

17. FEDERAL INVESTMENT

Federal investment is the portion of Federal spending of taxpayer money intended to yield long-term benefits for the economy and the Nation. This spending promises greater benefits than if that money had been allocated in the private sector. It promotes improved efficiency within Federal agencies, as well as growth in the national economy by increasing the overall stock of capital. Investment spending can take the form of direct Federal spending or grants to State, local, tribal and territorial governments.¹ It can be designated for physical capital—a tangible asset or the improvement of that asset—that increases production over a period of years or increases value to the Government. It can also be for research and development, education, or training, all of which are intangible, but can

¹ For more information on Federal grants to State and local governments see Chapter 14, “Aid to State and Local Governments,” in this volume.

still increase income in the future or provide other long-term benefits.

Most presentations in the *Analytical Perspectives* volume combine investment spending with spending intended for current use. In contrast, this chapter focuses solely on Federal and federally financed investment, providing a comprehensive picture of Federal spending for physical capital, research and development, and education and training. Because the analysis in this chapter excludes spending for non-investment activities, it gives only a partial picture of Federal support for specific national needs, such as defense.

Total Federal investment spending was \$792 billion in 2021. It is expected to increase by 1.7 percent in 2022 to \$806 billion. The Budget proposes a 1.0 percent increase from 2022 for a total of \$814 billion in 2023.

DESCRIPTION OF FEDERAL INVESTMENT

The Budget uses a relatively broad definition of investment. It defines Federal investment as encompassing spending for research, development, education, and training as well as physical assets such as land, structures, infrastructure, and major equipment. It also includes spending regardless of the ultimate ownership of the resulting asset, or the purpose it serves. For the purposes of this definition, however, Federal investment does not include “social investment” items like healthcare or social services where it is difficult to separate out the degree to which the spending provides current versus future benefits. The distinction between investment spending and current outlays is a matter of judgment, but the definition used for the purposes of this analysis has remained consistent over time and is useful for historical comparisons.²

Investment in physical assets can be for the construction or improvement of buildings, structures, and infrastructure or for the development or acquisition of major equipment. The broader research and development category includes spending on the facilities in which these activities occur and major equipment for the conduct of research and development, as well as spending for basic and applied research, and experimental development.³ Investment in education and training includes vocational rehabilitation, programs for veterans, funding for school systems and higher education, and agricultural extension services. This category excludes training for military personnel or other individuals in Government service.

² Historical figures on investment outlays beginning in 1940 may be found in the Budget’s *Historical Tables*. The *Historical Tables* are available at <https://www.whitehouse.gov/omb/historical-tables/>.

³ A more thorough discussion of research and development funding may be found in Chapter 18, “Research and Development,” in this volume.

The Budget further classifies investments as either grants to State, local, tribal and territorial governments (e.g., for highways or education), or “direct Federal programs.” The “direct Federal” category consists primarily of spending for assets owned by the Federal Government, such as weapons systems and buildings, but also includes grants to private organizations and individuals for investment, such as capital grants to Amtrak, Pell Grants, and higher education loans to individuals. For grants made to State and local governments, it is the recipient jurisdiction, not the Federal Government, that ultimately determines whether the money is used to finance investment or for current use. This analysis classifies outlays based on the category in which the recipient jurisdiction is expected to spend a majority of the money. General purpose fiscal assistance is classified as current spending, although in practice, some may be spent by recipient jurisdictions on investment.

Additionally, in this analysis, Federal investment includes credit programs that are for investment purposes. When direct loans and loan guarantees are used to fund investment, the subsidy value is included as investment. The subsidies are classified according to their program purpose, such as construction, or education and training.

This discussion presents spending for gross investment, without adjusting for depreciation.

Composition of Federal Investment Outlays

Major Federal Investment

The composition of major Federal investment outlays is summarized in Table 17–1. The categories include major

public physical investment, the conduct of research and development, and the conduct of education and training. Total major Federal investment outlays were \$791 billion in 2021. They are estimated to increase 1.6 percent to \$803 billion in 2022, and increase by 0.8 percent to \$810 billion in 2023. For 2021 through 2023, defense investment outlays comprise about one-third of total major Federal investment while non-defense investment comprises around two-thirds. In 2022, defense investment outlays are expected to decrease by \$0.2 billion, 0.1 percent, while non-defense investment outlays are expected to increase by \$13 billion, 2.4 percent. In 2023, the Budget projects a defense investment increase of \$20 billion, or 7.7 percent, over 2022 and a decrease in non-defense investment of \$13.6 billion, or 2.5 percent.

Physical investment:

Outlays for major public physical capital (hereafter referred to as “physical investment outlays”) were \$339 billion in 2021 and are estimated to increase by 10 percent to \$375 billion in 2022. In 2023, outlays for physical investment are estimated to increase by 6.4 percent to \$398 billion. Physical investment outlays are for construction and renovation, the development or purchase of major equipment, and the purchase or sale of land and structures. Around 64 percent of these outlays are for direct physical investment by the Federal Government, with the remainder being grants to State and local governments for physical investment.

Direct physical investment outlays by the Federal Government are primarily for defense. Defense outlays for physical investment are estimated to be \$193 billion in 2023, \$5.6 billion higher than in 2022. Outlays for direct physical investment for nondefense purposes are estimated to be \$60 billion in 2023, an increase of 4.3 percent from 2022. Among the sources of this increase are an estimated increase of roughly \$1.4 billion in spending on medical facilities within the Department of Veterans Affairs.

Outlays for grants to State and local governments for physical investment are estimated to be \$145 billion in 2023, a 12 percent increase over the 2022 estimate of \$129 billion. Grants for physical investment fund transportation programs, sewage treatment plants, community and regional development, public housing, and other State and tribal assistance.⁴ The increase in 2023 is mostly accounted for by a roughly \$6 billion increase in Federal-aid highways grants and a roughly \$3 billion increase in grants for highway infrastructure programs. Much of this investment originates from funding included in the Infrastructure Investment and Jobs Act (Public Law 117-58, “IIJA”), which was signed into law on November 15, 2021. The IIJA makes an array of transformational investments in our country’s infrastructure.

Conduct of research and development:

Outlays for the conduct of research and development were \$147 billion in 2021. Outlays are estimated to in-

crease by 4.7 percent to \$154 billion in 2022, and increase by 14 percent in 2023 to \$175 billion. Roughly half of research and development outlays are for defense, a trend which has remained consistent over the past decade. Physical investment for research and development facilities and equipment is included in the physical investment category.

Non-defense outlays for the conduct of research and development are estimated to be \$86 billion in 2023, 7.9 percent higher than 2022. Among the sources of this increase are a roughly \$1.2 billion increase in investment in energy efficiency and renewable energy (funded partially through money from the IIJA) and a roughly \$1.6 billion increase in investment within the National Institutes of Health.

A discussion of research and development funding can be found in Chapter 18, “Research and Development,” in this volume.

Conduct of education and training:

Outlays for the conduct of education and training were \$305 billion in 2021. Outlays are estimated to decrease by 9.7 percent to \$275 billion in 2022, and decrease by 14 percent in 2023 to \$237 billion.

Grants to State and local governments for this category were \$86 billion in 2021. They are estimated to increase by 31 percent to \$113 billion in 2022, and decrease by 29 percent to \$80 billion in 2023. In 2023, grants are estimated to be one-third of total investment in education and training. This pattern of spending on grants to State and local governments for education and training is largely explained by changes in spending levels in response to the health and economic crises caused by the COVID-19 pandemic. For example through the Education Stabilization Fund, which received roughly \$166 billion in funding from the American Rescue Plan Act of 2021 (Public Law 117-2), the Department of Education outlayed roughly \$25 billion in grants for education and training in 2021. Grants for education and training from this fund are estimated to increase to roughly \$34 billion in 2022 and decrease to roughly \$11 billion in 2023.

Direct Federal education and training outlays in 2021 were \$219 billion. They are estimated to decrease by 26 percent to be \$162 billion in 2022, and decrease by a further 3.6 percent to \$156 billion in 2023. These decreases are largely explained by changes in accounting for the Federal Direct Student Loan Program. In 2021, outlays in this account totaled \$130 billion, mainly due to \$71 billion in upwards modifications and \$54 billion in upward reestimates and interest on the reestimates. There were much smaller upward modifications and reestimates in 2022: \$12 billion and \$27 billion, respectively, yielding total estimated outlays for 2022 of roughly \$48 billion. In 2023, outlays are estimated to be just \$14 billion and are only associated with loan subsidies for the 2023 cohort; no modifications or reestimates for 2023 have been made.

Programs in this category primarily consist of aid for higher education through student financial assistance, loan subsidies, and veterans’ education, training, and rehabilitation. This category does not include outlays for

⁴ In the 2023 Budget, Transit Infrastructure Grant amounts are shown as grants to State and local governments (as compared with the 2022 Budget, when they were categorized as direct Federal physical investment) based on further review of program operations.

education and training of Federal civilian and military employees. Outlays for education and training that are for physical investment and for research and development are in the categories for physical investment and the conduct of research and development.

Major Federal investment outlays will comprise an estimated 14.0 percent of total Federal outlays in 2023 and 3.2 percent of the Nation's gross domestic product. Budget authority and outlays for major Federal investment by subcategory may be found in Table 17-2 at the end of this chapter.

Miscellaneous Physical Investment

In addition to the categories of major Federal investment, several miscellaneous categories of investment outlays are shown at the bottom of Table 17-1.

Outlays for commodity inventories are for the purchase or sale of agricultural products pursuant to farm price support programs and other commodities. Sales are estimated to exceed purchases by \$2.0 billion in 2023. Outlays for other miscellaneous physical investment are estimated to be \$5.9 billion in 2023.

Detailed Table on Investment Spending

Table 17-2 provides data on budget authority as well as outlays for major Federal investment, divided according to grants to State and local governments and direct Federal spending. Miscellaneous investment is not included in this table.

Table 17-1. COMPOSITION OF FEDERAL INVESTMENT OUTLAYS
(In billions of dollars)

Federal Investment	Actual 2021	Estimate	
		2022	2023
Major public physical capital investment:			
Direct Federal:			
National defense	187.9	187.4	193.0
Nondefense	47.1	57.9	60.4
Subtotal, direct major public physical capital investment	235.0	245.2	253.4
Grants to State and local governments	104.2	129.3	145.1
Subtotal, major public physical capital investment	339.2	374.5	398.4
Conduct of research and development:			
National defense	73.9	74.3	88.8
Nondefense	73.1	79.7	86.0
Subtotal, conduct of research and development	147.1	153.9	174.9
Conduct of education and training:			
Grants to State and local governments	85.8	112.6	80.2
Direct Federal	218.8	162.3	156.4
Subtotal, conduct of education and training	304.5	274.9	236.6
Total, major Federal investment outlays	790.8	803.4	809.8
MEMORANDUM			
Major Federal investment outlays:			
National defense	261.8	261.6	281.8
Nondefense	528.9	541.7	528.0
Total, major Federal investment outlays	790.8	803.4	809.8
Miscellaneous physical investment:			
Commodity inventories	-1.2	-3.0	-2.0
Other physical investment (direct)	2.7	5.5	5.9
Total, miscellaneous physical investment	1.6	2.5	3.8
Total, Federal investment outlays, including miscellaneous physical investment	792.3	805.9	813.7

Table 17-2. FEDERAL INVESTMENT BUDGET AUTHORITY AND OUTLAYS: GRANT AND DIRECT FEDERAL PROGRAMS

(In millions of dollars)

Description	Budget Authority			Outlays		
	2021 Actual	2022 Estimate	2023 Estimate	2021 Actual	2022 Estimate	2023 Estimate
GRANTS TO STATE AND LOCAL GOVERNMENTS						
Major public physical investment:						
Construction and rehabilitation:						
Transportation						
Highways	57,483	70,051	66,822	47,128	51,695	60,803
Mass transportation	58,109	20,955	21,756	24,220	34,130	26,159
Rail transportation	5,229	15,560	17,261	4,772	6,677	7,836
Air and other transportation	6,785	12,861	12,927	9,356	7,241	8,679
Subtotal, transportation	127,606	119,427	118,766	85,476	99,743	103,477
Other construction and rehabilitation:						
Pollution control and abatement	3,904	13,496	15,560	3,350	3,326	7,615
Community and regional development	7,928	10,260	5,515	8,255	13,383	14,023
Housing assistance	10,996	5,292	6,888	3,976	6,249	6,951
Other	3,065	49,784	2,103	1,270	3,253	6,772
Subtotal, other construction and rehabilitation	25,893	78,832	30,066	16,851	26,211	35,361
Subtotal, construction and rehabilitation	153,499	198,259	148,832	102,327	125,954	138,838
Other physical assets	2,941	16,183	13,309	1,877	3,323	6,217
Subtotal, major public physical investment	156,440	214,442	162,141	104,204	129,277	145,055
Conduct of research and development						
Agriculture	370	372	405	311	421	605
Other	224	340	367	47	53	72
Subtotal, conduct of research and development	594	712	772	358	474	677
Conduct of education and training						
Elementary, secondary, and vocational education	230,428	41,689	68,433	63,337	86,090	54,621
Higher education	408	409	428	468	200	127
Research and general education aids	1,322	861	947	1,133	1,203	1,064
Training and employment	3,493	3,345	3,784	3,057	4,036	3,325
Social services	17,985	14,826	17,330	13,986	17,454	16,944
Agriculture	450	450	459	495	377	593
Other	2,564	3,354	3,310	3,293	3,263	3,542
Subtotal, conduct of education and training	256,650	64,934	94,691	85,769	112,623	80,216
Subtotal, grants for investment	413,684	280,088	257,604	190,331	242,374	225,948
DIRECT FEDERAL PROGRAMS						
Major public physical investment						
Construction and rehabilitation						
National defense						
Military construction and family housing	6,803	6,804	10,441	8,861	10,792	10,474
Atomic energy defense activities and other	3,142	3,147	4,015	2,292	2,491	3,050
Subtotal, national defense	9,945	9,951	14,456	11,153	13,283	13,524
Nondefense						
International affairs	1,329	1,305	1,290	1,035	1,132	1,225
General science, space, and technology	2,085	2,207	1,838	1,764	2,086	2,023
Water resources projects	4,727	22,953	4,383	3,954	6,551	5,494
Other natural resources and environment	2,766	3,417	3,000	1,210	3,095	2,937
Energy	347	4,146	5,576	2,479	3,719	3,744
Postal service	679	1,126	1,260	769	500	705
Transportation	129	677	679	94	163	223
Veterans hospitals and other health facilities	8,309	5,036	7,770	4,571	4,998	7,923
Administration of justice	2,991	3,192	1,705	2,710	2,951	3,102
GSA real property activities	807	4,253	7,229	1,135	1,593	1,845
Other construction	7,570	4,284	16,927	6,013	4,942	5,724
Subtotal, nondefense	31,739	52,596	51,657	25,734	31,730	34,945
Subtotal, construction and rehabilitation	41,684	62,547	66,113	36,887	45,013	48,469

**Table 17-2. FEDERAL INVESTMENT BUDGET AUTHORITY AND OUTLAYS:
GRANT AND DIRECT FEDERAL PROGRAMS—Continued**

(In millions of dollars)

Description	Budget Authority			Outlays		
	2021 Actual	2022 Estimate	2023 Estimate	2021 Actual	2022 Estimate	2023 Estimate
Acquisition of major equipment						
National defense						
Department of Defense	173,224	184,010	190,291	175,798	173,229	178,568
Atomic energy defense activities	1,474	1,376	1,405	973	887	957
Subtotal, national defense	174,698	185,386	191,696	176,771	174,116	179,525
Nondefense						
General science and basic research	526	494	602	411	490	523
Postal service	1,688	7,004	2,153	1,102	1,956	2,692
Air transportation	3,788	4,889	4,773	3,486	3,853	4,310
Water transportation (Coast Guard)	2,244	2,672	1,635	1,649	2,346	2,252
Other transportation (railroads)	6	4	21	6	4	16
Hospital and medical care for veterans	4,614	5,013	4,480	3,189	5,414	4,267
Federal law enforcement activities	2,659	1,643	1,800	2,682	1,507	1,429
Department of the Treasury (fiscal operations)	895	402	501	395	515	547
National Oceanic and Atmospheric Administration	1,307	1,356	1,969	1,261	1,855	1,649
Other	5,824	5,757	7,096	6,955	8,168	7,530
Subtotal, nondefense	23,551	29,234	25,030	21,136	26,108	25,215
Subtotal, acquisition of major equipment	198,249	214,620	216,726	197,907	200,224	204,740
Purchase or sale of land and structures						
National defense	-33	-32	-33	-27	-22	-33
Natural resources and environment	463	496	520	274	349	485
General government	1	-260	-241	1	-260	-241
Other	100	157	237	-52	-68	-33
Subtotal, purchase or sale of land and structures	531	361	483	196	-1	178
Subtotal, major public physical investment	240,464	277,528	283,322	234,990	245,236	253,387
Conduct of research and development						
National defense						
Defense military	70,079	65,671	83,769	69,017	69,749	83,461
Atomic energy and other	5,284	5,355	5,828	4,930	4,509	5,345
Subtotal, national defense	75,363	71,026	89,597	73,947	74,258	88,806
Nondefense						
International affairs	230	233	228	230	233	228
General science, space, and technology						
NASA	11,512	11,593	12,670	10,517	11,585	11,794
National Science Foundation	6,942	6,543	7,902	5,546	6,107	6,371
Department of Energy	5,487	5,415	6,125	5,241	6,343	6,497
Subtotal, general science, space, and technology	23,941	23,551	26,697	21,304	24,035	24,662
Energy	4,231	7,601	9,086	3,536	3,876	6,148
Transportation						
Department of Transportation	875	977	1,170	791	924	1,083
NASA	610	629	769	572	613	691
Other transportation	40	40	41	30	43	39
Subtotal, transportation	1,525	1,646	1,980	1,393	1,580	1,813
Health						
National Institutes of Health	40,546	40,436	59,866	37,387	39,782	41,423
Other health	1,387	1,266	1,542	1,048	933	1,061
Subtotal, health	41,933	41,702	61,408	38,435	40,715	42,484
Agriculture	2,174	2,217	2,528	1,847	2,271	2,904
Natural resources and environment	2,655	2,831	3,456	2,530	2,565	3,251
National Institute of Standards and Technology	829	709	925	733	797	895
Hospital and medical care for veterans	1,445	1,436	1,655	1,390	1,603	1,550
All other research and development	1,481	1,657	1,749	1,359	1,510	1,376
Subtotal, nondefense	80,444	83,583	109,712	72,757	79,185	85,311

**Table 17–2. FEDERAL INVESTMENT BUDGET AUTHORITY AND OUTLAYS:
GRANT AND DIRECT FEDERAL PROGRAMS—Continued**

(In millions of dollars)

Description	Budget Authority			Outlays		
	2021 Actual	2022 Estimate	2023 Estimate	2021 Actual	2022 Estimate	2023 Estimate
Subtotal, conduct of research and development	155,807	154,609	199,309	146,704	153,443	174,117
Conduct of education and training						
Elementary, secondary, and vocational education	64,939	1,414	1,942	26,300	65,420	77,711
Higher education	173,734	74,014	63,348	171,482	72,979	54,789
Research and general education aids	2,807	2,438	2,802	2,277	2,631	2,668
Training and employment	2,196	2,253	2,863	2,099	2,679	2,462
Health	2,986	2,287	2,646	2,409	2,744	2,676
Veterans education, training, and rehabilitation	13,178	15,146	9,121	12,245	12,892	12,512
General science and basic research	914	785	1,236	716	1,107	1,334
International affairs	753	752	753	552	860	760
Other	1,124	995	1,351	675	998	1,484
Subtotal, conduct of education and training	262,631	100,084	86,062	218,755	162,310	156,396
Subtotal, direct Federal investment	658,902	532,221	568,693	600,449	560,989	583,900
Total, Federal investment	1,072,586	812,309	826,297	790,780	803,363	809,848