A Personal Note from the Publisher

This is the eighth year that SSTI has prepared an issue of the SSTI Weekly Digest dedicated solely to the federal budget. The first issue was exactly two pages long. This issue, depending on your font size, is around 15 pages. In fact, it’s so large we’re sending it in two sections.

Despite battling computer viruses that zapped e-mail inboxes on three computers (don’t believe those IT people that tell you viruses don’t target Netscape Messenger), three very dedicated SSTI staff members worked late into the night all week long to get this issue to you. All SSTI publications are the result of a team effort and this edition would not have been possible without the efforts of the full SSTI staff, but special thanks to Mark Skinner, Mark Kish, and Heidi Findley for the work they have put into this issue. I think you will find this edition remarkable; a pdf version will be available on our website next week.

Thanks, too, to SSTI sponsors and affiliates whose support of SSTI make the Digest possible. If you aren’t already a sponsor or an affiliate, I urge you to join. It is only with the sponsors and affiliates support that SSTI is able to provide this kind of service. For more information on becoming a sponsor or affiliate, please e-mail me at berglund@ssti.org.
SSTI Analysis
More Losers than Winners for TBED in Federal Budget

Every budget has winners and losers. Much of the press attention on the President's budget released on Monday has been focused on the macro-level winners (increases in spending on defense and homeland security) and losers (the size of the deficit).

For the eighth straight year, SSTI has prepared a special issue of the SSTI Weekly Digest to look beyond the macro and focus on the programs that are of greatest interest to those involved in building tech-based economies. This overview provides a glimpse at the winners and losers in tech-based economic development (TBED). And there are far more losers than winners this year.

Programs slated for increases:

- **Nanoscale science and engineering** funded by the National Science Foundation (NSF) would increase 20 percent to $305 million.
- The Department of Energy’s (DOE) **Clean Coal Power Initiative** would increase $108 million, or 60.5 percent.
- The Small Business Administration's **7(a) General Business Loan** program would increase 25 percent.
- The **Mathematics and Science Partnerships** program sees its total spending increase by $61 million from $288 million in FY 2004 at the Department of Education and NSF to $349 million in FY 2005.
- Six new **Science and Technology Centers** and two new **nanotechnology centers** would be created by NSF.
- The **Economic Development Administration** would be increased by $10 million over FY04.

Examples of programs recommended for sizable cuts or elimination:

- The **Advanced Technology Program (ATP)** within the Department of Commerce is slated for termination for the second year in a row.
- Education's **Community Technology Centers (CTC)** program is proposed for termination for the fourth straight year.
- Commerce's **Technology Opportunities Program (TOP)** is proposed for termination for the third straight year.
- The **Distance Learning & Telemedicine Program** at the Department of Agriculture would have no new funding for loans, representing a $300 million decrease.
- The **Manufacturing Extension Partnership (MEP)**, after experiencing a 63 percent cut in the current fiscal year, is proposed to be cut another $400,000 to $39.2 million.
- Funding for **Industries of the Future** within DOE would be cut 53 percent for specific industries and 20 percent for crosscutting industries.
- The **Office of Economic Adjustment** at the Department of Defense (DoD) would experience a 25 percent decline in funding.
- DOE's **Coal Research and Development** programs would be cut 20 percent.
- The **Education and Human Resources Directorate** at NSF would be cut by 18 percent.
The Experimental Program to Stimulate Competitive Research (EPSCoR) at NSF would be cut by 11 percent.

The move to double NSF’s budget in five years appears to be going nowhere. To accomplish that goal, NSF’s FY05 level would have to be $7.378 billion; the budget request is for $5.745 billion, a 3 percent increase over FY04. And,

The Science and Technology portion of DoD would drop to pre-2003 levels as more emphasis is placed on advanced stages of development than research.

Finally, anyone who has prepared a budget – be it the private, nonprofit or public sector – has to admire the chutzpah of NASA budget authors who say “major activities for FY2005 will be developed prior to the start of FY2005” for the new Human and Robotic Technologies section, but ask for a 61 percent increase for the unit, anyway.

Multi-agency Initiatives

The White House Office of Science and Technology Policy (OSTP) released an overview of the federal R&D investment proposed in the Administration’s FY 2005 budget request. In FY05, OSTP reports, 13.5 percent of all discretionary outlays are dedicated to R&D — the highest share in 37 years. Of this, the Administration’s request commits 5.7 percent of discretionary outlays to non-defense R&D, which represents the third-highest level in 25 years. Multi-agency research priorities for the Administration include:

Climate Change Research Initiative (CCRI)
The budget for CCRI is $240 million, which is 42 percent larger than the amount enacted in 2004. The Department of Energy (DOE), NASA, the National Oceanic and Atmospheric Administration and the National Science Foundation (NSF) account for 90 percent of the CCRI request. The initiative supports near-term research objectives, such as: reducing scientific uncertainty produced by interactions between atmospheric radiation and organic or black soot aerosols, inorganic or mineral dust aerosols, and water as liquid, solid and vapor; developing decision support resources with synthesis and assessment scientific documents; and improving accuracy of climate model simulations with enhanced computer and cyber infrastructure resources for increased horizontal and vertical model resolutions and for increased effectiveness of data analyses and interpretation.

National Nanotechnology Initiative (NNI)
The President’s 2005 budget provides $982 million for NNI, more than doubling levels funded in 2001, which was the first year of the initiative. This investment will advance understanding of nanoscale phenomena – the unique properties of matter that occur at the level of clusters of atoms and molecules – and enable the use of this knowledge to bring about improvements in medicine, manufacturing, high-performance materials, information technology, and energy and environmental technologies. Ten agencies participate in NNI, with 80 percent of the funding going to DOE, NSF and the Department of Defense (DoD).

Networking and Information Technology R&D (NITRD) Program
The President’s 2005 budget provides $2 billion for the NITRD Program. By coordinating key research efforts and related activities, the NITRD agencies leverage resources to make broader advances in computing and networking than any single agency could attain. More than half of the FY05 NITRD request goes to NSF and the Department of
Health and Human Services. Other contributing agencies include the Environmental Protection Agency, DoD, DOE, NASA and the Departments of Commerce.

U.S. Department of Agriculture

The Administration's FY 2005 budget for the U.S. Department of Agriculture (USDA) calls for $82 billion in spending, an increase of $4 billion or about 5 percent above the FY 2004 level. Discretionary outlays are estimated at $20.8 billion, a 3 percent change, or $720 million below the FY04 level.

Among highlights, USDA's Food and Agriculture Defense Initiative would receive $381 million, a $302 million increase over FY04. The initiative serves to support public agricultural institutions that will identify and respond to high risk biological pathogens in the food and agricultural system. Included in the funding is $178 million to complete construction of the new National Centers for Animal Health in Ames, Iowa, USDA's flagship lab for large animal research and diagnosis. At least $31 million of the total funding appears to be dedicated solely for research.

New funding requests also were made for forest and rangeland research, as well as biomass research and development (R&D). For FY05, the amount available for the former would be $281 million, a $15 million increase, while $14 million is proposed for biomass R&D — a level consistent with FY04. For R&D in wildland fire management, the Administration proposes decreasing funding from $22 million to $19 million. Each of the above programs fall under USDA's Natural Resources Conservation Service (NRCS).

The 2002 Farm Bill authorized a number of new programs, including a loan and grant program for renewable energy and energy efficiency, a value-added grants program, and a rural business investment program. The Administration's FY05 budget request includes discretionary funding instead of mandatory funding for the value-added and renewable energy programs. All three programs are housed under the Rural Business-Cooperative Service (RBS):

- **Renewable Energy program** — $11 million for discretionary grants ($12 million decrease). The budget request notes that some portion of the amount provided for grants may be used to fund loans in FY04 and FY05.
- **Value-added Agricultural Product Development program** — $16 million for discretionary grants ($1 million increase).
- **Rural Business Investment Program** — $11 million ($7 million increase).

Other ongoing RBS and Rural Utilities Service (RUS) programs that would receive funding in FY05 include:

- **Distance Learning & Telemedicine Program** — $25 million in grants (no change) and no new funding for loans ($300 million decrease) to support the educational and health care needs of rural America through advanced telecommunications technologies.
- **Broadband and Internet Services Program** — $9.9 million in discretionary funding authority would support $331 million in loans to help finance the installation of various modes of broadband transmission capacity. The FY05 budget request represents a decline over FY04 levels, which include $51.8
million in combined mandatory (carried over) and discretionary authority to support $602 million in loans. Mandatory funding provided by the Farm Bill for both years, a total of $40 million in budget authority, would be rescinded. No new funding was requested in FY05 for broadband grants, a $9 million decrease over FY04.

- **Business and Industry Guaranteed Loans** — $600 million ($48 million increase) 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.

- **Empowerment Zones & Enterprise Community Program** — no funding requested ($13 million decrease). This program is designed to empower communities by supporting local plans that coordinate economic, physical, environmental, community and human development.

- **Rural Business Enterprise Grants** — $40 million ($2 million decrease) to support public entities and nonprofit corporations that assist small and emerging businesses.

- **Rural Business Opportunity Grants** — $3 million (no change) to promote economic development in rural communities with exceptional needs.

- **Rural Economic Development Grants** — $4 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, extension activities, and economic and statistical analysis. REE’s total FY05 funding of $2.44 billion ($64 million decrease) is distributed across four areas:

- **Agricultural Research Service** (ARS) — $1.19 billion ($21 million increase), including $987.6 million for research in the natural and biological sciences. Part of this funding, $5 million, would go toward advanced research and development of bovine spongiform encephalopathy testing technologies.

- **Cooperative State Research, Education and Extension Service** (CSREES) — $1.03 billion ($104 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** — $180 million ($16 million increase) to help fund initiatives in agricultural genomics, and human nutrition and obesity.
  - **Initiative for Future Agriculture and Food Systems** — Mandatory funding for this program was blocked in FY03 and FY04 and is cancelled in FY05.

- **Economic Research Service** (ERS) — $80 million ($9 million increase) for economic and social science information and analysis on agriculture, food, environment and rural development.

- **National Agricultural Statistics Service** (NASS) — $138 million ($10 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.
Department of Commerce
The Administration’s FY 2005 $5.836 billion budget request for the Department of Commerce reflects a $58 million decrease over the FY 2004 level. Several programs of interest to the tech-based economic development community would 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 FY05 request for EDA, $320.3 million, shows a $10 million increase over the FY04 request. Funding request levels are included for the following individual grant programs:

- **Public Works Grants** — $200.1 million ($1.8 million increase) 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** — $45.4 million ($5 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.
- **Planning Grants** — $23.7 million ($200,000 increase) 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** — $11.8 million ($100,000 increase) for assistance to U.S. firms and industries injured as a result of international trade competition.
- **Technical Assistance** — $8.3 million ($500,000 decrease) to provide technical assistance and expertise, such as feasibility and industry studies for economic development efforts.
- **Research and Evaluation** — $495,000 ($87,000 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** — $8.3 million ($2 million increase). OTP’s mission is to develop national policies and initiatives to enable technology to best contribute to America’s competitiveness. The office also administers the National Medal of Technology.
- **NIST Advanced Technology Program** (ATP) — no new funding requested ($194.7 million decrease). The Administration’s FY05 budget would terminate the
program. The budget request states, “The Administration believes that other NIST research and development programs are much more effective and necessary in supporting the fundamental scientific understanding and technological needs of U.S.-based businesses, American workers and the domestic economy. Further, large shares of ATP funding have gone to major corporations that 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)** — $39.2 million ($400,000 decrease). The budget request reverses somewhat the Administration's attempt last year to phase out the program when it requested $12.6 million. The program is down from $106 million approved for FY03.

- **NIST Baldrige National Quality Program** — $5.4 million ($500,000 decrease). This program helps U.S. businesses and other organizations continuously improve their competitiveness and productivity through quality and performance management practices.

**NTIA Technology Opportunities Program** — The Administration requested – as it has in each of the last three fiscal years – the program's termination, which represents a $12.9 million decrease from FY04. 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 $34.5 million in FY05, an increase of $5.6 million over the FY04 level. MBDA maintains the lead role within the federal government providing management and technical assistance to minority-owned businesses.

The **National Oceanic and Atmospheric Administration (NOAA)** would receive $3.377 billion in FY05, or $308 million less than FY04. NOAA components supporting significant research activity include:

- **National Marine Fisheries Service** — $623.2 million ($1 million increase) for research in the variables affecting the abundance and variety of marine fisheries.

- **National Ocean Service** — $378.8 million ($126.2 million decrease) to support coastal science and estuarine research reserves of national significance.

- **Oceanic and Atmospheric Research (OAR)** — $350.2 million ($42.7 million decrease) for the research and technology development necessary to improve outlooks, solar-terrestrial forecasts and marine services.

The **U.S. Patent and Trademark Office (USPTO)** would have a budget of $1.533 billion in FY05 ($312 million increase) and would be funded for the first time entirely by fees. USPTO is attempting to implement a strategic plan that would result in a reduction in the time required for a complete review of patent applications to 27 months by 2009.

The **Department of Defense** (DoD) totals $401.7 billion, an increase of 7 percent from the FY 2004 appropriation level. Funding for
research, development, testing and evaluation also would climb 6.7 percent to $68.9 billion. However, the science and technology portion of that category – including basic research, applied research and advanced technology development – would drop to pre-2003 levels. The basic research is down 5.3 percent from FY04 levels; applied research would drop 12.1 percent, and advanced technology development would decline by 14.6 percent.

The emphasis in the Administration’s request continues to be on the more advanced stages of development (advanced component development & prototypes and system development & demonstration), rather than research.

Defense-wide science and tech expenditures would increase while spending at the Army, Navy and Air Force would decline. Research spending at the Missile Defense Agency (MDA) and the Defense Advanced Research Projects Agency would increase. The breakdown by component is as follows:

**Army**

- Basic Research — $317.5 million (16.8 percent decrease).
- Applied Research — $651.2 million (37.4 percent decrease).
- Advanced Technology Development — $814.6 million (32.4 percent decrease).

**Navy**

- Basic Research — $477 million (1.5 percent decrease).
- Applied Research — $564.1 million (22.1 percent decrease).
- Advanced Technology Development — $677.2 million (33.1 percent decrease).

**Air Force**

- Basic Research — $345.5 million (4.3 percent increase).
- Applied Research — $786.2 million (12.3 percent decrease).
- Advanced Technology Development — $787 million (28 percent decrease).

**Defense-wide**

- Basic Research — $190.1 million (8.2 percent decrease).
- Applied Research — $1.88 billion (6.4 percent increase).
- Advanced Technology Development — $3.05 billion (3.9 percent increase).

Funding requests for other programs of interest also would suffer cuts, including:

- **Defense Experimental Program to Stimulate Competitive Research** (EPSCoR) — $9.6 million (0.1 percent increase) 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 & Technology Program** — $5.2 million ($5.2 million decrease in the Air Force and $3.7 million elimination defense-wide) for developing technologies that have both military and commercial potential. Only the Air Force will seek partnerships with industry through this program in FY05.
- **Government/Industry Cosponsorship of University Research** — no new funding is requested ($6.7 million decrease).
Office of Economic Adjustment — $44.8 million (25.7 percent decrease) to provide assistance to communities, regions and states adversely impacted by significant DoD program changes, such as: base expansions; closures; realignments; major contract changes that result in significant worker layoffs; and other personnel reductions or increases.

Procurement Technical Assistance Centers (PTACs) — $19.6 million (3.4 percent increase). The 93 PTACs across the country provide assistance to business firms in marketing products and services to the federal, state and local governments.

Technology Link — $1.9 million (45.5 percent decrease) to MDA for facilitating the use of technology developed in the non-defense public and private sectors.

University and Industry Research Centers — $77.7 million (22.2 percent decrease) to the Army.

University Research Initiatives — $274.5 million (3.1 percent decrease) to improve the quality of research performed at universities to meet DoD needs, provide expanded opportunities for interaction between universities and the DoD research community, and to support fellowships and traineeships in science and engineering disciplines important to national defense. The breakdown by component includes $75.1 million (11.9 percent decrease) for the Army, $83.5 million (8.3 percent decrease) for the Navy, and $115.9 million (9 percent increase) for the Air Force.

Department of Education

The Administration's FY 2005 budget request for the Department of Education (ED) is $57.3 billion, a 3 percent increase ($1.7 billion) over the FY 2004 spending plan. The new budget request includes $2.93 billion (no change) for the Improving Teacher Quality State Grants program, which gives states and local educational agencies resources to prepare, train and recruit high-quality teachers to improve student achievement. The request also increases funding from the FY04 level ($149 million) by $120 million to $269 million for Mathematics and Science Partnerships, a program for improving academic achievement in math and science, including integrating teaching methods based on scientifically-based research and technology into the curriculum. The proposed increase represents a transfer of funds from the Math and Science Partnership program under the National Science Foundation (except for $80 million), which in FY05 will begin the process of phasing out the program.

The Administration's FY05 request terminates the Community Technology Centers (CTC) program ($9.9 million in FY04). The ED budget summary explains that the Administration is working with Congress to develop legislation reauthorizing programs included in the Carl D. Perkins Vocational and Technical Education Act of 1998. When new authorizing legislation is enacted, resources for the affected programs will be requested, the summary adds. The CTC program, which offers disadvantaged residents of economically distressed areas access to computers and training, is not listed among those programs because it is said to have "limited impact and funding for similar activities is available through other federal agencies."

Under the new budget request, the Administration is proposing to consolidate three ED program budgets "in an effort to reform job training programs, target resources to programs with documented effectiveness, and eliminate funding for duplicative programs." One example is Projects with Industry ($21.8 billion in FY04), a program
that seeks to create job and career opportunities in the competitive labor market for disabled individuals.

Additional requests for programs include:

- **Educational Technology State Grants** — $692 million (no change) to improve student achievement in high-poverty school districts through the effective integration of technology into classroom instruction, including acquisition of computers, software, connections and teacher training.

- **Research, Development and Dissemination** — $185.5 million ($20 million increase) to help support the National Center for Education Research, which oversees directed research, field-initiated studies, and research and development centers. These programs, as well as the ED SBIR program, are within the newly created Institute of Education Sciences.
  - **Regional Educational Laboratories** — no new funding requested ($66.6 million decrease). The FY05 budget request does not offer an explanation for the termination of this network of 10 regional laboratories; however, the FY04 budget request had indicated the centers "have not consistently provided high-quality research and development products or evidence-based training and technical assistance." The laboratories received $67 million in FY03.

- **Research and Innovation** — no new funding requested ($78.1 million decrease). This program would be transferred from the Office of Special Education and Rehabilitative Services to the newly created National Center for Special Education Research within the Institute of Education Sciences. The program funds support research and dissemination activities to address gaps in scientific knowledge in order to improve special education and early intervention services and results for infants, toddlers, and children with disabilities.

- **21st Century Community Learning Centers** — $999.1 million (no change) for academic enrichment opportunities and related services for before- and after-school, weekend and summer hours for students who attend high-poverty schools.

Department of Energy

The Administration's FY 2005 budget request for the Department of Energy (DOE) is $24.3 billion, or $1.04 billion (4.5 percent) more than the FY 2004 request. Part of that increase, $383 million (4.4 percent), would go to the National Nuclear Security Administration's $9.05 billion budget allotment. Another part, $730 million (9.3 percent), would go to the Environment budget, which is $8.55 billion in FY05. The Science budget, at $3.43 billion, would experience a $68.3 million decrease (2 percent), and the $2.48 billion Energy budget would decline by $45.7 million (1.8 percent).

The FY05 request for the Office of Energy Efficiency and Renewable Energy (EE), $1.25 billion, reflects a 1.2 percent increase over the office's FY04 level. EE conducts research, development and deployment activities to advance energy efficiency and clean power technologies and practices. All of the $15 million increase for EE would be absorbed by renewable energy activities funded within the Energy Supply account. Energy efficiency activities, funded within the Energy Conservation account, would experience a 0.2 percent cut and would provide renewable energy activities an additional $2 million.
One major DOE program, the **Coal Research Initiative**, would receive $447 million in FY05 between two components — $287 million for the Clean Coal Power Initiative (CCPI) and $160 million for the coal research and development (R&D) program. Funding for the CCPI reflects a $108 million increase over its FY04 level and includes $237 million for the FutureGen initiative launched by DOE last year. FutureGen is expected to yield the world's first integrated carbon-sequestration and hydrogen production research power plant. Initiatives that would receive funding under the coal R&D program are outlined further below.

Another big DOE item is the **Hydrogen Fuel Initiative**, a $228 million R&D effort to support hydrogen fuel production, storage, distribution and infrastructure. Funding for the initiative would come from EE ($173 million), the Office of Science ($29 million), Office of Fossil Energy ($16 million), and the Office of Nuclear Energy, Science and Technology ($9 million). The Department of Transportation also is contributing $0.8 million in FY05. The Hydrogen Fuel Initiative complements the **FreedomCAR Partnership**, which supports technologies needed to enable the mass production of affordable, practical hydrogen powered fuel cell vehicles.

Also included in the FY05 budget request is $209 million for **nanoscience research**, an $8 million increase over its FY04 level, and $264 million for fusion sciences research, or $1.6 million more than last year. Other Office of Science initiatives with respective increased or decreased levels, by percent, include:

- **Advanced Scientific Computing Research** — $204 million (1 percent increase).
- **Basic Energy Sciences Program** — $1.06 billion (5.2 percent increase).
- **Biological and Environmental Research** — $502 million (21.8 percent decrease).
- **High Energy Physics** — $737 million (0.5 percent increase).
- **Nuclear Physics** — $401 million (2.9 percent increase).

Additionally, SSTI highlights the following DOE programs of interest:

- **Advanced Fuel Cycle Initiative** — $46.3 million (30.7 percent decrease).
- **Advanced Metallurgical Processes Research** — $8 million (19 percent decrease).
- **Biomass and Biorefinery Systems R&D program** — $81.3 million (13.5 percent decrease), the combined total between the Energy Supply and Energy Conservation accounts. The FY05 request for this program is actually higher than its FY04 counterpart; however, the FY04 level includes $40.7 million in congressionally directed projects, resulting in a net decrease this year.
- **Building Technologies** — $58.3 million (2.6 percent decrease).
- **Clean Coal Technology** — $97 million (11.5 percent increase).
- **Coal Research Initiative** — $447 million (18.1 percent increase).
  - Clean Coal Power Initiative — $287 million (60.5 percent increase).
  - Coal R&D — $160 million (19.8 percent decrease).
    - Advanced Research — $30.5 million (20.2 percent decrease).
    - Fuels — $16 million (48.7 percent decrease).
    - Central Systems — $64.5 million (28.3 percent decrease).
    - Sequestration R&D — $49 million (21.6 percent increase).
- **Generation IV Nuclear Energy Systems Initiative** — $30.5 million (10.1 percent increase).
- **High Temperature Superconductivity R&D** — $45 million (32 percent increase).
Industries of the Future — $22.4 million (52.6 percent decrease) for Specific industries and $31.9 million (20.1 percent decrease) for Crosscutting industries. The Administration's budget proposes to close out the Specific subprogram upon the successful completion of existing high-payoff projects and near-term commercialization efforts that industry can complete on its own. The decreases in funding are absorbed by all participating industries.

National Climate Change Technology Initiative — $3 million to spur innovation of technologies based on their potential to reduce, avoid or capture greenhouse gas emissions. No funding for this initiative was received in FY04.

Natural Gas Technologies — $26 million (39.5 percent decrease).

Nuclear Energy Research Initiative — no new funding requested ($6.6 million decrease). Beginning in FY05, NERI activities would be integrated into four other R&D programs as part of restructuring efforts.

Nuclear Energy Technologies — $10.2 million (47.8 percent decrease).

Petroleum/Oil Technology — $15 million (57.2 percent decrease).

University Reactor Fuel Assistance and Support — $21 million (8.1 percent decrease).

Vehicle Technologies — $156.7 million (12 percent decrease).

Department of Health and Human Services
The $571.6 billion FY 2005 budget request for the Department of Health and Human Services (HHS) reflects a 2.8 percent increase over the FY 2004 budget authority. Most of the increase occurs in mandatory spending programs such as Medicare and Medicaid.

Collectively, spending for a dozen discretionary programs such as the Food & Drug Administration, Centers for Disease Control & Prevention (CDC) and the National Institutes of Health (NIH) would increase by only 1.2 percent. Individually, the Administration's request for discretionary programs is quite varied. For example, funding for NIH, which supports the vast majority of the nation's medical science research agenda, would grow by 2.6 percent or $729 million to $28.6 billion. Funding for CDC, however, would decrease by 5.9 percent to $4.18 billion.

More than 85 percent of NIH's budget annually is awarded to researchers at 2,800 universities, research hospitals and other research facilities. These funds will support a record total of nearly 40,000 research project grants in FY05, including an estimated 10,393 new and competing awards.

Funding Priorities for NIH in FY05 include:

- **Biodefense** — $1.7 billion ($121 million increase). Funding largely would go toward biomedical science, with two goals: a) basic research on the biology of microbial agents with bioterrorism potential and the properties of the host's response to infection and defense mechanisms; and, b) applied research with predetermined milestones for the development of new or improved diagnostics, vaccines and therapies.

- **NIH Roadmap for Medical Research** — $237 million ($109 million increase), or 85 percent above the FY04 level. The roadmap has three themes: new pathways to discovery ($137 million), interdisciplinary research teams of the future ($39 million); and re-engineering the clinical research enterprise ($61 million).
- **HIV/AIDS Research** — $2.9 billion ($80 million increase).
- **Obesity Research** — $440 million (10 percent increase) to address six research priority areas.

Of the individual institutes, the National Cancer Institute would receive the largest dollar gain with a $4.87 billion request ($134 million increase). The $1.1 billion request for the National Center for Research Resources reflects an $85 million decrease.

Due in large part to increases in biodefense research, the NIH SBIR/STTR budget is projected to increase by $15.6 million, or 2.6 percent, to an FY05 total of $615.8 million.

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**Department of Homeland Security**

At $40.2 billion, the FY 2005 funding request for the Department of Homeland Security (DHS) is 10 percent above the comparable FY 2004 resource level.

DHS will hold its budget briefing on Monday, Feb. 9. As a result, SSTI will include a summary of the department's budget in the Feb. 13 issue of the SSTI Weekly Digest. Initial DHS press materials report two science and technology (S&T) related priorities:

- **Enhancing Biodefense** — "$65 million to enhance current environmental monitoring activities, bringing the total FY 2005 investment in this area to $118 million. A key component of this initiative will be an expansion and deployment of the next generation of technologies related to the BioWatch Program, a bio-surveillance warning system."

- **Improving Aviation Security** — "$61 million in S&T’s budget, to accelerate development of more effective technologies to counter the threat of portable anti-aircraft missiles."

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**Department of Housing and Urban Development**

For the Department of Housing and Urban Development in FY 2005, the Administration has requested $31.3 billion, a $849 million increase over the FY 2004 level. Community Development Block Grants would be funded at $4.62 billion, a $316 million decrease from FY04. Other programs of interest include:

- **Brownfields Economic Development Initiative** (BEDI) — no new funding requested ($25 million decrease). 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** — $2 million ($13 million decrease). Program helps to create or expand computer technology centers in low-income housing or nearby communities. The program received $20 million in FY02.

- **Partnership for Advancing Technology in Housing** (PATH) — no new funding requested ($8 million decrease). Program is a public-private partnership aimed at
reducing the cost and increasing the quality of housing through the application of technology.

- **Policy Development and Research** — $47 million ($8 million increase).
- **Renewal Communities, Urban Empowerment Zones and Enterprise Communities** (RC/EZ/EC) — no new funding requested ($15 million decrease). Program offers tax incentives, technical assistance and historically grants to encourage economic development and investment in selected significantly distressed areas around the country.
- **Rural Housing and Economic Development** — no new funding requested ($25 million decrease). Program supports innovative housing and economic development activities in rural areas. Recipients have included local rural nonprofits, community development corporations, state housing finance agencies, state community or economic development agencies, and Indian tribes.

**Department of Labor**

The Department of Labor's budget request for FY 2005 is 4.5 percent less than the FY 2004 appropriation. The agency's payroll, however, would increase by 73 full-time equivalent positions, according to the budget overview. The budget decrease is due largely to an anticipated decline in spending for mandatory programs such as unemployment benefits as the economy improves.

Receiving most of the attention in the press is the Administration's plans for the **Community College Initiative**, a new $250 million employer-focused state grant program for training conducted through community and technical colleges. The budget request states, the grants would be "awarded to states that can certify that the training will be focused on industries with demonstrated labor shortages, such as health care and high-tech manufacturing. The request is expected to result in training and subsequent employment or an opportunity for enhanced employment for up to 100,000 individuals."

A total of $3.28 billion is requested for **employment and training programs for adults**, an increase of $149.3 million above 2004. The net increase is largely the result of several new program proposals offered in conjunction with a new Consolidated Adult and Dislocated Worker State Grant, to be authorized by an amended Workforce Investment Act.

**Department of Transportation**

The Administration's FY 2005 budget request of $58.7 billion for the Department of Transportation (DOT) is 0.2 percent higher than the FY 2004 appropriation. DOT’s request would be distributed across the department's five key strategic objectives as follows:

- Improve safety (24.4 percent);
- Increase mobility for all Americans (64.9 percent);
- Increase global transportation connectivity in support of the Nation's economy (0.5 percent);
- Protect the environment (7.9 percent); and,
- Support national security (0.8 percent).

The 1.4 percent balance would go toward "organizational excellence," according to the DOT Budget in Brief.

SSTI also highlights the research and development (R&D) portion of the DOT budget request:

In FY05, the Research, Engineering, and Development line item at the Federal Aviation Administration (FHA) would be $117 million, a decrease of $2.4 million from FY04 appropriations. The majority of the funds, $93 million, will be used for aviation safety research; the balance for issues concerning mobility ($7.7 million) and the environment ($16.7 million).

The Federal Highway Administration (FHWA) requests $428 million for Research and Intelligent Transportation Systems (ITS). FHWA will continue to work on identifying ways to reduce the number of injuries and fatalities on the nation's roadways by demonstrating the application of innovative technologies in highway safety, deploying and evaluating safety technologies and innovations at the state and local levels, and assuring the deployment of best practices in training, management, design and planning.

The National Highway Traffic Safety Administration (NHTSA) requests $94.4 million for research and analysis into reducing highway fatalities and injuries by providing leadership in crash causation and crash prevention research. This includes crashworthiness research for occupant protection and biomechanics; driver distraction testing; crash causation research; and national crash data systems. A new $5 million crash avoidance initiative will analyze real-world data and assess methods to test new motor vehicle technologies and improve driver performance. A new $1 million initiative is also included to develop an innovative crash data system to provide real-time fatality data.

The FY05 budget request for the Federal Transit Administration (FTA) reflects program streamlining and consolidation proposed in pending surface transportation reauthorization legislation. As a result, comparisons to previous year budget allocations are difficult. FTA requests $50.6 million for National Research, while the R&D category received $131 million in FY04, including the University Transportation Centers. The FY05 research request is to be distributed across four programs as follows:

- $32.1 million for the National Research Program;
- $8.4 million for the Transit Cooperative Research Program;
- $4.1 million for the National Transit Institute training programs; and,
- $6 million for the University Transportation Research Program.

At $36 million, the R&D budget for the Federal Railway Administration (FRA) would increase 5.9 percent over FY04 appropriations. The FRA research agenda supports efforts in the areas of rail systems safety, track structures, train occupant protection, human factors in train operations, rolling stock and components, track and train interaction, track control, grade crossings, and hazardous materials. The $2 million increase would provide funding for a High-Speed and Freight Locomotive simulator (partnering with the Army), as well as research in the areas of driver behavior and accident causation. The increase also would continue the installation of the Nationwide
Differential Global Positioning System, which will provide precise positioning and navigation information to ensure the safety and security of lives and property throughout the United States.

The request for the Next Generation High Speed Rail initiative is $10 million in FY05.

Poised to receive a nine percent increase in FY05 funds, the Research and Special Programs Administration (RSPA) serves to protect people and the environment from risks of hazardous materials transportation; foster transportation innovations through research, technology, education and training; and prepare the nation's transportation system to aid people and property harmed by natural or terrorist disasters.

The FY05 budget request for RSPA's research and special programs line item is $53 million, 15.2 percent higher than FY04. The research programs element, however, remains $3 million. Funds will be used to improve DOT's overall R&D program and to promote the safe transport of hydrogen fuels and fuel systems so that alternative-fuel vehicles can be developed as a safe alternative to petroleum-fueled vehicles. RSPA will be working with the Department of Energy to obtain $1 million in reimbursable funding for this purpose.

The Minority Business Resource Center (MBRC) program, through the DOT Office of the Secretary requests $3.9 million in FY05. $0.9 million in federal subsidy and administrative expenses will support an $18 million short-term loan guarantee program to assist small, disadvantaged and women-owned transportation-related businesses; and $3 million will fund the Minority Business Outreach program, which includes a clearinghouse for national dissemination of information on transportation-related projects and grants to minority educational institutions.

Department of the Treasury
The Administration requested $48.4 million for the Community Development Financial Institutions (CDFI) account, a 20.7 percent decrease from the FY 2004 appropriation. CDFI provides equity investments, grants, loans, and technical assistance to new and existing CDFIs such as community development banks, community development credit unions, community development loan and venture capital funds, and microenterprise loan funds. CDFI also administers the New Market Tax Credits program, which permits taxpayers to receive a credit against federal income taxes for making qualified equity investments in designated Community Development Entities. The $48.4 million is distributed as follows:

- **Native American/Hawaiian Program** — $3 million (51.1 percent decrease) to overcome barriers preventing access to credit, capital and financial services in Native American, Alaskan Native and Native Hawaiian communities.
- **Financial Assistance** — $19 million (40.6 percent decrease) to certified CDFIs that demonstrate the ability to leverage non-Federal dollars to support comprehensive business plans of providing services to create community development impact in underserved markets.
- **Technical Assistance** — $3 million (72.7 percent decrease) provides grants to CDFIs, and entities proposing to become CDFIs, in order to build their capacity to better address the community development and capital access needs of their particular target market.
Bank Enterprise Awards Program — $4 million (no change) to recognize the key role played by mainstream depository institutions, such as banks and thrifts, in promoting community revitalization through the provision of essential financial services, credit, and investment capital.

Direct Loan Subsidy — $4 million (no change).

Administrative expenses — $15.321 million (27.7 percent increase).

Environmental Protection Agency
The Administration's FY 2005 budget request for the Environmental Protection Agency (EPA) is $7.76 billion, a $133 million increase over the FY 2004 request level. However, the agency's science and technology programs would receive $689 million, a $42 million decrease from FY04, and research programs would receive $512.7 million, or $28.7 million less than they did a year ago. Research in 15 program areas, four of which are detailed further below, would be affected by the cut.

Funding for three areas closely tied to homeland security that would experience increases or decreases, by percent, are:

- Communication and Information — $4.3 million (13.1 percent increase).
- Critical Infrastructure Program — $11.9 million (63.4 percent decrease).
- Preparedness, Response and Recovery — $56.4 million (9.6 percent decrease).

Other EPA programs of interest include:

- Pollution Prevention Grant Program — $7 million to help state programs assist businesses and industries in identifying environmental strategies for complying with federal and state environmental regulations.
- Regional Science and Technology — $3.6 million (0.5 percent increase).
- Research — $589 million (5.3 percent decrease).
  - Environmental Technology Verification — $3 million (25.3 percent decrease) for this voluntary, market-based verification program for commercial-ready technologies.
  - Human Health and Ecosystems — $177.4 million (7 percent decrease) to enhance current risk assessment and management strategies and guidance to better consider risk determination needs for children.
  - Pollution Prevention — $34.1 million ($12.7 percent decrease).
  - Fellowships — $8.3 million (29 percent increase) to support the Science To Achieve Results (STAR) Fellowship Program and other fellowships.

National Aeronautics and Space Administration
The Administration's $16.244 billion FY 2005 budget request for NASA represents a 5.6 percent increase over the FY 2004 appropriations. To accompany NASA's new vision for NASA, announced by the President last month, the agency has reorganized around seven enterprises and numerous themes.

The Earth is out, Mars is in, and the budget numbers reflect that. Spending on terrestrial subjects such as earth system science, earth science applications, physical science, Sun-Earth connections, education and aeronautics would see cuts.
Education programs, which includes the minority university research and education program, are reduced by 25.2 percent to $169 million and never recover over the five-year span included in NASA's budget materials. In its brief summary of the NASA budget, the Association of American Universities explains most of the Congressional earmarks on NASA's budget are in this line item and much of the $57 million reduction could be related to that.

For FY05, the Earth Science enterprise would be reduced $128 million or 7.9 percent in FY05 and an additional 6.4 percent in FY06. NASA's contribution to the Climate Change Research Initiative falls within this enterprise.

The Biological & Physical Sciences enterprise, posted to grow by 6.5 percent or $64 million in FY05, would drop to pre-FY04 levels for the four outyears of fiscal years 2006-09.

The winners in the FY05 budget proposal include Space Flight and Space Science, which posted increases of 13.6 percent and 4.2 percent, respectively.

Plans for the new Human and Robotic Technology (HRT) unit are so undefined at this date that NASA's budget request states "major activities for FY 2005 will be developed prior to the start of FY 2005." Nevertheless, the agency requests a 61.1 percent increase over FY04 appropriations of $679 million for programs moved into the theme.

Two new programs are described briefly that would capture $134.9 million (one-third of the new funds) include:

- **Technology Maturation** — $114.9 million to develop and validate novel concepts and technologies to enable safe, affordable, effective and sustainable human-robotic exploration, and to assure their timely transition into Lunar Exploration Theme demonstrations and operations.

- **Centennial Challenges** — $20 million to establish a series of annual prizes for revolutionary, breakthrough accomplishments that advance solar system exploration and other NASA priorities.

Programs of particular interest to the tech-based economic development community, such as SBIR, STTR, Commercialization Programs and Technology Transfer Programs also fall under the new HRT theme — and appear headed for a 24 percent reduction. Funded in a concept area labeled "Innovative Technology Transfer Partnerships," the four programs collectively would be reduced by $50.9 million. Specific FY05 allocations for the individual programs are not provided but rather the entire line item requests a lump sum of $161.4 million.

NASA also does not hide its animosity toward commercialization and technology transfer. Page EC 2-13 of the NASA FY05 budget request, which describes the Innovative Technology Transfer Partnerships concept area states, "Efforts to document and license technologies, to transfer these technologies to the private sector as legislatively mandated, and to prudently manage NASA's intellectual property, will be very limited."
National Science Foundation

The end of 2002 saw an act of Congress to double the budget for the National Science Foundation (NSF) by FY 2008. Two fiscal years later, little progress can be seen toward that goal. Last week, Congress approved $5.58 billion for the agency; the FY 2004 authorization level was $6.39 billion. To double NSF's budget by FY08, the FY 2005 authorization level is set at $7.378 billion. The Administration's budget for next year requests only a 3 percent increase above the FY04 appropriations, raising NSF's total budget to $5.745 billion.

While NSF's overall budget would show a net increase of $167.2 million, several significant changes are made in four appropriation lines to accomplish this:

- Research and related activities — $201 million (4.7 percent increase).
- Salaries and expenses — $75.3 million more (34.4 percent increase).
- Major research equipment and facilities construction — $58.3 million more (37.6 percent increase).
- Education and human resources — $167.6 million less (17.9 percent decrease).

With such a modest net increase, the NSF budget request includes few new initiatives (e.g., three new construction projects: the National Ecological Observatory Network, the Scientific Ocean Drilling Vessel, and Rare Symmetry Violating Processes). A new $5 million Innovation Fund would provide NSF the opportunity to "respond quickly to rapidly emerging activities at the frontiers of learning and discovery" according to the budget request.

Also a Workforce for the 21st Century priority area funding of $15.4 million is proposed to focus on attracting and preparing U.S. domestic students for the Science, Technology, Engineering and Mathematics (STEM) workforce, especially those students who have traditionally been underrepresented in these fields, and conducting research to inform the preparation of the next generation of the workforce. NSF failed in its attempt to fund the new initiative last year at the $8.5 million level.

The cuts in the Education and Human Resources directorate are borne by:

- Slated for transfer to the Department of Education is the Math & Science Partnerships which strives to ensure that all preK-12 students have the opportunity to achieve their full potential in mathematics and science. The program received $139.17 million in FY04. NSF will continue to support activities already initiated with an investment of $80 million in FY 05 through its Integrative Activities line item.
- Experimental Program to Stimulate Competitive Research (EPSCoR) — A total of $114 million (11.1 percent reduction) 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. Funding would be derived from the Education and Human Resources Account ($84 million in FY05 — $10.44 million less than FY04) and through Research and Related Activities (approximately $30 million in FY05). According to the Foundation's budget documents, the request "may require NSF to provide less support for infrastructure awards."
- Science, Technology, Engineering and Mathematics (STEM) Talent Expansion Program (STEP) — $15 million (30 percent decrease) to raise 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.
• **Advanced Technological Education** — $38.16 million (15.6 percent decrease) to support improvement in technician education in science- and engineering-related fields that drive the nation’s economy, particularly at two-year colleges and secondary schools, by supporting the design and implementation of new curricula, courses, laboratories, educational materials, opportunities for faculty and student development, and collaboration among educational institutions and partners from business, industry, and government.

• **Historically Black Colleges and Universities - Undergraduate Program** — $19.98 million (16.3 percent decrease) to provide awards to enhance the quality of undergraduate STEM programs through curricular reform and enhancement, faculty development, research experiences for undergraduates, upgrade of scientific

• **Informal Science Education** — $50 million (19.5 percent decrease) promotes public interest understanding and engagement in science and technology through voluntary self-directed, and life-long learning opportunities for millions of children and adults.

Education-related programs to receive significant percentage increases include:

• **Integrative Graduate Education and Research Training (IGERT)** — $81.74 million (22 percent increase).

• **Graduate Research Fellowships** — $103.30 million (6.2 percent increase).

• **Graduate Teaching Fellowships in K-12 Education** — $55.70 million (11.7 percent increase).

• **Course, Curriculum & Lab Improvement** — $50.97 million (13.3 percent increase).

The **National Nanotechnology Initiative** remains a priority area as the FY05 request for NSF’s investment in nanoscale science and engineering would grow by 20.3 percent to $305 million.

NSF’s centers programs, favorites of many state and local tech-based economic development initiatives, are highlighted for additional funds for new and expanded centers. Selected programs:

• **Science and Technology Centers** — $72.39 million (70.2 percent increase). $30 million will be dedicated to supporting six new centers across the range of NSF disciplines. The balance of the request will support the 11 currently funded centers.

• **Engineering Research Centers** — $63.49 million (3.1 percent decrease) to support 19 partnerships involving academe, industry and NSF for development of next-generation advances in complex engineered systems important for the nation’s future.

• **Nanoscale Science & Engineering Centers** — $33.79 million (10 percent increase) to fund two new nanotechnology centers with multidisciplinary capabilities and to enhance the awards of selected existing centers.

• **Plant Genome Virtual Centers** — $36 million in the Biological Sciences Directorate (no change) to support collaboratories where coordinated, multi-investigator teams pursue comprehensive plant genome research programs relevant to economically important plants or plant processes.

• **Long-Term Ecological Research (LTER) Sites** — $22.82 million (11.2 percent increase) to support collaborative interdisciplinary research at LTER sites.
• **Science of Learning Centers** — $20 million (level funding) to continue support for multidisciplinary, multi-institutional centers to advanced understanding of learning.

• **Industry/University Cooperative Research Centers** (I/UCRCs) — $6 million from the Engineering Directorate (no change) to further develop long-term partnerships among industry, academe, and government. There currently are 46 I/UCRCs.

• **Environmental Social and Behavioral Science Centers** — $3.5 million to support 2-3 centers that advance fundamental knowledge in the area.

**Partnerships for Innovation** would receive $10 million, or $600,000 more than the FY04 level. The 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.

Funding for **SBIR/STTR** within the Engineering Directorate is $104.1 million, a half-percent increase over FY04, to support innovation research conducted by small technology firms.

**Small Business Administration**

The Administration's $678.4 million request for the Small Business Administration (SBA) represents an 11.4 percent decrease from the FY 2004 appropriation. Loan guarantee authority for the **7(a) General Business Loan** program, however, would grow to $12.5 billion next year — a 25 percent increase above the FY04 level.

Collectively, SBA's technical assistance programs do not fair well in the Administration's FY 2005 budget, as funding would drop 21.3 percent from FY04 to $111 million. Funding levels for selected activities identified as "core programs" in the agency's press materials include:

• **Small Business Development Centers** (SBDC) — $88 million (1.1 percent decrease) to support 1,100 SBDCs around the country that provide management assistance to current and prospective small business owners.

• **Women's Business Centers** — $12.5 million (no change) to support 84 WBCs located throughout the U.S. to promote the growth of women-owned businesses through programs that address business training and technical assistance, and provide access to credit and capital, federal contracts, and international trade opportunities.

• **Service Corps of Retired Executives** (SCORE) — $5 million (no change) to support 389 chapter offices to provide entrepreneurs with free, confidential face-to-face and email business counseling services.

• **National Women's Business Council** — $750,000 (no change) to support a bipartisan federal advisory council created to serve as an independent source of advice and policy recommendations to the President, Congress and SBA on economic issues of importance to women business owners.

• **Veteran's Outreach** — $750,000 (no change) to provide entrepreneurial development services such as business training, counseling and mentoring to eligible veterans owning or considering starting a small business.
The FY05 request also proposes decreasing the government contracting and minority enterprise development line item of the SBA budget by 13.8 percent to $25 million.

The budget includes $4 billion for the Small Business Investment Company (SBIC) Participating Securities and $3 billion for SBIC Debentures (no change from previous year) but is critical of the program's results. The Administration request states "program performance has been weak, with estimated losses to the taxpayer of about $2 billion... The 2005 Budget is proposing increased fees and profit-shares, which are necessary for the program to be fiscally sound. The Budget also improves the subsidy estimation methodology by including historical performance."

The Federal and State Technology Partnership ($2 million in FY04) and Rural Outreach Programs ($250,000 in FY04) are included in SBA's operating budget funds, according to the SBA Media office. The SBA official was unable to specify FY05 funding level requests. However, unconfirmed sources suggest no funding was requested for either program. Both programs support state efforts to strengthen the technological competitiveness of small business concerns.