

Special Federal Budget Issue — February 7, 2003

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President's FY04 Budget Has TBED, S&T Winners and Losers

Each year SSTI provides a brief review of the President's budget request for selected programs and research areas of interest to many in the technology-based economic development community, highlighting the changes over the previous year's appropriation levels. The Bush Administration's FY 2004 budget request offers a mixed bag — there's some good news and some bad news.

For FY04, the Administration has requested record levels of spending on research and development, with priority areas such as R&D for fighting bioterrorism, nanotechnology, fuel cells, and networking and information technology receiving sizable increases. The biotech community, however, is sent notice that five years of the Bush and Clinton Administrations recommending double-digit increases for the National Institutes of Health (NIH) have ended. NIH is looking at only a 1.8 percent growth overall. Supporters of doubling the National Science Foundation (NSF) budget over the next five years see the 8.9 percent increase slated for the agency in FY04 will make the goal fairly difficult to reach.

It's a very mixed budget, however, for programs that support many of the priorities for the programs and client companies of state, local and university technology-based economic development efforts. For instance, the Department of Commerce's Economic

Development Administration is funded at \$365 million while the Advanced Technology Program and the Manufacturing Extension Program are both slated for elimination. New USDA rural investment programs and enterprise zones would be defunded while funding for loans for rural broadband access would be 2.5 times greater than the FY 2003 request. Two better known Digital Divide programs, the Department of Education's Community Technology Centers and the National Telecommunications and Information Administration's Technology Opportunities Program, are both eliminated.

EPSCoR and EPSCoR-like programs see mixed messages as well. Cuts are recommended in the Defense budget, flatlined in NSF and increased by 10 percent in NIH.

In other agencies, other popular TBED programs take the ax. DOE's Industries of the Future - Specific grants is cut in half, and NASA's Commercial Technology Programs is to be eliminated.

The Fiscal Year That Almost Isn't

Comparing the FY04 request to "previous levels" is a bit misleading this year, making any analysis a risky venture. For those following Congressional progress, or lack thereof, on the FY 2003 budget, it comes as no surprise when we say FY03 appropriations do not exist for *any* federal agency, with the exception of the Department of Defense and military construction.

The latest news on the FY03 budget battle is not particularly encouraging either. The House passed another Continuing Resolution this week keeping the federal government running until February 20. Senator Ted Stevens (R-AK), chair of the Senate Appropriations Committee is threatening that if the budget isn't done by February 14, then he supports a continuing resolution for the remainder of the fiscal year, which ends September 30. The chief effect of such a resolution setting FY03 spending at FY02 levels is agencies and programs slated for increases in FY03 would be hurt, including NIH and NSF.

As a result, we're left to compare the Administration's FY04 request to the Administration's FY03 request for all agencies but Defense, and occasionally to the FY02 appropriation when the changes are dramatic. We've commented when the intent of Congress suggests FY03 funding will be significantly different than the Administration's FY04 request, *if* the omnibus appropriations bill passes. Relative changes with the FY03 budget request levels are given in parentheses, unless noted.

Because of its length, this year's synopsis is presented between two email messages. The complete review also is available on SSTI's website at:
<http://www.ssti.org/Digest/2003/020703.htm>

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Multi-Agency and Government-wide Initiatives

The White House Office of Science and Technology Policy (OSTP) has highlighted several of the research and technology themes within the President's FY 2004 Budget Request, and select initiatives are highlighted below. In addition, the Administration is calling for the **Federal Research and Experimentation Tax Credit** to be made permanent.

Promoting Innovation

The Administration's budget provides a \$123 billion total investment in research and development (R&D), up 7 percent from FY 2003. Included within this amount are the following:

- **Combating Terrorism**: The FY04 budget provides \$3.2 billion in R&D funding for homeland security and combating terrorism initiatives. More than \$900 million is allocated for combating terrorism research in the Department of Homeland Security alone. Other R&D will be focused on countering chemical, biological, radiological, nuclear and other catastrophic threats. Coordinated federal efforts will emphasize strategies to combat weapons of mass destruction; information analysis; social, behavioral, and educational aspects of combating terrorism; border entry/exit technologies; and developing standards relevant to both homeland and national security.
- **Networking and Information Technology R&D Program (NITRD)**: The Administration's FY04 budget requests \$2.2 billion for the NITRD Program, a 6 percent increase over FY03. At \$724 million, NSF receives the largest share of FY04 funding, but the Department of Health and Human Services (HHS) will receive the largest increase – up 18 percent to \$441 million – particularly in bioinformatics R&D. The NITRD agencies leverage resources to make extensive advances in computing and networking by coordinating key research activities. In 2004, research emphasis will be placed on network security, reliability and privacy; high-assurance software and systems; micro- and embedded sensor technologies; revolutionary architecture; and social and economic impacts of IT.
- **National Nanotechnology Initiative (NNI)**: The Administration's \$847 million budget request for the NNI reflects a 9.5 percent increase over FY03. Ten federal agencies currently are requesting funding for NNI activities, with the National Science Foundation (NSF) having the largest share of funding. The NNI strategy for 2004 entails additional investment in fundamental research across science and engineering fields through investment in activities at universities, centers of excellence and supporting infrastructure.

Climate Change

The proposed FY 2004 budget includes an increase of 355 percent, to \$182 million, for the **Climate Change Research Initiative** (CCRI). Investment will be used to develop resources to assist policymaking, supply computer resources for climate modeling, and improve observations and data management for a climate observing system. The CCRI and the **US Global Change Research Program** combine to form the **Climate Change Science Program** (CCSP). The \$1.75 billion FY04 budget request for the CCSP remains approximately the same as it was in FY03.

K-12 Mathematics and Science Education R&D Initiatives

- **Math and Science Partnership Program**: Requested FY04 funding for this initiative totals \$212.5 million for the Department of Education and NSF. Scientists and mathematicians from institutions of higher education, and teachers and administrators from primary and secondary schools, are brought together to address methods for revising and strengthening how these subjects are currently taught.
- **Interagency Education Research Initiative (IERI)**: A total of \$50 million is requested in FY04, with NSF receiving half of the funding. The goal of the IERI is to improve preK-12 achievement in math, reading and science. This is accomplished by performing research on the potential of applying educational

practices, which have proven effective with a limited number of students or classrooms, on a larger scale.

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U.S. Department of Agriculture (USDA)

The Administration's \$74 billion FY 2004 budget request for USDA is 2 percent higher than FY 2003. Discretionary spending, however, would decrease by \$311 million.

The 2002 Farm Bill authorized a number of new programs including a value-added grants program, a loan and grant program for renewable energy and energy efficiency, and two additional business lending programs — a rural business investment program and a rural strategic investment program. The Administration's 2004 budget request proposes blocking some of the mandatory funding the 2002 Farm Bill provided for these programs. It also includes discretionary funding instead of mandatory funding for the value-added and renewable energy programs.

- The **Renewable Energy** program would receive \$3 million of discretionary funding, 83 percent less than the \$18 million under the mandatory funding arrangement.
- The **Value Added Agricultural Product Development** program would receive \$2 million instead of \$10 million.
- Both the **Rural Business Investment Program** and the **Rural Strategic Investment Program** would be defunded. They would have received \$44 million and \$85 million, respectively, in mandatory funding.

New funding requests also are made in the following programs under the Rural Utilities Service (RUS) and Rural Business-Cooperative Service:

- **Distance Learning & Telemedicine (DLT) Program** — \$25 million in grants (no change) and \$50 million in direct loans (no change) to meet the educational and health care needs of rural America through advanced telecommunications technologies.
- **Rural Broadband Access Loan and Loan Guarantee Program** — \$196 million in loans (\$116 million increase) to facilitate deployment of new and innovative technologies that provide two-way data transmission of 200 kbps or more in communities with populations of up to 20,000.
- **Broadband and Internet Services Grants Program** — \$2 million (no change) to finance the installation of various modes of broadband transmission capacity, including fiber optic cable for high speed Internet access, and to provide local dial-up internet service to under served areas.
- **Business and Industry Guaranteed Loans** — \$602 million (\$131 million decrease) to provide protection against loan losses so that private lenders are willing to extend credit to establish, expand or modernize rural businesses. Special efforts are being made to help rural communities diversify their economies, particularly into value-added processing, by focusing on cooperative ventures. The cut is explained in the budget summary as being due to higher than anticipated defaults and lower interest rates causing decreased demand.
- **Empowerment Zones & Enterprise Community Program** and the Rural Economic Area Partnership Zones — No new funding was requested for FY04, as was the case with the FY03 budget. The EZ/EC Program seeks to empower

communities by supporting local plans that coordinate economic, physical, environmental, community and human development.

- [Rural Business Enterprise Grants](#) — \$44 million (no change) to support public entities and non-profit corporations that assist small and emerging business.
- [Rural Business Opportunity Grants](#) — \$3 million (no change) to promote economic development in rural communities with exceptional needs. Program provides grants to pay costs of providing economic planning for rural communities, technical assistance for rural businesses, or training for rural entrepreneurs or economic development officials.
- [Rural Economic Development Grants](#) — \$15 million (no change) for grants to electric and telephone utilities. Program promotes sustainable rural economic development and job creation projects through the operation of a revolving loan fund program.

USDA research activities are coordinated by the [Research, Education and Economics \(REE\)](#) agencies, which oversee the discovery, application and dissemination of information and technologies spanning the biological, physical and social sciences. This is accomplished through agricultural research, education, and extension activities and economic and statistical analysis. REE's total FY 2004 funding of \$2.37 billion (\$10 million increase) is distributed among four areas:

- [Agricultural Research Service](#) — \$1.03 billion (\$32 million decrease), including \$946 million for research and information in air, animal, plant, soil and water sciences; post-harvest food safety; human nutrition; and integration of agricultural systems. ARS is the principal in-house research agency in USDA in the area of natural and biological sciences.
- [Cooperative State Research, Education and Extension Service](#) — \$1.02 billion (\$13 million decrease) to support research partnerships with land-grant and non-land grant colleges and universities in carrying out extramural research, higher education and extension activities.
 - [National Research Initiative \(NRI\)](#) — \$200 million (\$40 million decrease). The FY04 request is 33 percent higher than the FY02 appropriation of \$150 million. Animal genomics is slated for a \$10 million increase in the NRI, and a corresponding increase of \$4 million appears in the ARS budget.
 - [Initiative for Future Agriculture and Food Systems](#) — Mandatory funding for this program has been blocked since at least FY02.
- [Economic Research Service](#) — \$77 million (\$5 million increase) for the principal intramural economic and social science research agency in USDA.
- [National Agricultural Statistics Service](#) — \$136 million (\$5 million increase) to conduct the Census of Agriculture and provide the official current statistics on agricultural production and indicators of the economic and environmental welfare of the farm sector.

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[Department of Commerce](#)

The Administration's FY 2004 \$5.407 billion budget request for the Department of Commerce reflects a \$73.89 million increase over the FY 2003 request. Several programs of interest to the tech-based economic development community experience significant changes to their funding levels.

Commerce's [Economic Development Administration](#) (EDA) provides grants to states, regions and communities to help create wealth and minimize poverty by promoting a favorable business environment to attract private capital investments and high skill, high wage jobs. The FY04 request for EDA is \$364.4 million, \$33.4 million of which is for administration (\$2.7 million more than FY03). Funding request levels are included for the following individual grant programs:

- **Public Works Grants** — \$232.1 million (\$2.1 million decrease) to support the construction or expansion of infrastructure and development facilities that are needed for industrial and commercial development, including water and sewer systems; telecommunications and other electronic commerce infrastructure; industrial parks; skill-training facilities; business incubator facilities that support entrepreneurial development; eco-industrial development projects; and brownfields redevelopment.
- **Economic Adjustment** — \$54.7 million (\$10.3 million increase) for grants to help communities adjust to gradual erosion or a sudden downturn in economic conditions that can cause structural damage to the underlying economic base, including brownfield redevelopment. "Funds will be invested in projects such as brownfields redevelopment and high-technology development and manufacturing, along with incubators to foster such development. EDA will also fund innovative regional strategy projects, such as eco-industrial parks and high tech incubators as well as traditional types of investments. Investments will be based on regional strategies that have the greatest impact in terms of quality job creation, private leveraging and overall economic impacts."
- **Planning Grants** — \$22.3 million (\$49,000 decrease) to support the design and implementation of effective economic development policies, programs and strategies of local economic development organizations, states, regional planning authorities and communities.
- **Trade Adjustment Assistance** — \$13 million (no change) for assistance to U.S. firms and industries injured as a result of international trade competition.
- **Technical Assistance** — \$8.4 million (\$124,000 decrease) to provide technical assistance and expertise, such as feasibility and industry studies for economic development efforts.
- **Research and Evaluation** — \$500,000 (\$52,000 decrease) to provide a coordinated, comprehensive information gathering and distribution process, and serve as the agency's conduit and repository for best practices in economic development.

The [Technology Administration](#) (TA) works with U.S. industry to maximize technology's contribution to U.S. economic growth. Led by the Under Secretary for Technology, TA fulfills its broad responsibilities through its component organizations: the Office of Technology Policy (OTP), the National Institute of Standards and Technology (NIST) and the National Technical Information Service (NTIS) with its National Telecommunications and Information Administration (NTIA).

- [Under Secretary for Technology/OTP](#) — \$8.015 million (\$129,000 increase). Program provides leadership and policy guidance in promoting national technology policies that facilitate U.S. preeminence in key areas of science and technology and leverage technological innovation to strengthen American global competitiveness. The office also administers the National Medal of Technology.
- [NIST Advanced Technology Program \(ATP\)](#) — \$30.8 million (\$80 million less than the FY03 request and approximately \$150 million less than Congress is considering for FY03) for grants to accelerate private investment in and development of high risk, broad impact technologies. The FY04 OMB budget justification explains "...the FY 2004 Budget proposes to terminate the Advanced

Technology Program (ATP). Funding is provided for administrative costs and close out. The Administration believes that other federally funded research and development programs are more effective and of higher priority. Further, large shares of ATP funding has gone to major corporations which do not need subsidies. Finally ATP-funded projects often have been similar to those being carried out by firms not receiving such subsidies."

- **[NIST Manufacturing Extension Partnership \(MEP\)](#)** — The FY 2004 request, \$12.6 million, repeats the Administration's attempt to return the MEP to its original funding plan, which called for the phase-out of federal monies to MEP centers after six years of funding. Congress appears to be prepared to provide at least \$103.5 million for FY03, however. MEP assists small manufacturing establishments in assimilating new technologies and manufacturing practices through government-industry partnerships and extension services.
- **[NIST Baldrige National Quality Program](#)** — \$5.795 million (no change). Program catalyzes and rewards continuous quality and performance improvement practices in U.S. businesses and educational and healthcare organizations.
- **[NTIA Technology Opportunities Program](#)** — The Administration requested the program's termination in both FY 2003 and FY 2004. The FY 2004 request is zero, while the FY 2003 request included \$212,000 for program close out. The OMB budget justification states, "The Technology Opportunities Program grants have demonstrated the use of advanced telecommunications technology to enhance the delivery of social services, such as education, health care and public safety. This program has fulfilled its mission and is proposed for termination."

The **[Minority Business Development Agency](#)** (MBDA) would receive \$29.487 million in FY04, an increase of \$0.581 million over the FY03 request. MBDA provides a variety of direct and indirect business assistance services through public-private sector partnerships, including funding for Business Development Centers (BDCs), Native American Business Development Centers (NABDCs), and Minority Business Opportunity Committees.

The **[National Oceanic and Atmospheric Administration](#)** (NOAA) would receive \$3.326 billion in FY04, or \$190 million more than FY03. NOAA components supporting significant research activity include:

- **National Marine Fisheries Service** — \$620.96 million (\$15.87 million increase) for research in the variables affecting the abundance and variety of marine fisheries. The FY04 budget includes a \$2 million increase for research in the effects of climate change on marine and coastal ecosystems, but a \$1.5 million reduction to the Science and Technology base line item.
- **National Ocean Service** — \$391.03 million (\$6.5 million increase) to support coastal science and estuarine research reserves of national significance. The FY04 budget increase includes \$1 million to research, develop and implement new oceanographic models for key ports.
- **[Oceanic and Atmospheric Research \(OAR\)](#)** — \$366.5 million (\$70.2 million increase) for the research and technology development necessary to improve outlooks, solar-terrestrial forecasts and marine services. The FY04 request includes a \$13.4 million increase for NOAA's portion of the Climate Change Research Initiative. The National Sea Grant College Program, which the Administration had recommended be transferred to NSF last year, is restored to the OAR line item, accounting for \$57.4 million of the service's increase. OAR promotes economic growth through efforts in marine biotechnology; sustainable

usage of coastal, marine and Great Lakes resources; and development of environmental observing technologies.

The [U.S. Patent and Trademark Office](#) (USPTO) would receive \$1.404 billion in FY04, a \$70 million increase from the FY03 request. USPTO examines patent applications, grants patent protection for qualified inventions and disseminates technological information disclosed in patents. The office also examines trademark applications and provides registration to owners of qualified trademarks.

The [Bureau of Economic Analysis](#) (BEA) would receive \$84.76 million in FY04, or \$11.54 million more than FY03. BEA seeks to strengthen the understanding of the U.S. economy and its competitive position by providing the most relevant and accurate GDP and economic accounts data in a timely and cost-effective manner.

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Department of Defense (DoD)

The Administration's FY 2004 budget request for DoD is \$379.9 billion, a \$15.3 billion increase over the FY 2003 appropriations — DoD is the only department to have a passed spending bill this year. Overall funding for defense science and technology research, which is defined as basic research, applied research, and advanced technology development, drops by \$160 million in the FY04 request. The breakdown is as follows:

Basic Research — \$1.315 billion (1.8 percent decrease)

- Army - \$330 million (57 percent increase)
- Navy - \$456 million (16 percent increase)
- Air Force - \$308 million (49.5 percent increase)
- Defense Wide - \$221 million (58.4 percent decrease)

Applied Research — \$3.735 billion (10 percent decrease)

- Army - \$677 million (15 percent decrease)
- Navy - \$555 million (32 percent decrease)
- Air Force - \$760 million (4 percent decrease)
- Defense Wide - \$1.743 billion (no change)

Advanced Technology Development — \$5.367 billion (\$278 million increase)

- Army - \$845 million (17 percent decrease)
- Navy - \$650 million (26 percent decrease)
- Air Force - \$1.301 billion (93 percent increase)
- Defense Wide - \$2.571 billion (2 percent increase)

Other DoD programs of interest include:

- [University Research Initiatives](#) — \$247.5 million (\$12.8 million increase) to improve the quality of research performed at universities to meet Defense needs.
- [Defense Experimental Program to Stimulate Competitive Research](#) — \$9.7 million (41 percent decrease) to improve the capabilities of U.S. institutions of

higher education to conduct research and to educate scientists and engineers in areas important to national defense.

- [Dual Use Science and Technology](#) program is aimed at developing technologies that have both military and commercial potential. Partnerships with industry are sought through this program.
 - Airforce - \$10.6 million (1.8 percent increase)
 - Navy - none requested (no funding in FY03)
 - Army - none requested (no funding in FY03)
- [Procurement Technical Assistance Centers \(PTACs\)](#) — \$19.158 million (8.8 percent decrease). PTA Centers are a local resource available that can provide assistance to business firms in marketing products and services to the federal, state and local governments.
- [University and Industry Research Centers](#) — \$84.8 million through the Department of the Army (1.8 percent increase)

The following two programs would not receive funding under the Administration's FY04 budget request:

- [Commercial Operations and Support Savings Initiative](#) — received \$15.5 million in FY03. Program attempts to reduce operations and support costs by inserting commercial items or technologies into military systems.
- [Government/Industry Cosponsorship](#) — received \$8.9 million in FY03.

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[Department of Education \(ED\)](#)

At \$53.1 billion, the Administration's FY 2004 budget request for ED shows a 5.6 percent increase (\$2.8 billion) over the FY 2003 spending plan. The new budget request includes \$2.85 billion (no change) for [Improving Teacher Quality State Grants](#), which give states and local educational agencies resources to select and implement research-based strategies for developing a high-quality teaching force and improving student achievement. The request also continues funding at the 2003 level, \$12.5 million, for [Mathematics and Science Partnerships](#), a program for improving academic achievement in math and science. The majority of funding for this multi-agency initiative is under the National Science Foundation.

The Administration's FY03 and FY04 requests identify 45 ED programs for termination, including the [Community Technology Centers](#) (\$32.5 million FY02 appropriation). The ED budget summary explains the program "supports centers that offer disadvantaged residents of economically distressed areas access to computers and training. Program has limited impact and funding for similar activities is available through other Federal agencies."

Also slated for termination is the [Projects With Industry](#) program (\$22.1 million FY02 appropriation) that helps individuals with disabilities obtain employment and advance their careers in the competitive labor market.

Additional requests for programs include:

- [Educational Technology State Grants](#) — \$700.5 million (no change) to improve student achievement through the effective integration of technology into

- classroom instruction, including training for teachers to use technology, to develop courses in information technology, and to purchase technology-based curricula.
- **Research and Dissemination** — \$185 million (\$10 million increase). Program expands efforts through the newly created [Institute of Education Sciences](#) (formerly the Office of Educational Research and Improvement or OERI) to develop proven, research-based practices for improving student achievement and disseminate those practices. The ED SBIR program also falls within this line item.
 - [Regional Educational Laboratories](#) — The FY04 request eliminates this network of 10 regional laboratories that, according to ED, "have not consistently provided high quality research and development products or evidence-based training and technical assistance." The laboratories received \$67 million in FY02, and \$68 million was requested in FY03.
 - **Research and Innovation** (Office of Special Education and Rehabilitation Services) — \$78.4 million (no change) for developing new knowledge in rehabilitation services and disabilities through research, demonstrations and dissemination activities. The FY04 request includes about \$17.3 million for new projects and \$60.2 million for continuations.
 - [21st Century Community Learning Centers](#) — \$600 million (\$400 million decrease) for before- and after-school academic enrichment opportunities, particularly for children who attend high-poverty or low-performing schools. ED will no longer hold discretionary grant competitions for the centers because the program is transitioning to a state-administered program.

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Department of Energy (DOE)

The Administration's FY 2004 budget request for DOE is \$23.4 billion — 5.9 percent or \$1.311 billion more than the FY 2003 request. Part of that increase, 11.7 percent, would go to the [National Nuclear Security Administration](#). Another part, 4.6 percent, would go to the [Environment](#) budget, which is \$8.030 billion in FY04. The [Science](#) budget would see only a \$47.1 million increase (1.4 percent), and the \$2.45 billion [Energy](#) budget is roughly \$9 million higher in FY04 (0.4 percent increase).

Among major DOE programs receiving FY04 funding, the **Coal Research Initiative** would receive \$321 million between its two components, the Clean Coal Power Initiative (\$130 million) and the current coal R&D program (\$190.5 million). The \$130 million will be used for the second round of competition to select industry-proposed clean coal power projects.

Also included in the FY04 budget request is \$197 million for **nanoscience research**, a \$64 million increase over FY03 program funding. Within this amount, DOE will design and construct five new nanoscience research centers. Other Office of Science initiatives are shown with respective increased or decreased levels by percent from the FY03 budget request:

- **Advanced Scientific Computing Research** — \$173.5 million (4.2 percent increase).
- **Basic Energy Sciences Program** — \$1.01 billion (1 percent decrease).
- **Biological and Environmental Research** — \$499.5 million (3.2 percent decrease).

- **Fusion Energy Sciences Program** — \$257.3 million (no change).
- **High Energy Physics** — \$738.0 million (1.8 percent decrease).
- **Nuclear Physics** — \$389.4 million (1.8 percent decrease).

The total request for **Energy Efficiency and Renewable Energy (EE)**, \$1.32 billion, remains essentially flat compared to the FY03 level. However, due to reorganization in 2002 that resulted in 11 program offices and a centralized administration office, EE funded activities will receive \$37.2 million more in FY04 (9.1 percent increase) than they did in FY03. This additional funding is reflected in EE's **Energy Supply** account. Funding for **Energy Conservation** programs is down 3.9 percent from a year ago.

Funding for all of EE's fuel cell activities will support the new **FreedomFuel Initiative** and **FreedomCAR**. The Administration has requested \$181 million for FreedomFuel, an R&D initiative focused on hydrogen fuel production, storage and distribution. The new initiative is expected to complement FreedomCAR, which would receive \$169 million in FY04 to support technologies that enable the mass production of hydrogen powered fuel cell vehicles. Additionally, \$5 million is provided for another new initiative, **Solid State Lighting**, to develop illumination technologies that could achieve energy efficiencies as high as 70 percent. Other Office of Energy programs of interest to receive FY04 funding include:

- **Advanced Fuel Cycle Initiative** — \$63.03 million (245.9 percent increase).
- **Advanced Metallurgical Processes Research** — \$10 million (88.7 percent increase)
- **Biomass and Biorefinery Systems R&D** — \$78.6 million FY04 funding (71.5 percent decrease) is the combined total between the Energy Supply and Energy Conservation accounts. To help offset the decrease, USDA will receive \$14 million in mandatory biomass R&D funding in FY04. The program aims at reducing processing energy requirements and production costs in biomass processing plants and future integrated industrial biorefineries.
- **Coal Research Initiative** — \$320.5 million (1.6 percent increase)
 - Advanced Research — \$37.5 million (18.3 percent increase)
 - Fuels — \$5 million (no change)
 - Central Systems — \$86 million (1.2 percent increase)
 - Clean Coal Power Initiative — \$130 million (15.4 percent decrease)
 - Sequestrations R&D — \$62 million (40.9 percent increase)
- **Cooperative Research and Development** — \$6 million (no change)
- **Hydrogen Technology** — \$88.0 million (120.6 percent increase). The \$48.1 million increase will support FreedomFuel research.
- **Industries of the Future** — **Specific:** \$24.04 million (54 percent decrease). The Administration's budget proposes to close out this program upon the successful completion of existing high-payoff projects and near-term commercialization efforts that industry can complete on its own. The 54 percent slash in funding is evenly absorbed by all participating industries.
- **Industries of the Future** — **Crosscutting:** \$34.4 million (no change). Program focuses on three areas that offer major improvements in energy efficiency and emissions reduction, including advanced industrial materials, high-efficiency/clean combustion technologies, and advanced sensors/control systems.
- **National Climate Change Technology Initiative (NCCTI)** — \$40 million in FY04 funding for this program cuts across three program offices: \$24.5 million for EE, \$13.2 million for Fossil Energy and \$2.3 million for Nuclear Energy, Science and Technology. Program supports applied research to reduce, avoid or capture greenhouse gas emissions.

- **Natural Gas Technologies** — \$26.6 million (17.6 percent increase).
- **Nuclear Energy Research Initiative (NERI)** — \$12 million (52 percent decrease).
- **Nuclear Energy Technologies** — \$48 million (3.2 percent increase).
- **Nuclear Hydrogen Initiative** — \$4 million (no funding requested in FY03). Program supports the FreedomFuel Initiative.
- **Other Power Systems** — \$47 million (5.1 percent decrease).
 - Distributed Generation Fuel Cells — \$44.5 million (5.6 percent decrease).
 - Novel Systems — \$2.5 million (no change)
- **Petroleum/Oil Technology** — \$15 million (57.6 percent decrease).
- **University Reactor Fuel Assistance and Support** — \$18.5 million (5.7 percent increase).
- **Vehicle Technologies** — \$157.6 million (2.6 percent increase). Program supports the FreedomCAR partnership, among other initiatives.

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Department of Health and Human Services (HHS)/ National Institutes of Health (NIH)

The vast majority of the research functions of HHS reside within the NIH, which, over the past five years, has seen two-digit increases each year as a result of a concerted effort to double the NIH budget by FY 2003. Spending through the 27 NIH institutes and centers now accounts for roughly 40 percent of the HHS budget annually.

For the FY 2004 NIH budget, the Administration requested a more modest \$27.893 billion, only 1.8 percent higher than the FY03 request. When adjusted for one-time facilities costs in FY03, the total available for NIH non-biodefense research programs increases by 4.3 percent. The FY04 budget supports NIH's request of \$1.625 billion for biodefense research.

With a concerted and directed effort, state and local tech-based economic development entities and their partners could become effective collaborators as NIH directs even more grant and funding resources in FY04 toward multidisciplinary research teams spanning university departments, geographical barriers and public-private sectors. The NIH FY04 budget summary contends "the NIH will need to address the role of government in facilitating culture change and work with the private sector, universities, professional societies, and researchers to implement such change."

Other NIH programs of note:

- **Institutional Development Award (IdeA) Program** — \$210 million (\$25 million increase). This increase supports NIH's continuing efforts to develop a critical mass of competitive biomedical researchers in 23 states that have not fully participated in NIH research funding in the past.
- **Small Business Innovation Research/Small Business Technology Transfer Research (SBIR/STTR) Programs** — \$602.179 million (8.9 percent increase). Programs support domestic small business concerns to engage in Research/Research and Development (R/R&D) that has the potential for commercialization.

The Institutes' biodefense research budget more than doubles (+117 percent) from the FY03 Amended President's Budget. The [National Institute of Allergy and Infectious Diseases](#) (NIAID) will take the leadership role for NIH on biodefense. NIAID plans to create four Regional Centers of Excellence for Biodefense and Emerging Infectious Diseases to provide and maintain the R&D capacity necessary for identifying and responding to emerging diseases and bioterrorism events. NIAID also plans to expand the number of candidate drugs and vaccines under research. NIH will increase its interactions with collaborative partners in industry to foster translational research and increase the number of clinical research projects underway in the area.

Elsewhere within HHS, the FY04 request for the [Agency for Healthcare Research and Quality](#) (AHRQ) is \$211 million, \$27 million greater than the FY03 request, but \$37 million less than the FY02 actual appropriation. AHRQ is responsible for supporting, conducting and disseminating research that improves the outcomes and quality of health care, reduces costs, improves patient safety and broadens access to services. Funding is divided among two categories:

- **Patient Safety Research** — \$84 million (\$24 million increase). Of this total, \$50 million will support hospital-based information technology investments. An emphasis will be placed on small community and rural hospitals.
- **Other Quality, Cost-Effectiveness and Intramural Research** — \$127 million (\$3 million increase).

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[Department of Homeland Security \(DHS\)](#)

The Administration has requested a total budget of \$36.2 billion for the Department of Homeland Security, reflecting a \$22.1 billion increase over FY 2002 funding levels for functions formerly in other agencies and now consolidated within the Department. The majority of the R&D activities fall under the [Science and Technology Directorate](#), which would receive \$803 million in FY 2004 — an increase of \$242 million, or 43 percent, over FY03 requested funding levels.

Within the Directorate, \$350 million is requested for the [Homeland Security Advanced Research Projects Agency](#) (HSARPA). DHS will look to partner with the private sector and others in the deployment of innovative, high-payoff capabilities through HSARPA. Funding will target high-priority operational requirements including those for chemical, biological, radiological and nuclear counter measures; critical infrastructure protection; and conventional missions. Other priorities within the S&T directorate include evaluating and prototyping commercially available technologies and developing programs and facilities in the homeland security complex.

Additional Budget Highlights in the Science and Technology Directorate:

- **[Biological Countermeasures](#)** — \$365 million to develop and implement integrated systems to reduce the probability and consequences of a biological attack on the civilian population or agricultural system.
- **[Radiological/Nuclear Countermeasures](#)** — \$137 million for the development of measures that prevent the importation, transportation and subsequent detonation of a radiological or nuclear device.

- [Threat Vulnerability Testing and Assessments](#) — \$90 million to develop technologies and systems that enhance the department's ability to analyze threat information.
- [Chemical/High Explosives Countermeasures](#) — \$65 million to expand protection of civilians from chemical weapons attacks and enhance the work of the Transportation Security Administration to develop explosive detection and mitigation technologies against current and emerging threats.
- **University Programs, Emerging Threats, and Rapid Prototyping Program** — \$62 million would support key initiatives including creating strategic partnerships with the academic community, supporting cutting-edge research on emerging threats, and establishing the Homeland Security Institute.
- **Conventional Missions Program** — \$55 million to develop a program to support RDT&E and systems development for the U.S. Secret Service, the Borders and Transportation Security Directorate, and the Emergency Preparedness and Response Directorate.
- **Standards Program** — \$25 million to support a program that would be implemented through a partnership with the National Institute of Standards and Technology (NIST), the American National Standards Institute, and other federal agencies.

Another DHS budget request of potential interest is the [Information Analysis and Infrastructure Protection Program](#), which would receive \$299 million to work with states and industry to identify and prioritize protective measures to mitigate risks identified through threat-vulnerability-consequence mapping. These efforts will focus on the principal threats and wisely utilize scarce resources. This funding will also support training assistance, response planning and exercises, and technology transfer.

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[Department of Housing and Urban Development \(HUD\)](#)

For FY 2004, the Administration has requested \$31.3 billion for HUD. This represents a \$399 million increase over the FY 2003 request. HUD would fund [Community Development Block Grants](#) (CDBG) at \$4.436 billion, which is equal to the FY03 level. Funding for numerous other programs of interest, however, would be eliminated in HUD under the FY04 budget request, including:

- [Renewal Communities, Urban Empowerment Zones and Enterprise Communities \(RC/EZ/EC\)](#) — FY02 funding: \$45 million; FY03 request: \$0. Program offers tax incentives, technical assistance and historically grants to encourage economic development and investment in selected significantly distressed areas around the country.
- [Brownfield Redevelopment](#) — FY03 request: \$25 million. Program is designed to assist cities with the redevelopment of abandoned, idled and underused industrial and commercial facilities with expansion and redevelopment of real or perceived environmental contamination.
- [Network Neighborhood Initiative](#) — FY03 request: \$5 million. Program helps to create or expand computer technology centers in low-income housing or nearby communities.
- [Partnership for Advancing Technology in Housing \(PATH\)](#) — FY02 funding: \$8 million; FY03 request: \$0. Program is a public-private partnership aimed at reducing the cost and increasing the quality of housing through the application of technology.

- [Rural Housing and Economic Development](#) — FY02 funding: \$25 million; FY03 request: \$0. Program supports innovative housing and economic development activities in rural areas. Recipients have included local rural nonprofits, community development corporations (CDCs), state housing finance agencies (HFAs), state community and/or economic development agencies, and Indian tribes.

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[Department of Labor](#)

As a result of the Workforce Investment Act expiring in FY 2004, the Administration proposes to eliminate and consolidate a number of programs, including three [adult training and employment programs](#) – the WIA adult program, dislocated worker program, and Employment Service state grants – into a single \$3.1 billion grant program. The goal is to increase state administrative flexibility and to decrease duplicative functions. As a result, the DOL budget request for FY04 is \$58.477 billion, or more than \$15 billion less than the FY 2003 request.

The Administration has included its economic stimulus plan a \$3.6 billion proposal to allow states to create **Re-employment Accounts** for unemployed individuals. The Re-employment Accounts will provide up to \$3,000 to certain job seekers to allow them to purchase the training, re-employment or support services they need to get back to work. In addition to the services they select, individuals will still be able to receive free-of-charge, basic re-employment services (such as resume drafting) from states and One Stop Career Centers. If workers land a job within 13 weeks after starting unemployment insurance benefits, they may keep the money remaining in their account as a re-employment bonus. The FY04 cost of the proposal is \$2 billion.

The Administration also proposes eliminating the \$44.5 million [Youth Opportunity Grants](#) and replacing the \$1 billion **Youth Activities** account with a new **Youth Grants** program to focus on providing young people with a strong, core academic foundation in conjunction with appropriate supplemental vocational skills and training leading to post-secondary degree and certification options. The budget summary states the change will minimize overlap with Department of Education programs.

The [H-1B Training and Administration](#) is slated to receive \$129 million in FY04, a decrease of \$74 million from the FY03 request of \$203 million. Legislation authorizing the H-1B skill training program funded by fees imposed on employers applying for foreign workers expires at the end of FY03. Fees are expected to total \$98 million in FY03.

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[Department of Transportation \(DOT\)](#)

The FY 2004 budget includes \$54.3 billion for DOT, an overall increase of \$2.9 billion or 6 percent when compared to last year's \$51.4 billion request. This year, the U.S. Coast Guard and the Transportation Security Administration are being transferred to the new Department of Homeland Security.

[Federal Aviation Administration](#) — \$100 million for Research, Engineering, and Development (19 percent decrease).

[Federal Highway Administration](#) — \$121 million for Intelligent Transportation Systems (ITS) research, operational tests, and deployment to further increase the number of integrated ITS locations. In FY03, \$82 million was requested for ITS standards, research and development, and \$91 million was requested for ITS deployment.

[National Highway Traffic and Safety Administration](#) — \$68 million for research and analysis to provide leadership in the area of crash causation and crash prevention research, including developing studies and programs to determine the effects that crashes have on the human body. (11.5 percent increase)

[Federal Transit Administration](#) — \$49.8 million (\$800,000 increase) is requested for National Research.

- **National Research Program** — \$31.5 million for the (no change)
- **Transit Cooperative Research Program** — \$8.3 million (4 percent increase).
- **National Transit Institute training programs** — \$4 million (no change).
- [University Transportation Centers](#) — \$6 million (no change).

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[Environmental Protection Agency \(EPA\)](#)

The Administration's EPA budget request for FY 2004 is \$7.627 billion, an increase of one-tenth of one percent from the FY 2003 budget request. Funding for science programs, however, increases to \$357.1 million, up 8.9 percent from FY03. Funding for three areas within the EPA that will be involved intimately with Homeland Security experience dramatic changes in the FY04 request: **Communication and Information**, up to \$3.82 million from \$477,000 in FY03; **Critical Infrastructure Program**, up 49.4 percent to \$38.5 million; and **Preparedness, Response, and Recovery**, down 31 percent, from \$87.6 million to \$60.3 million.

Other EPA programs of interest are:

- [Research to Support Pollution Prevention](#) — \$37.9 million (14 percent decrease).
- [Regional Science and Technology](#) — \$3.6 million (less than one percent increase).
- [Human Health Research](#) — \$53.6 million (3.5 percent increase) to support research on the effect of pollution on the human body. Research efforts include how pollution affects people with asthma and other illnesses and how water contaminants affect swimmers and beachgoers.
- [Science To Achieve Results Fellowship Program \(STAR\)](#) at the National Center for Environmental Research — \$4.9 million (no funding requested in FY03).
- [Environmental Monitoring and Assessment Program \(EMAP\)](#) — \$38.9 million (\$613,000 increase) to develop the tools necessary to monitor and assess the status and trends of national ecological resources. EMAP's goal is to develop the scientific understanding for translating data from multiple scales into

assessments of ecological conditions and forecasts of future risks to natural resources.

- [Environmental Technology Verification](#) — \$3.7 million (1.8 percent increase) to advance testing procedures and verifies the performance of technologies that have the ability to improve protection of human health and the environment.
- [Pollution Prevention Grants to States](#) — \$6 million (\$14,000 increase). Program provides matching grants to state programs to provide the capability to assist businesses and industries in identifying better environmental strategies and solutions for complying with federal and state environmental regulations.
- [Communicating Research Information](#) — \$11.4 million (105 percent increase).

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[NASA](#)

NASA's FY 2004 budget request is \$15.469 billion, up 3.1 percent from the \$15 billion level in FY 2003. The request includes \$337 million in new initiatives, including:

- \$26 million for **Climate Change Research Acceleration** to accelerate evaluation of non-carbon dioxide (CO₂) impact on climate change.
- \$39 million for the **Human Research Initiative** to certify crew safety for missions beyond low-Earth orbit over 100 days by mitigating the highest risks and to enable knowledge and technology to reduce mass to orbit and beyond for life support by a factor of three by 2010.
- \$26 million for the **Education Initiative** to support: the Educator Astronaut Program (\$2 million) that will select teachers and transport them into space to inspire and motivate students; the NASA Explorer Schools Program (\$13 million) that will provide target middle schools with a customized and sustained learning environment using NASA's most recent discoveries and latest technologies to garner greater interest in science and engineering careers; Scholarship for Service (\$9 million) that will link scholarship with service at a NASA Center and help NASA better attract top students into its workforce; and Explorer Institutes (\$2 million), NASA's direct link with the informal education community (science centers and museums) through openly competed grants.

Funding for the Science, Aeronautics and Exploration unit is proposed at \$7.661 billion, a 13 percent decrease from the \$8.8 billion in FY03. Funding across technology areas within the unit is as follows:

- [Space Science](#) — \$4.007 billion (17.4 percent increase) to answer fundamental questions about life in the universe: how it arose, what its mechanisms are, where in the solar system life may have originated or may exist today, and whether there are similar planetary environments around other stars where the signature of life can be found.
- [Earth Science](#) — \$1.552 billion (4.6 percent decrease) to understand and protect our home planet by advancing Earth system science and applying the results to improve prediction of climate, weather and natural hazards.
- [Biological & Physical Research](#) — \$973 million (15.5 percent increase) to conduct interdisciplinary fundamental and applied research to address opportunities and challenges of human exploration of space.
- [Aerospace and Crosscutting Technology](#) — \$959 million (\$10 million decrease) for pioneering and developing advanced technologies and for helping others use NASA technology for non-aerospace commercial purposes and

develops technology partnerships with industry and academia outside traditional aerospace fields.

- The Innovative Technology Transfer Partnerships is cut to \$169 million (\$14 million decrease). Funding is distributed as follows:
 - \$135 million for SBIR/STTR programs.
 - \$29 million for discontinuing the existing commercial technology promotion efforts, instead, "recompeting and refocusing our technology transfer programs to maximize benefits to the taxpayer." The eliminated [Commercial Technology Programs](#) would be replaced by "making technology transfer a normal part of doing business whenever it is developing new technologies and to potentially leverage technology transfer capabilities at other agencies." It appears that this would eliminate the Regional Technology Transfer Centers and Commercial Technology Offices.
 - \$5 million for the Enterprise Engine being introduced to create partnerships with innovators. Program supports dual use technologies to further NASA's mission and meet future technology needs.
- [Education Programs](#) — \$170 million (\$10 million increase) to inspire more students to pursue the study of science, technology, engineering and mathematics (STEM) and ultimately to choose careers in aeronautics and space-related fields.

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National Science Foundation (NSF)

The Administration's FY 2004 request for NSF is \$5.48 billion, an 8.1 percent increase over the FY 2003 request and more than 13 percent over the FY 2002 appropriation. Congress, however, is poised to provide NSF with more than the Administration requested in FY03. Congress also passed a measure last year that the President signed to double NSF's budget over five years beginning in FY04, similar to a previously successful commitment for the National Institutes of Health. To meet that goal for NSF, the FY04 budget request would have needed to reflect a double-digit increase.

Several new initiatives are outlined in the foundation's FY04 request, including:

- **Human and Social Dynamics** — \$24.25 million (142.5 percent increase) for a new priority area to build on previous support for enhanced programs in the social, behavioral and economic sciences. This initiative draws on recent convergence of research in biology, engineering, information, technology and cognitive science to investigate the causes and ramifications of change and its complex consequences.
- **Science of Learning Centers** — \$20 million to fund 3-5 new multi-disciplinary, multi-institutional centers to enhance understanding of how people learn, how the brain stores information, and how to best use new information technology to promote learning. The new centers will be part of the [Learning for the 21st Century](#) initiative.
- **Workforce for the 21st Century** — \$8.5 million for a new effort that will draw on existing, successful education programs to establish a seamless route of advancement for students from preK-12 to postdoctorate levels.

For the [National Nanotechnology Initiative](#), \$248.99 million is requested in FY04 (11.8 percent increase) to advance fundamental research of nanoscale phenomena. The request includes \$46 million for the **Centers and Networks of Excellence** (21.2 percent increase) to fund research and education centers within the Nanoscale priority area.

Funding requests for additional programs of interest include:

- [Experimental Program to Stimulate Competitive Research \(EPSCoR\)](#) — \$105 million (no change) to promote the development of selected states' science and technology resources through partnerships involving a state's universities, industry, government, and the federal R&D enterprise.
- [Engineering Research Centers](#) — \$60.22 million (\$2.1 million decrease) to support partnerships involving academe, industry, and NSF for development of next-generation advances in complex engineered systems important for the nation's future.
- [Science and Technology Centers](#) — \$44.91 million (no change) to support centers across the range of NSF disciplines.
- [Partnerships for Innovation](#) — \$10 million requested in FY04 doubles the FY03 request. Program stimulates the transformation of knowledge created by the national research and education enterprise into innovations that create new wealth, build strong local, regional and national economies and improve the national well-being.

The request for selected **environmental and biological sciences** programs include:

- [Biocomplexity in the Environment](#) — \$99.83 million (\$21 million increase) to support investigation into interdependencies of natural and human systems at all scales.
- [Plant Genome Research Program](#) — \$75 million (no change) for supporting ongoing research on genomics of plants.
- [2010 Project](#) — \$25 million (no change) to support work on the genome of the model plant *Arabidopsis* with the end goal of creating better products for society.
- [Climate Change Research Initiative](#) — \$25 million (67 percent increase) as part of the multi-agency initiative to advance understanding in highly focused areas of climate science, to reduce uncertainty, and to facilitate policy decisions. Three to five centers will be established (\$4.5 million) to this end.

[Information Technology Research](#) — \$302.61 million (\$17 million increase) to deepen fundamental research between fields and disciplines and explore new applications to advance research across all fields. Additionally, NSF's budget for [Networking Information Technology Research and Development Program](#), a multi-agency program to encourage advances in computing, would be \$723.6 million (\$45 million increase).

The NSF FY04 request also includes a 60 percent hike in major research equipment and facilities and, for the first time, more than \$1 billion for its [mathematics and physical sciences](#) activities. In the mathematical sciences priority area alone, NSF will seek more than \$89 million, a 48 percent increase over its 2003 request of \$60 million, to continue its focus on fundamental research and integration of mathematics, statistics and education research across the full range of scientific and engineering disciplines. Funding requests for related programs includes:

- [Math and Science Partnerships](#) — \$200 million (no change) to ensure that all preK-12 students have the opportunity to achieve their full potential in mathematics and science.
- [Science, Technology, Engineering and Mathematics Talent Expansion Program \(STEP\)](#) — \$7 million (250 percent increase) to increase the number of students (U.S. citizens or permanent residents) pursuing and receiving associate or baccalaureate degrees in established or emerging fields within science, technology, engineering, and mathematics

To broaden participation in engineering and the sciences, NSF will heighten its emphasis in FY04 on the programs that encourage women and minorities in undergraduate through postdoctorate levels. These include the **Historically Black Colleges and Universities (HBCU) Undergraduate Program**, with a \$20 million investment (+43 percent increase), the **Louis Stokes Alliance for Minority Participation**, helping minorities toward undergraduate degrees in science and engineering, \$32.7 million in FY04 (+23 percent increase), and **ADVANCE**, a program achieving more diversity among successful scientists with family responsibilities, \$21.2 million (+23 percent increase).

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[Small Business Administration](#)

For FY 2004, the Administration requests \$798 million in discretionary budget authority for SBA, an increase of \$19 million or 2.4 percent over the FY 2003 request, but 12.5 percent less than the FY 2002 appropriation. The FY04 SBA Direct Loan Disbursements would fall to \$720 million, a decrease of \$138 million from the FY03 request and \$618 million less than the FY02 appropriation.

The Administration's FY04 budget request shows no funding for the [New Markets Venture Capital Program](#) or other New Markets programs.

- [Federal and State Technology Partnership](#) — \$3 million (no change) to support state efforts to strengthen the technological competitiveness of small business concerns.
- [Rural Outreach Programs](#) — \$0.5 million (no change) for grants to eligible states to provide technical assistance to small businesses applying for federal SBIR and STTR funding.
- **Non-credit Business Assistance Programs**, including the [Small Business Development Centers](#), the Service Corps of Retired executives, and Business Information Centers, would receive \$141 million in FY04, a decrease of \$3 million from the FY03 request and \$36 million from the FY02 appropriation. The FY04 request includes \$88 million for the SBDCs, equal to the FY03 request.
- [Small Business Investment Company](#) — \$4 billion for SBIR Participating Securities and \$3 billion for SBIC Debentures (no change).

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