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June 1998

# BUDGET TRENDS

## Federal Investment Outlays, Fiscal Years 1981-2003



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**Accounting and Information  
Management Division**

B-279819

June 15, 1998

The Honorable Frank R. Lautenberg  
Ranking Democratic Member  
Committee on the Budget  
United States Senate

The Honorable George E. Brown, Jr.  
Ranking Democratic Member  
Committee on Science  
House of Representatives

This report is in response to your request that we update our 1997 report<sup>1</sup> on investment trends. It includes new estimates for 1998 through 2003 contained in the President's 1999 budget and per conversation with your staff recalculates the investment component for Department of Defense research and development (R&D).

Concerns still abound about levels of federal and domestically-financed investment and national saving. Reductions in the federal government's deficit or increases in the surplus help increase national saving and expand domestic capital available for private investment. At the same time, however, reducing the deficit places constraints on the government's discretionary spending which finances most federal investment. The constraints on discretionary spending have again tightened with the enactment of the Balanced Budget Act of 1997. Recent congressional initiatives have sought to promote long-term private sector economic growth by increasing federal investment. The National Research Investment Act of 1998 (S. 1305), a bipartisan bill, would almost double total R&D funding between 1999 and 2008 at 12 selected agencies. In addition, the President's budget for fiscal year 1999 proposed three new investment funds: (1) the Research Fund for America, which includes a broad range of investment in knowledge, (2) the Environmental Resources Fund, which includes several environmental programs identified by the President as investment programs, and (3) the Transportation Fund for America, which includes highway and airport programs. You have both expressed interest in the future of spending for investment and indicated that better information on recent investment trends would help decision-making.

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<sup>1</sup>Budget Trends: Federal Investment Outlays, Fiscal Years 1981-2002 (GAO/AIMD-97-88, May 21, 1997).

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## Results in Brief

The annual levels of investment spending for the period 1998 through 2002 in the President's 1999 budget (in constant dollars)<sup>2</sup> is estimated to range from slightly more than \$2 billion to almost \$11 billion higher each year than the levels estimated in the President's 1998 budget for the same period. Only one budget function<sup>3</sup>—energy—has lower estimates for 1998 through 2002 than in the 1998 budget.<sup>4</sup>

The share of total federal budget outlays and of gross domestic product (GDP) devoted to investment<sup>5</sup> declined slightly from the early 1980s through 1997. According to the administration's policy estimates contained in the President's 1999 budget, investment's share of both outlays and GDP will increase slightly from 1998 through 2000 and then fall slightly through 2003. These new estimates represent a change from the 1998 budget estimates which showed a continuing gradual decline from 1998 through 2002. When investment outlays are converted to constant 1992 dollars, roughly the same picture emerges over this time period. Investment spending in estimated constant dollar outlays generally increased from the mid-1980s through 1995 before dropping in 1996 and 1997. In the 1999 budget, investment spending is projected to increase from 1998 through 2000 and then gradually decrease through 2003. The 1998 budget estimates for 1998 through 2002 had shown a similar trend but at a slightly lower level.

Investment by category (character class<sup>6</sup>) in constant dollars shows varying patterns. After dropping from 1981 to 1983, physical capital remained relatively stable through 1995, with slight declines in 1996 and 1997. The 1999 budget estimates for fiscal years 1998 through 2003 show a

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<sup>2</sup>Constant dollars are dollar values adjusted for changes in the average price level. They represent the values that would exist if prices had remained at the same average level as the base period.

<sup>3</sup>The functional classification is a system of classifying budget resources to the national needs being addressed, such as defense and health. Each budget account is generally placed in the budget function that best reflects its major purpose. Functions may be divided into subfunctions depending on the complexity of national need being addressed.

<sup>4</sup>The total level of investment reported in this report is lower than that reported in our 1997 report. This is because of a revision in the composition of investment, principally the substitution of Defense applied R&D for developmental R&D. This substitution did not significantly alter the trend data presented.

<sup>5</sup>We define investment as federal spending, either direct or through grants, specifically intended to enhance the private sector's long-term productivity.

<sup>6</sup>Character classification is used to report investment activities separately from noninvestment in the President's budget submission. Data are classified as investment by agencies when they finance activities yielding benefits largely in the future, such as physical assets, research and development, and education and training. Character classification also distinguishes between grants to state and local governments and direct federal programs.

relatively stable level—around \$33 billion to \$34 billion each year. This is a higher level than the 1998 budget estimates, which showed a steady decline from 1998 through 2002. The R&D category had relatively steady increases from the mid-1980s through 1997 and estimates for 1998 through 2003 continue to increase. This is a change from the estimates for 1998 through 2002 made in the 1998 budget which had shown modest decreases after 1998. Likewise, after dropping from 1981 through 1984, education and training has shown a relatively steady increase that is projected in the 1999 budget to continue through 2000 before dropping off slightly thereafter. The 1998 budget estimates showed a similar pattern for 1998 through 2002 at a slightly lower level of outlays.

The pattern of investment from 1981 through 2003 in constant dollars varies across budget functions. Seven functions contain about 95 percent of investment outlays. Four of those functions, Education and Training (500), Transportation (400), Health (550), and General Science, Space, and Technology (250) show general increases over this period. The National Defense (050) function shows several fluctuations but remains relatively flat overall. Investment spending in the Natural Resources and Environment (300) and Energy (270) functions shows a continued downward trend from the 1980s through 2003.

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## Background

We previously reported<sup>7</sup> that the current budget structure does not highlight, for decision-making purposes, the differences between spending for long-term investment and current consumption because it treats all expenditures the same. Nor does the current budget process encourage the Congress to make explicit decisions about how much spending overall should be devoted to programs having a direct bearing on long-term growth and productivity.

In our 1993 report, we suggested that establishing investment targets within a framework similar to that contained in the Budget Enforcement Act is the most promising way to incorporate an investment component into budget decision-making. In that report we concluded that the most appropriate definition of investment would include only that federal spending, either direct or through grants, which is specifically intended to enhance the private sector's long-term productivity. This definition includes spending on (1) some intangible activities, such as R&D, (2) human capital designed to increase worker productivity, particularly education

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<sup>7</sup>GAO/AIMD-97-88, May 21, 1997, and Budget Issues: Incorporating an Investment Component in the Federal Budget (GAO/AIMD-94-40, November 9, 1993).

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and training, and (3) physical assets to improve infrastructure, such as highways, bridges, and air traffic control systems.

This definition would not include spending for physical capital designed to achieve federal agency programmatic goals or improve the government's operating efficiency—such as spending for federal land, office buildings, and defense weapons systems—because such spending does not directly enhance productivity in the private sector. Some budget functions and subfunctions—such as international affairs, recreational resources, and law enforcement and justice—have been excluded from this analysis because we believe the bulk of spending in these subfunctions does not directly enhance productivity. This definition of investment was also used in our November 1993 report on incorporating an investment component in the federal budget and in our 1997 report on trends in federal investment outlays.<sup>8</sup>

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## Objective, Scope, and Methodology

The objective of this assignment was to update the data we provided last year on the trend in the federal budget's actual and future estimated investment outlays. This report includes actual investment outlays for fiscal years 1981 through 1997 and estimates contained in the President's 1999 budget for fiscal years 1998 through 2003. As agreed with your offices, the analysis was done on a macro basis, using aggregate data by investment category and budget function and subfunction. We did not analyze data at either the agency or account level.

Also, as agreed with your offices, we reexamined the items to be included in the definition of investment, specifically related to Defense R&D. We discussed different categories of Defense R&D with Office of Management and Budget (OMB) and Congressional Research Service staff. As a result, we changed the categories of Defense R&D included as investment spending from what was included in last year's report to more accurately reflect what we believe to promote private sector economic growth. We now include the categories of basic and applied research rather than basic and developmental research as in last year's analysis. This adjustment lowers the amount attributed to total investment, Defense investment, and R&D, but does not significantly alter the overall trend data. In order to make comparisons between the 1998 and 1999 budget estimates, we recast the 1998 data using our revised categories for Defense R&D.

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<sup>8</sup>GAO/AIMD-94-40, November 9, 1993, and GAO/AIMD-97-88, May 21, 1997.

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Outlay data used for this analysis were extracted from the automated information system that OMB used to prepare the President's annual budget request. We traced totals to published budget documents but did not independently verify this information. Reported actual outlay data (including offsetting collections but excluding offsetting receipts) for fiscal years 1981 through 1997 were used for both investment and total federal outlays; the President's estimates for his policy as shown in the 1999 budget were used for fiscal years 1998 through 2003. Annual GDP numbers and GDP implicit price deflators used in calculating constant dollar values for investment for fiscal years 1981 through 2003 were obtained from the Historical Tables accompanying the President's 1999 budget.

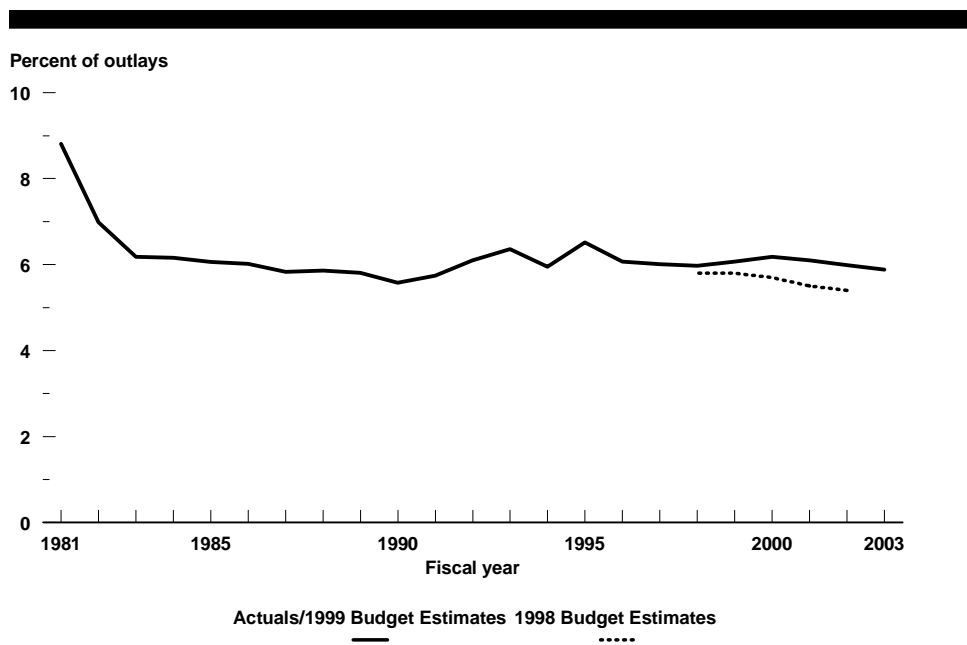
Our work was done from March 1998 through May 1998 in accordance with generally accepted government auditing standards.

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## Overall Investment Trends

The President's policy estimates of what we have categorized as investment spending for fiscal year 1999 amount to \$126.7 billion, which is 6.1 percent of total outlays and 1.5 percent of GDP. Actual total federal outlays for investment as a share of total outlays decreased from a high of 8.8 percent in 1981 to 6 percent in 1997. While investment rose in some years, the overall trend after 1982 was relatively flat, as shown in figure 1. Investment outlays for fiscal years 1998 to 2003 are projected to rise from 6 percent to 6.2 percent in 2000 and then decline to 5.9 percent in 2003. The estimates for 1998 through 2002 using the 1999 budget estimates are higher than those for the corresponding period contained in the 1998 budget both in dollars and as a percent of total outlays.

**Figure 1: Investment as a Percent of Total Outlays, Fiscal Years 1981 Through 2003**

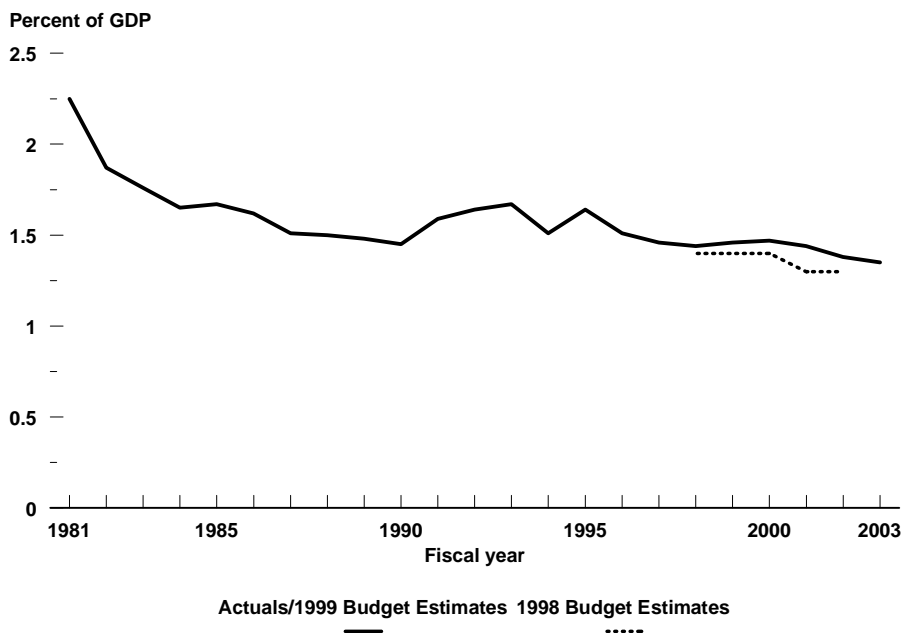


Note: 1998 through 2003 are estimates.

The share of total outlays categorized as investment may be influenced as much by increases in noninvestment outlays as by investment outlays themselves. Accordingly, to offer assurance that the investment trend line was not a function of the level of overall federal outlays, we analyzed the outlays' share of GDP. As shown in figure 2, we found that actual investment outlays as a percent of GDP followed the same pattern as investment outlays as a percent of total federal outlays. From a high of 2.3 percent of GDP in 1981, investment outlays fell to 1.5 percent of GDP in 1997. While the decline was not steady from year to year, the overall trend was downward. Estimates in the President's 1999 budget rise from 1.4 percent of GDP in 1998 to 1.5 percent in 2000 and then decline to 1.4 percent by 2003. As figure 2 shows, these estimates for the 1998 through 2002 period are higher in all years than the corresponding estimates from the 1998 budget.



**Figure 2: Investment as a Percent of Gross Domestic Product, Fiscal Years 1981 Through 2003**

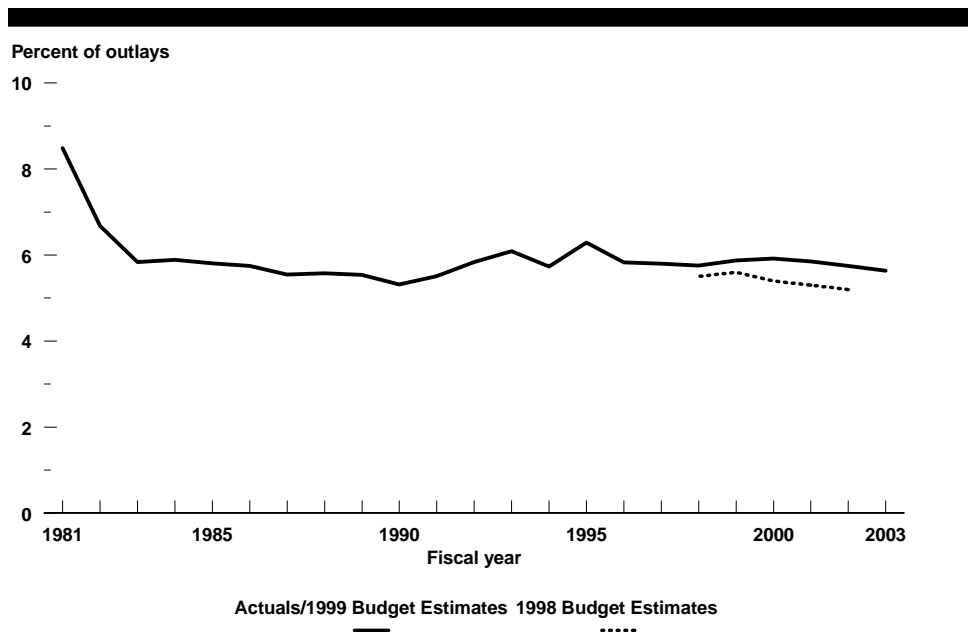


Note: 1998 through 2003 are estimates.

Figure 3 shows nondefense outlays<sup>9</sup> for investment as a share of total outlays. Nondefense outlays dropped from 8.5 percent of total outlays in 1981 to a low of 5.3 percent in 1990, then rose to 6.3 percent in 1995 and fell to 5.8 percent in 1997. Estimates in the 1999 budget rise slightly to 5.9 percent in 2000 and decline to 5.6 percent in 2003.

<sup>9</sup>Total federal investment outlays minus investment outlays in the Defense function.

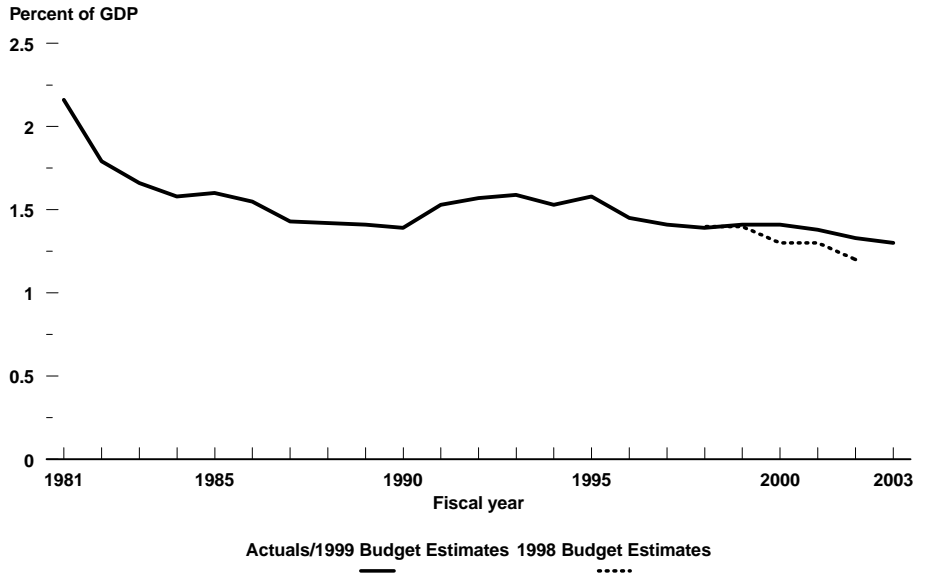
**Figure 3: Nondefense Investment as a Percent of Total Outlays, Fiscal Years 1981 Through 2003**



Note: 1998 through 2003 are estimates.

As shown in figure 4, nondefense outlays as a percent of GDP show a similar pattern. As in the case of total outlays, the 1999 budget plans to dedicate a higher percentage of total outlays to nondefense investment from 1998 through 2002 than did the 1998 budget.

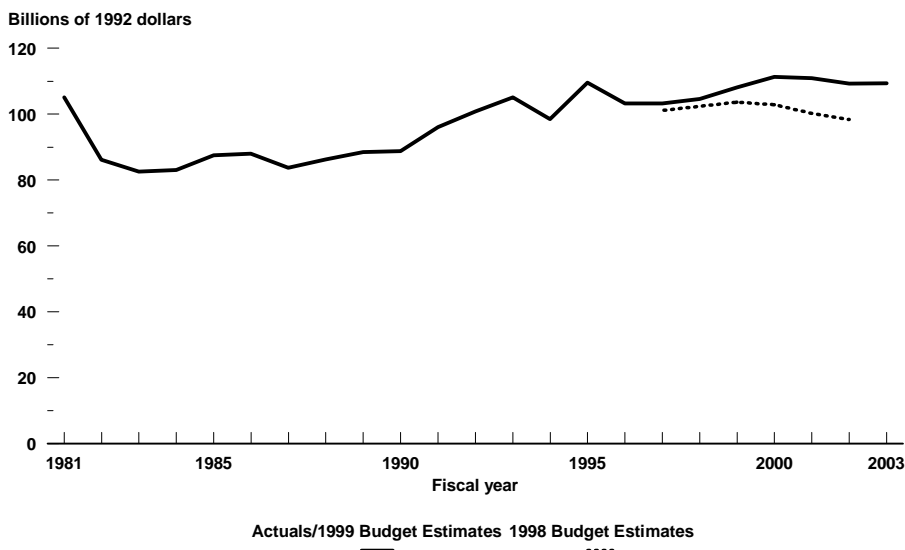
**Figure 4: Nondefense Investment as a Percent of Gross Domestic Product, Fiscal Years 1981 Through 2003**



Note: 1998 through 2003 are estimates.

The spending pattern is different when analyzed in terms of constant dollars. As shown in figure 5, in constant dollars, investment spending dropped from \$105 billion in 1981 to \$83 billion in 1984. However, it increased somewhat steadily to \$110 billion in 1995 before dropping to \$103 billion in 1997. Estimates in the 1999 budget increase from \$105 billion in 1998 to \$111 billion in 2000 before dropping to \$109 billion in 2003. As shown in figure 5, the 1999 budget estimates for investment from 1998 through 2002 range from slightly more than \$2 billion to almost \$11 billion higher than the 1998 budget estimates.

**Figure 5: Investment for Fiscal Years 1981 Through 2003 in Constant 1992 Dollars**



Note: 1998 through 2003 are estimates.

## Investment by Category

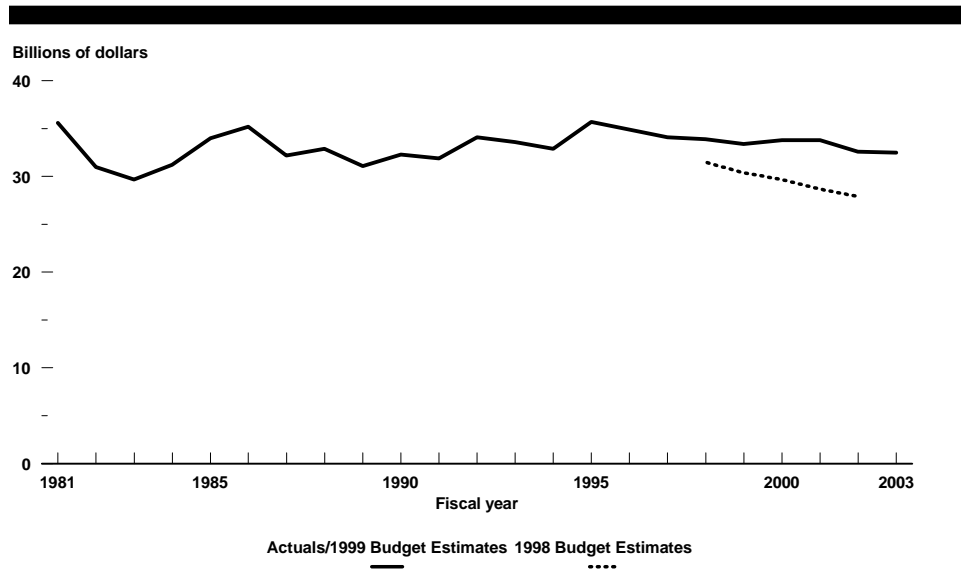
Investment by category is a way of describing the three major types of investment financed by the federal government—outlays for physical assets, research and development, and education and training. These basic categories are determined by character class designations federal agencies report in the budget. They are subdivided into more detailed categories, such as construction and rehabilitation or equipment (physical assets); basic, applied, and development (research and development); or direct federal programs or grants to others (physical assets, research and development, and education and training).

### Physical Assets

This category includes federal spending on physical assets intended to promote long-term private sector economic growth. It includes such major items as federal-aid highways, airport facilities and equipment, and Department of Energy and National Aeronautics and Space Administration (NASA) research facilities. It excludes spending for physical assets whose principal use is in agency missions, such as federal office buildings and weapons systems. In constant dollars, actual investment in physical assets has remained relatively stable over the term of our analyses—ranging from highs of about \$36 billion in 1981 and 1995 to a low of \$30 billion for 1983. (See figure 6.) Estimates in the 1999 budget for 1998 through 2003 are in

the \$33 billion to \$34 billion range and are higher than those contained in the 1998 budget.

**Figure 6: Investment in Physical Assets for Fiscal Years 1981 Through 2003 in Constant 1992 Dollars**

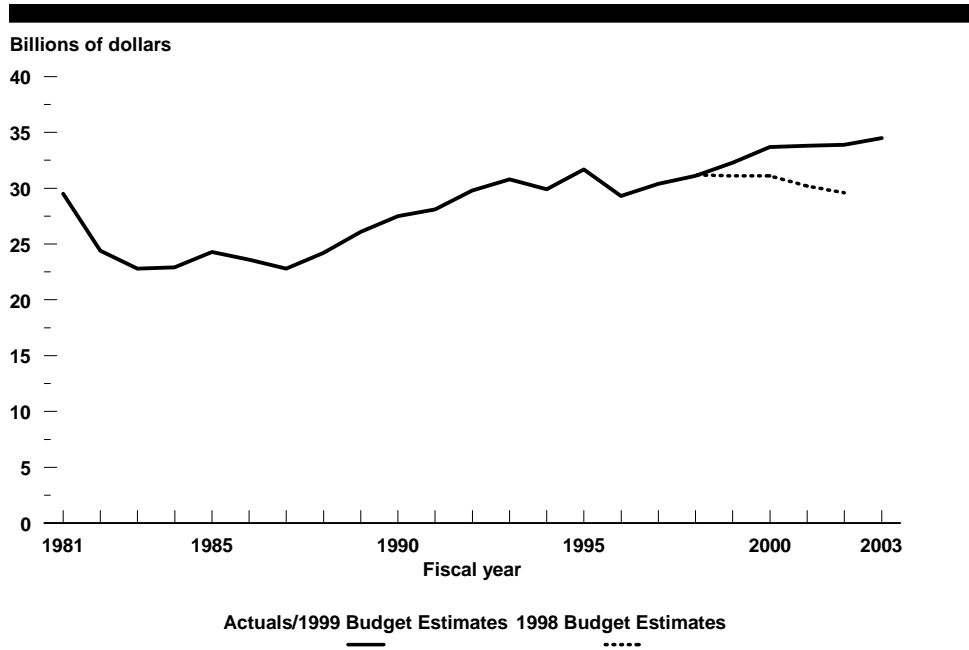


Note: 1998 through 2003 are estimates.

**Research and Development**

This category includes the R&D activities of the Department of Defense (basic and applied research only), NASA, National Institutes of Health, Department of Energy, and others. As shown in figure 7, outlays for R&D in constant dollars decreased from \$30 billion in 1981 to \$23 billion in 1984, then gradually increased to \$32 billion in 1995 before declining to \$29 billion in 1996. R&D estimates in the 1999 budget for 1998 through 2003 increase from \$31 billion to almost \$35 billion. In contrast, the 1998 budget projected a slight decline from \$31 billion in 1998 to \$30 billion in 2002.

**Figure 7: Investment in Research and Development for Fiscal Years 1981 Through 2003 in Constant 1992 Dollars**

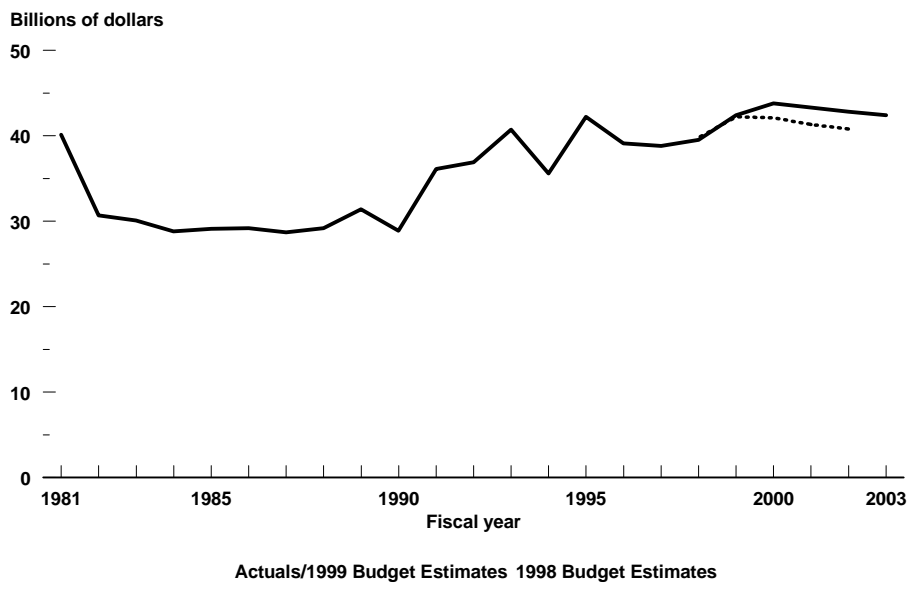


Note: 1998 through 2003 are estimates.

## Education and Training

This category includes items such as the Department of Labor’s training and employment services, the Department of Veterans Affairs’ readjustment benefits, and the Department of Education’s student financial assistance. As shown in figure 8, education and training constant dollar outlays declined sharply from 1981, and remained relatively flat at \$29 billion to \$31 billion through 1990 before beginning a rising trend, estimated in the 1999 budget to reach a peak at \$44 billion in 2000, dropping to \$42 billion by 2003. Compared to the 1998 budget estimates for 1998 through 2002, the 1999 budget estimates are lower for 1998 by less than \$1 billion and higher for 1999 through 2002 by amounts ranging from less than \$1 billion to \$2 billion.

**Figure 8: Investment in Education and Training for Fiscal Years 1981 Through 2003 in Constant 1992 Dollars**



Note: 1998 through 2003 are estimates.

## Investment by Budget Function

Budget functions are groupings of budgetary resources according to the national needs being addressed without regard to agency or organizational distinctions or the category (character class) of resources used.

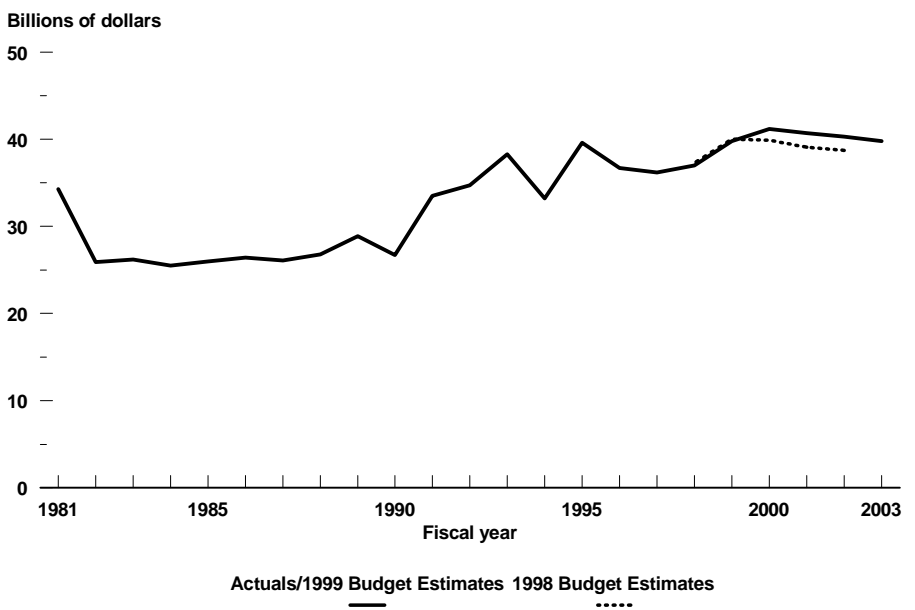
Based on the average annual outlays from 1981 through 2003, investment outlays in seven budget functions comprise about 95 percent of all investment outlays, with the top four comprising 79 percent of total investment. In descending order of constant dollar investment outlays, the functions are (1) Education, Training, Employment, and Social Services, (2) Transportation, (3) Health (principally R&D at the National Institutes of Health), (4) General Science, Space, and Technology, (5) Natural Resources and Environment, (6) National Defense, and (7) Energy. While there may be year-to-year variations in investment outlays, these seven functions can be placed into three groups based on their general investment spending trends—increased, steady, and declining.

## Increased Spending

The Education, Training, Employment, and Social Services function contains such investment items as the Department of Labor’s training and employment services; the Department of Health and Human Services’

children and families services programs; and the Department of Education's student financial assistance, special education, family education loans, and education for the disadvantaged programs. The overall constant dollar outlay trend for this function<sup>10</sup> (500) is upward, as shown in figure 9. A sharp decline from \$34 billion to \$26 billion between 1981 and 1982 was followed by generally increasing outlays up to \$40 billion in 1995. Outlays declined in 1997 before climbing back to \$40 billion to \$41 billion level for 1999 through 2003. Estimates for 2000 through 2002 are higher in the 1999 budget than they were in the 1998 budget.

**Figure 9: Investment Outlays for the Education, Training, Employment, and Social Services Function in Constant 1992 Dollars, Fiscal Years 1981 Through 2003**



Note: 1998 through 2003 are estimates.

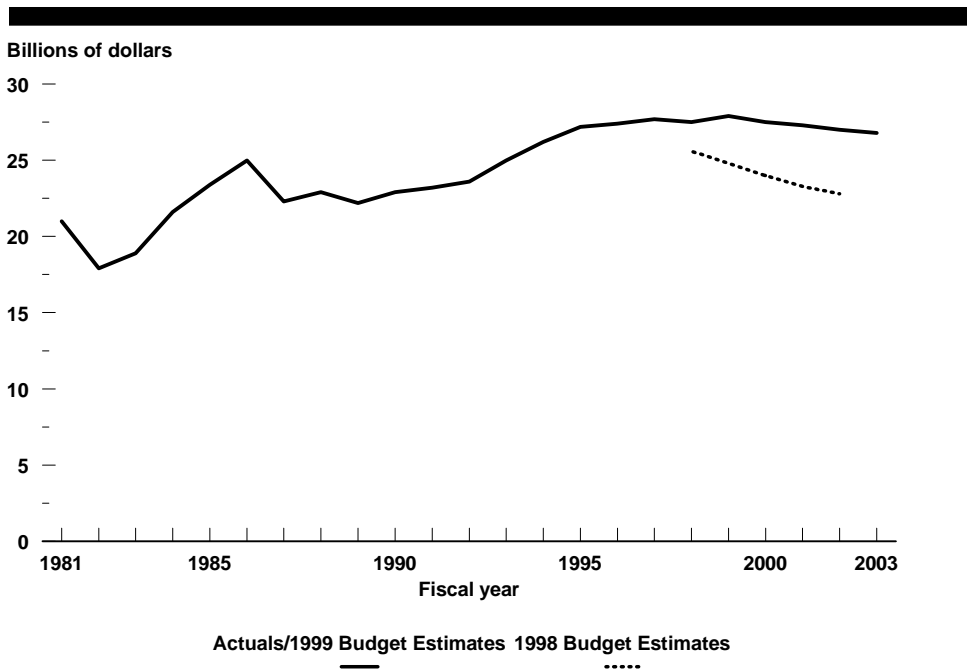
Outlays for Transportation (400) include federal-aid highways spending from the transportation trust fund, federal transit formula grants, and facilities and equipment outlays from the airport and airway trust fund. In constant dollars, the trend for outlays has been generally upward. Outlays

<sup>10</sup>The functional totals for education and training are lower than the category (character class) of investment called education and training. This is because some education and training in federal agencies is classified in functional reporting as part of the agency mission (for example, the Defense function) rather than the education and training function.



reached a high of about \$28 billion in 1997. However, as illustrated in figure 10, 1999 budget estimates for 1998 through 2003 remain in the \$27 billion to \$28 billion range as compared to 1998 budget estimates which had projected a steady decrease after 1997 to \$23 billion in 2002.

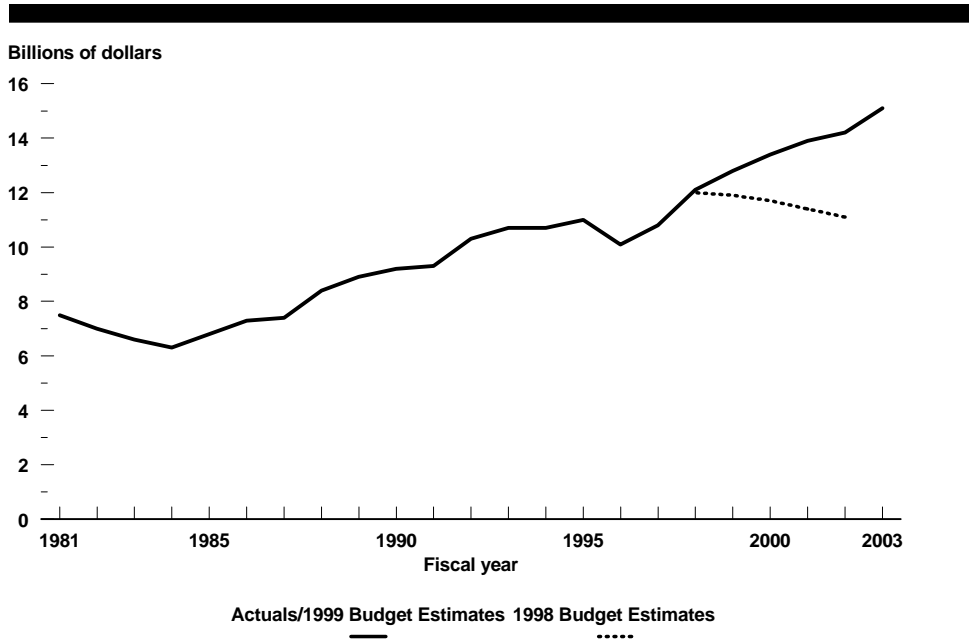
**Figure 10: Investment Outlays for the Transportation Function in Constant 1992 Dollars, Fiscal Years 1981 Through 2003**



Note: 1998 through 2003 are estimates.

Constant dollar investment outlays in the Health function (550), which are largely R&D carried out by the National Institutes of Health fell from about \$8 billion in 1981 to \$6 billion in 1984. They rose fairly consistently to \$11 billion in 1995, dropping to \$10 billion in 1996 and then rising again. Estimates in the 1999 budget increase from \$12 billion in 1998 to \$15 billion in 2003, in contrast to last year's estimates which showed a gradual decline to \$11 billion in 2002. (See figure 11.)

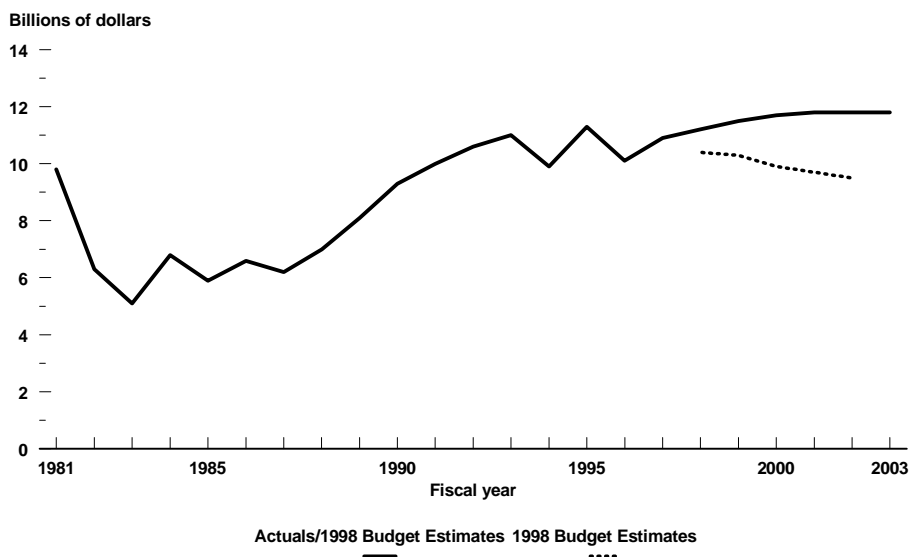
**Figure 11: Investment Outlays for the Health Function in Constant 1992 Dollars, Fiscal Years 1981 Through 2003**



Note: 1998 through 2003 are estimates.

As shown in figure 12, the General Science, Space, and Technology function (250), which includes National Science Foundation and NASA research, dropped sharply in constant dollar outlays from \$10 billion in 1981 to \$5 billion in 1983. Outlays then continued a fairly steady increase to \$11 billion in 1995. In 1996 outlays dropped to \$10 billion before beginning a steady increase to \$12 billion in estimated annual outlays from 2000 through 2003. In contrast, estimated future outlays in the 1998 budget were \$10 billion annually from 1998 through 2002.

**Figure 12: Investment Outlays for the General Science, Space, and Technology Function in Constant 1992 Dollars, Fiscal Years 1981 Through 2003**



Note: 1998 through 2003 are estimates.

## Stable Trends

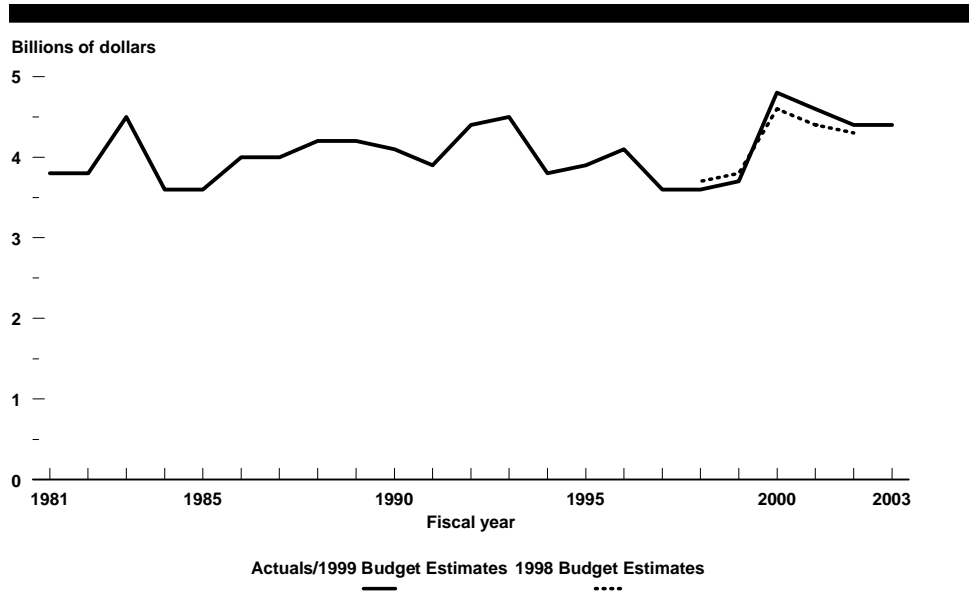
Investment outlays for the National Defense function (050), which includes basic and applied military R&D,<sup>11</sup> have hovered around the \$4 billion mark in constant dollar investment outlays from 1981 through 1997. Estimates in the 1999 budget are at the \$4 billion to \$5 billion level annually from 1998 through 2003. Estimates from the 1998 budget were slightly higher than the current estimates for 1998 and 1999, but slightly lower than the current estimates for 2000 through 2002. (See figure 13.)

Under our definition of investment, this function does not include military construction, weapons procurement, defense developmental research, and atomic energy defense activities. Basic and applied research are included because of possible adaptation to civilian use, particularly in the aviation industry. Others may have a different opinion on what defense items to include as investment. For example, OMB includes only defense basic research in its national capital<sup>12</sup> presentation.

<sup>11</sup>In our 1997 report, [GAO/AIMD-97-88](#), May 21, 1997, we included basic and developmental R&D for Defense. Those numbers were considerably higher than the results for this analysis. References to 1998 budget estimates in this report are based on a revision of the numbers to be consistent with contents in the current analysis.

<sup>12</sup>OMB's national capital presentation is contained in table 6-10 of the Analytical Perspectives of the President's 1999 budget and is based upon the GAO definition of investment. That presentation contains slightly different numbers because of differences in some items considered to be investment.

**Figure 13: Investment Outlays for the National Defense Function in Constant 1992 Dollars, Fiscal Years 1981 Through 2003**

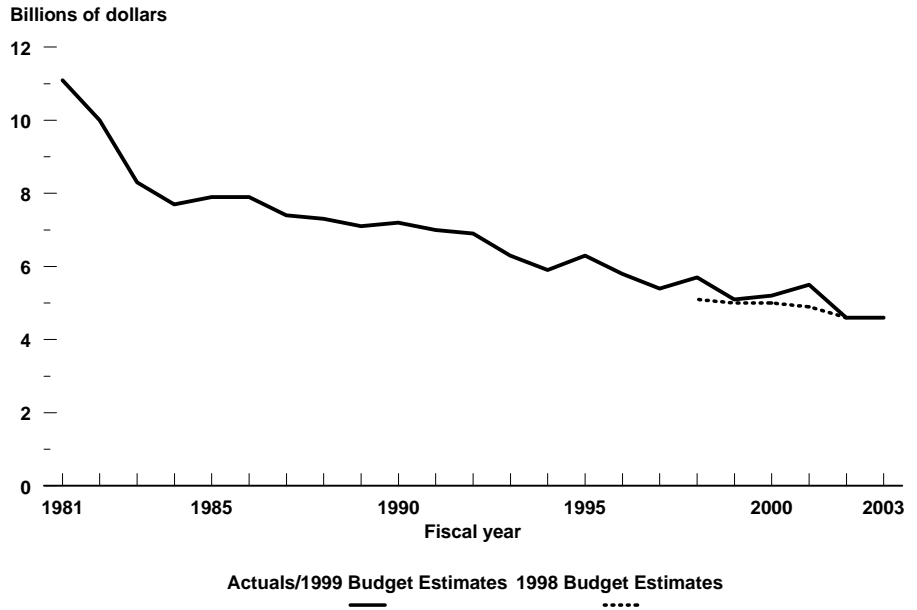


Note: 1998 through 2003 are estimates.

## Downward Trends

Investment outlays in the Natural Resources and Environment function (300), which includes items such as Environmental Protection Agency activities, show a continuous downward trend from 1981 through 2003. As seen in figure 14, constant dollar outlays of \$11 billion in 1981 decreased to slightly over \$5 billion in 1997 with a few intervening small upswings. Estimates in the 1999 budget for 1998 through 2003 show a continuing decline to less than \$5 billion. Although the 1999 budget estimates were slightly higher than those in the 1998 budget, the downward trend continues.

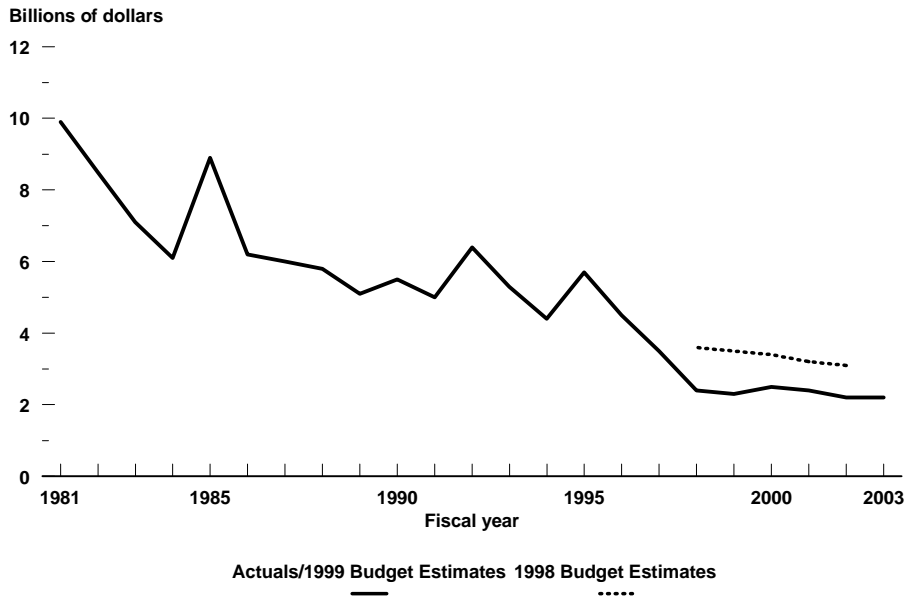
**Figure 14: Investment Outlays for the Natural Resources and Environment Function in Constant 1992 Dollars, Fiscal Years 1981 Through 2003**



Note: 1998 through 2003 are estimates.

Investment outlays in the Energy function (270), which includes Tennessee Valley Authority and Department of Energy activities, show a downward trend similar to the natural resources function. As seen in figure 15, constant dollar outlays were almost \$10 billion in 1981 but dropped to under \$4 billion in 1997. Despite upward spikes in outlays in 1985, 1992, and 1995, the overall trend was still downward. Estimated outlays for 1998 to 2003 show a continued decline to about \$2 billion. This year's estimates for 1998 through 2002 are lower than those in last year's budget for each of the outyears, but the same downward trend is present.

Figure 15: Investment Outlays for the Energy Function in Constant 1992 Dollars, Fiscal Years 1981 Through 2003



Note: 1998 through 2003 are estimates.

We are sending copies of this report to the Chairman of the Senate Budget Committee, the Chairman of the House Science Committee, and the Chairman and Ranking Minority Member of the House Budget Committee. Copies will also be sent to others on request.

Please contact me at (202) 512-9142 if you or your staffs have any questions concerning this letter. Christine Bonham, Assistant Director, and Robert Sexton and John Mingus, Senior Evaluators, were the major contributors to this report.

Susan J. Irving  
Associate Director, Budget Issues

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