

17. FEDERAL INVESTMENT

Federal investment is the portion of Federal spending intended to yield long-term benefits for the economy and the country. 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 of grants to State and local governments.¹ It can be designated for physical capital, which creates a tangible asset that yields a stream of services over a period of years. It also can be for research and development, education, or

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

training, all of which are intangible, but still increase income in the future or provide other long-term benefits.

Most presentations in this volume combine investment spending with spending intended for current use. This chapter focuses solely on Federal and federally financed investment. It provides a comprehensive picture of Federal investment spending for physical capital, research and development, and education and training, but because it disregards spending for non-investment activities, it provides only a partial picture of Federal support for specific national needs, such as defense and transportation.

DESCRIPTION OF FEDERAL INVESTMENT

The distinction between investment spending and current outlays is a matter of judgment. The budget has historically employed a relatively broad classification of investment, encompassing physical investment, research, development, education, and training. The budget further classifies investments into those that are grants to State and local governments, such as grants for highways, and all other investments, or "direct Federal programs." This "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 or higher education loans directly to individuals.

The definition of investment in a particular presentation can vary depending on specific considerations:

- Taking the approach of a traditional balance sheet would limit investment to only those physical assets owned by the Federal Government, excluding capital financed through grants and intangible assets such as research and education.
- Focusing on the role of investment in improving national productivity and enhancing economic growth would exclude items such as national defense assets, the direct benefits of which enhance national security rather than economic growth.
- Examining the efficiency of Federal operations would confine the coverage to investments that reduce costs or improve the effectiveness of internal Federal agency operations, such as computer systems.
- Considering a "social investment" perspective would broaden the coverage of investment beyond what is included in this chapter to include programs such as maternal health, certain nutrition programs, and

substance abuse treatment, which are designed in part to prevent more costly health problems in future years.

This analysis takes the relatively broad approach of including all investment in physical assets, research and development, and education and training, regardless of ultimate ownership of the resulting asset or the purpose it serves. It does not include "social investment" items like health care or social services where it is difficult to separate out the degree to which the spending provides current versus future benefits. The definition of investment used in this section provides consistency over time (historical figures on investment outlays back to 1940 can be found in the Budget's historical tables).² Table 17-2 at the end of this section allows disaggregation of the data to focus on those investment outlays that best suit a particular purpose.

In addition to this basic issue of definition, there are two technical problems in the classification of investment data: the treatment of grants to State and local governments, and the classification of spending that could be shown in multiple categories.

First, for some grants 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 current purposes. This analysis classifies all of the outlays into the category in which the recipient jurisdictions are expected to spend a majority of the money. General purpose fiscal assistance is classified as current spending, although some may be spent by recipient jurisdictions on investment.

Second, some spending could be classified in more than one category of investment. For example, outlays for construction of research facilities finance the acquisition of physical assets, but they also contribute to research and development. To avoid double counting, the outlays are

² The historical tables are available at <http://www.budget.gov/budget/Historicals> and on the Budget CD-ROM.

classified hierarchically in the category that is most commonly recognized as investment: physical assets, followed by research and development, followed by education and training. Consequently, outlays for the conduct of research and development do not include outlays for the construction of research facilities, because these outlays are included in the category for investment in physical assets.

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. For more information about the treatment of Federal credit programs, refer to the section on Federal credit in Chapter 8, “Budget Concepts,” in this volume.

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 Federal investment outlays were \$480.8 billion in 2016. Federal investment outlays are estimated to increase 10.5 percent to \$531.3 billion in 2017, and decrease by 7.5 percent to \$491.5 billion in 2018. In 2018, defense investment outlays are estimated to increase by \$19.9 billion, while nondefense investment outlays are expected to decrease by \$59.7 billion. The major factors contributing to these changes are described below.

Major Federal investment outlays will comprise an estimated 12.0 percent of total Federal outlays in 2018 and 2.5 percent of the Nation’s gross domestic product. Greater detail on Federal investment is available in Table 17–2 at the end of this section. That table includes both budget authority and outlays.

Physical investment. Outlays for major public physical capital investment (hereafter referred to as “physical investment outlays”) are estimated to increase by 12.8 percent in 2018 to \$264.5 billion. Physical investment outlays are for construction and rehabilitation, the purchase of major equipment, and the purchase or sale of land and structures. Over two-thirds of these outlays are for direct physical investment by the Federal Government, with the

Table 17–1. COMPOSITION OF FEDERAL INVESTMENT OUTLAYS

(In billions of dollars)

Federal Investment	Actual 2016	Estimate	
		2017	2018
Major public physical capital investment:			
Direct Federal:			
National defense	108.6	110.5	147.0
Nondefense	37.7	44.1	35.0
Subtotal, direct major public physical capital investment	146.2	154.6	182.0
Grants to State and local governments	79.7	79.8	82.5
Subtotal, major public physical capital investment	225.9	234.4	264.5
Conduct of research and development:			
National defense	72.7	73.3	56.7
Nondefense	62.4	67.3	60.8
Subtotal, conduct of research and development	135.1	140.6	117.5
Conduct of education and training:			
Grants to State and local governments	56.7	59.9	57.1
Direct Federal	63.1	96.4	52.3
Subtotal, conduct of education and training	119.8	156.3	109.5
Total, major Federal investment outlays	480.8	531.3	491.5
MEMORANDUM			
Major Federal investment outlays:			
National defense	181.2	183.8	203.7
Nondefense	299.6	347.5	287.8
Total, major Federal investment outlays	480.8	531.3	491.5
Miscellaneous physical investment:			
Commodity inventories	—*	–0.9	–1.8
Other physical investment (direct)	2.1	2.6	2.8
Total, miscellaneous physical investment	2.1	1.7	1.0
Total, Federal investment outlays, including miscellaneous physical investment	482.9	533.0	492.6

* \$100 million or less

remainder being grants to State and local governments for physical investment.

Direct physical investment outlays by the Federal Government are primarily for national defense. Defense outlays for physical investment are estimated to be \$147.0 billion in 2018, \$36.5 billion higher than in 2017. Approximately 94 percent of defense physical investment outlays, or an estimated \$139.2 billion, are for the procurement of weapons and other defense equipment, and the remainder is primarily for construction on military bases, family housing for military personnel, and Department of Energy defense facilities.³

Outlays for direct physical investment for nondefense purposes are estimated to be \$35.0 billion in 2018. Outlays for 2018 include \$19.5 billion for construction and rehabilitation. This amount includes funds for construction and rehabilitation of veterans' hospitals and Indian Health Service hospitals and clinics; water, power, and natural resources projects of the Corps of Engineers, and the Bureau of Reclamation within the Department of the Interior; energy projects of the Power Marketing Administrations within the Department of Energy, and the Tennessee Valley Authority; construction of office buildings by the General Services Administration; construction for the administration of justice programs (largely in Customs and Border Protection within the Department of Homeland Security); construction for embassy security; facilities for space and science programs of the National Aeronautics and Space Administration, Department of Energy, and National Science Foundation; and Postal Service facilities. Outlays for this category are estimated to decrease by \$6.6 billion in 2018 primarily because outlays for 2017 include upward reestimates of the cost of past guaranteed loans for the construction and repair of apartment buildings, hospitals, and other health care facilities. Additional decreases are within energy activities, which are caused by decreases in Tennessee Valley Authority capacity expansion projects and other capital expenditures, the Budget proposal to repeal the Department of Energy's Western Area Power Administration's authority to borrow from Treasury to fund transmission projects that are best carried out by the private sector, and the expiration in 2017 of the program eligibility period for the grants for specified energy property in lieu of tax credits.

Outlays for grants to State and local governments for physical investment are estimated to be \$82.5 billion in 2018, a 3.4 percent increase over the 2017 estimate of \$79.8 billion. Nearly three-quarters of these outlays are for transportation programs, primarily for highways. Other major grants for physical investment fund sewage treatment plants, community and regional development, public housing, and other State and tribal assistance grants. The increase in 2018 is more than accounted for by the Administration's infrastructure initiative, which will begin to rebuild and modernize the Nation's physical infrastructure, to help create jobs, maintain America's

³ The increase in outlays for defense physical investment from 2017 to 2018 is due in part to a redefinition of categories, as certain defense outlays for acquisition of major equipment were formerly classified as research and development. The amounts reclassified were \$31.0 billion in budget authority and \$27.4 billion in outlays.

economic competitiveness, and connect communities and people to more opportunities. While the Administration continues to work with the Congress, States, localities, and other infrastructure stakeholders to finalize the suite of Federal programs that will support this effort, the 2018 Budget includes \$200 billion in budget authority related to the infrastructure initiative, from which \$5 billion in outlays are estimated to occur in 2018. Those outlays are illustratively presented as grants to State and local governments.

Conduct of research and development. Outlays for the conduct of research and development are estimated to be \$117.5 billion in 2018, a \$23.1 billion or 16.4 percent decrease from 2017. Much of this decrease is due to the narrowing of the definition of "development" to experimental development," which was implemented for the FY 2018 President's Budget (as described in Chapter 18, "Research and Development," in this volume). Using the definition applied to the 2017 data, 2018 research and development outlays are approximately 3 percent higher than 2017. Nearly half of research and development outlays are for national defense.⁴ 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 \$60.8 billion in 2018, a \$6.5 billion or 9.7 percent decrease below 2017. Most investments in this area are funded through programs in the National Institutes of Health, the National Aeronautics and Space Administration, the Department of Energy, and the National Science Foundation.

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 \$119.8 billion in 2016. Outlays are estimated to increase to \$156.3 billion in 2017, and decrease in 2018 to \$109.5 billion. Grants to State and local governments for this category are estimated to be \$57.1 billion in 2018, 40.8 percent of the total. They include education programs for the disadvantaged and individuals with disabilities, training programs in the Department of Labor, Head Start, and other education programs. Direct Federal education and training outlays in 2018 are estimated to be \$52.3 billion, which is a decrease of \$44.1 billion, or 45.7 percent, from 2017. Programs in this category primarily consist of aid for higher education through student financial assistance, loan subsidies, and veterans' education, training, and rehabilitation. The decrease in outlays for the conduct of education and training from 2017 to 2018 is the result of revisions in the cost of past student loan activity, and budget proposals including the elimination of federally subsidized student loans.

This category does not include outlays for education and training of Federal civilian and military employees. Outlays for education and training that are for physical

⁴ The apparent \$16.6 billion decrease from 2017 to 2018 is the result of the redefinition of defense investment outlays formerly classified as research and development, as explained in the previous footnote.

investment and for research and development are in the categories for physical investment and the conduct of research and development.

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. These items, all for physical investment, are generally unrelated to improving Government operations or enhancing economic activity.

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 \$1.8 billion in 2018.

Outlays for other miscellaneous physical investment are estimated to be \$2.8 billion in 2018. This category

consists entirely of direct Federal outlays and includes primarily conservation programs.

Detailed Table on Investment Spending

The following table 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 because it is generally unrelated to improving Government operations or enhancing economic activity. Funding for the Administration's infrastructure initiative is illustratively presented in the table within the grants to State and local governments and specifically in the "other" line under the "other construction and rehabilitation" heading.

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

(In millions of dollars)

Description	Budget Authority			Outlays		
	2016 Actual	2017 Estimate	2018 Estimate	2016 Actual	2017 Estimate	2018 Estimate
GRANTS TO STATE AND LOCAL GOVERNMENTS						
Major public physical investment:						
Construction and rehabilitation:						
Transportation:						
Highways	41,327	42,986	43,057	43,416	41,924	42,527
Mass transportation	12,878	12,940	12,415	12,271	12,316	12,574
Rail transportation	1,447	1,445	807	3,505	4,443	1,169
Air and other transportation	3,677	3,676	3,190	3,365	3,853	3,842
Subtotal, transportation	59,329	61,047	59,469	62,557	62,536	60,112
Other construction and rehabilitation:						
Pollution control and abatement	2,880	2,976	2,511	3,490	3,473	3,227
Community and regional development	4,812	5,859	142	7,067	7,579	8,117
Housing assistance	3,600	3,585	1,164	4,150	3,672	3,513
Other	729	867	200,348	632	622	5,578
Subtotal, other construction and rehabilitation	12,021	13,287	204,165	15,339	15,346	20,435
Subtotal, construction and rehabilitation	71,350	74,334	263,634	77,896	77,882	80,547
Other physical assets	2,023	1,993	1,879	1,802	1,947	1,959
Subtotal, major public physical investment	73,373	76,327	265,513	79,698	79,829	82,506
Conduct of research and development:						
Agriculture	336	336	326	341	341	341
Other	181	190	177	141	149	134
Subtotal, conduct of research and development	517	526	503	482	490	475
Conduct of education and training:						
Elementary, secondary, and vocational education	38,287	38,115	34,152	37,552	38,810	38,224
Higher education	362	361	249	377	408	362
Research and general education aids	780	780	64	768	788	272
Training and employment	3,314	3,319	2,147	3,261	3,700	2,749
Social services	12,674	12,561	11,908	12,042	13,140	12,147
Agriculture	418	418	413	398	434	583
Other	2,347	1,752	2,347	2,326	2,612	2,812
Subtotal, conduct of education and training	58,182	57,306	51,280	56,724	59,892	57,149
Subtotal, grants for investment	132,072	134,159	317,296	136,904	140,211	140,130

Table 17-2. FEDERAL INVESTMENT BUDGET AUTHORITY AND OUTLAYS: GRANT AND DIRECT FEDERAL PROGRAMS—Continued
(In millions of dollars)

Description	Budget Authority			Outlays		
	2016 Actual	2017 Estimate	2018 Estimate	2016 Actual	2017 Estimate	2018 Estimate
DIRECT FEDERAL PROGRAMS						
Major public physical investment:						
Construction and rehabilitation:						
National defense:						
Military construction and family housing	6,679	6,549	8,970	6,253	6,353	7,658
Atomic energy defense activities and other	145	183	280	109	162	222
Subtotal, national defense	6,824	6,732	9,250	6,362	6,515	7,880
Nondefense:						
International affairs	1,602	2,267	499	1,006	1,413	1,450
General science, space, and technology	1,290	1,274	1,197	1,233	1,220	1,258
Water resources projects	2,998	3,266	2,114	2,933	3,498	3,237
Other natural resources and environment	1,176	1,178	923	1,092	1,195	1,052
Energy	3,190	4,669	-2,186	3,158	4,377	2,511
Postal service	402	519	527	402	627	559
Transportation	262	286	127	12	267	242
Veterans hospitals and other health facilities	3,827	2,947	3,649	3,521	3,319	3,582
Administration of justice	1,904	1,954	2,646	1,406	1,859	1,548
GSA real property activities	2,399	2,341	2,250	949	1,667	2,197
Other construction	5,150	6,554	1,203	4,920	6,673	1,890
Subtotal, nondefense	24,200	27,255	12,949	20,632	26,115	19,526
Subtotal, construction and rehabilitation	31,024	33,987	22,199	26,994	32,630	27,406
Acquisition of major equipment:						
National defense:						
Department of Defense	115,968	116,908	153,075	101,893	103,596	138,728
Atomic energy defense activities	483	416	420	329	429	438
Subtotal, national defense	116,451	117,324	153,495	102,222	104,025	139,166
Nondefense:						
General science and basic research	398	426	322	337	419	324
Postal service	1,388	1,413	1,095	1,392	1,260	1,088
Air transportation	3,506	3,859	2,902	3,364	3,999	3,235
Water transportation (Coast Guard)	1,735	1,689	1,109	1,099	1,094	1,531
Hospital and medical care for veterans	1,430	1,593	1,368	1,398	1,274	1,328
Federal law enforcement activities	1,698	929	989	1,648	1,296	970
Department of the Treasury (fiscal operations)	290	327	110	263	353	216
National Oceanic and Atmospheric Administration	2,229	2,308	1,717	2,001	1,908	1,816
Other	4,892	4,685	4,395	5,205	5,813	4,622
Subtotal, nondefense	17,566	17,229	14,007	16,707	17,416	15,130
Subtotal, acquisition of major equipment	134,017	134,553	167,502	118,929	121,441	154,296
Purchase or sale of land and structures:						
National defense	-26	-38	-38	-26	-32	-32
Natural resources and environment	351	307	117	217	279	217
General government	15	4
Other	155	159	159	130	278	149
Subtotal, purchase or sale of land and structures	480	428	253	321	525	338
Subtotal, major public physical investment	165,521	168,968	189,954	146,244	154,596	182,040
Conduct of research and development:						
National defense:						
Defense military	71,312	71,181	53,382	66,609	67,118	49,840
Atomic energy and other	6,301	6,175	7,104	6,045	6,186	6,867
Subtotal, national defense	77,613	77,356	60,486	72,654	73,304	56,707
Nondefense:						
International affairs	288	263	114	288	289	263
General science, space, and technology:						

Table 17-2. FEDERAL INVESTMENT BUDGET AUTHORITY AND OUTLAYS: GRANT AND DIRECT FEDERAL PROGRAMS—Continued
(In millions of dollars)

Description	Budget Authority			Outlays		
	2016 Actual	2017 Estimate	2018 Estimate	2016 Actual	2017 Estimate	2018 Estimate
NASA	12,737	12,801	9,697	11,416	11,655	9,198
National Science Foundation	5,601	5,650	4,951	5,120	5,225	5,037
Department of Energy	4,526	4,514	3,830	4,344	4,751	4,316
Subtotal, general science, space, and technology	22,864	22,965	18,478	20,880	21,631	18,551
Energy	3,331	3,328	1,600	2,776	2,892	2,734
Transportation:						
Department of Transportation	745	729	737	729	747	743
NASA	494	476	502	581	450	480
Other transportation	18	23	38	21	20	28
Subtotal, transportation	1,257	1,228	1,277	1,331	1,217	1,251
Health:						
National Institutes of Health	30,698	30,761	24,984	28,358	31,092	29,046
Other health	1,802	1,781	1,498	1,508	2,341	1,466
Subtotal, health	32,500	32,542	26,482	29,866	33,433	30,512
Agriculture	1,694	1,690	1,515	1,621	1,654	1,683
Natural resources and environment	2,277	2,297	1,774	2,216	2,339	1,917
National Institute of Standards and Technology	616	616	520	431	619	569
Hospital and medical care for veterans	1,222	1,346	1,357	1,166	1,304	1,340
All other research and development	1,541	1,686	1,509	1,339	1,445	1,514
Subtotal, nondefense	67,590	67,961	54,626	61,914	66,823	60,334
Subtotal, conduct of research and development	145,203	145,317	115,112	134,568	140,127	117,041
Conduct of education and training:						
Elementary, secondary, and vocational education	1,357	1,447	1,580	1,370	1,343	1,339
Higher education	37,829	75,569	26,362	38,899	71,809	27,326
Research and general education aids	2,272	2,271	2,216	2,278	2,247	2,237
Training and employment	2,294	2,270	1,997	2,111	2,211	2,655
Health	1,744	1,729	1,333	1,669	1,728	1,687
Veterans education, training, and rehabilitation	14,648	16,667	13,991	14,579	14,758	14,852
General science and basic research	924	861	768	822	797	836
International affairs	618	607	302	625	647	554
Other	825	874	786	736	855	850
Subtotal, conduct of education and training	62,511	102,295	49,335	63,089	96,395	52,336
Subtotal, direct Federal investment	373,235	416,580	354,401	343,901	391,118	351,417
Total, Federal investment	505,307	550,739	671,697	480,805	531,329	491,547