7	Expansion
10717	Lab-embedded entrepreneurship program	\$ 125	\$ 25	New
10718	Small business voucher program.	\$ 125	\$ 25	New
10722	Office of technology transitions	\$ 100	\$ 20	Expansion
<b>Micro Act—DOE</b>		<b>\$ 600</b>	<b>\$ 100</b>	
10731	Microelectronics research for energy innovation	\$ 475	\$ 75	New
10731	Microelectronics Science Research Centers	\$ 125	\$ 25	New
<b>National Nuclear University Research Infrastructure Reinvestment—DOE</b>		<b>\$ 680</b>	<b>\$ 136</b>	
10743	Collaboration between nuclear energy university stakeholders	\$ 275	\$ 55	Expansion
10744	Advanced nuclear research infrastructure enhancement subprogram	\$ 390	\$ 78	Expansion
10745	University Nuclear Leadership Program	\$ 15	\$ 3	Expansion
<b>National Nuclear University Research Infrastructure Reinvestment—DOE</b>		<b>\$ 680</b>	<b>\$ 136</b>	
10761	Deferred maintenance of laboratories	\$ 4,000	\$ 800	Expansion
<b>Fission for the Future—DOE</b>		<b>\$ 800</b>	<b>\$ 160</b>	
10781	R&D and demonstration of advanced nuclear reactors	\$ 800	\$ 160	New

Appropriation				
Section	Item	Total Amount (millions)	2023 Amount (millions)	Funding Status
<b>CHIPS ACT</b>		<b>\$ 54,200</b>	<b>\$ 28,200</b>	
102	Develop domestic manufacturing capability—Commerce	\$ 39,000	\$ 19,000	New
102	R&D and workforce development programs—	\$ 11,000	\$ 5,000	New
102	CHIPS for America Defense Fund—Commerce	\$ 2,000	\$ 2,000	New
102	CHIPS for America International Technology Security and Innovation Fund—State Dept	\$ 500	\$ 500	New
102	Creating Helpful Incentives to Produce Semiconductors—NSF	\$ 200	\$ 200	New
106	Public Wireless Supply Chain Innovation Fund—Commerce	\$ 1,500	\$ 1,500	New