

SUPPORTING STATEMENT – PART A
U.S. Department of Commerce
U.S. Census Bureau
Business R&D and Innovation Survey
(Forms BRDI-1 and BRDI-1A)
OMB Control No. 0607-0912

A. Justification

1. Necessity of the Information Collection

The National Science Foundation's (NSF) Division of Science Resources Statistics (SRS) and the U.S. Census Bureau's Economic Directorate have been engaged in a significant redesign of the Survey of Industrial Research and Development. To better understand how R&D is actually conducted in today's innovative and global based economy, NSF has done extensive background work, starting with the CNSTAT report *Measuring Research and Development Expenditures in the U.S. Economy*.¹ NSF has hosted numerous meetings/workshops with external data users both in the federal government and outside and has conducted a number of recordkeeping visits to companies to understand what is collectable. To better understand the issues in the present survey, NSF has done extensive review of both the statistical and subject matter aspects of it. Current plans for the redesigned survey call for five core sections, which will comprise the fixed elements. NSF and the Census Bureau have conducted four rounds of cognitive interviews to test the new content, and a final round of testing on the entire questionnaire will be conducted in July and August 2008. Results from these interviews have been included in a generic clearance submitted by Census. In order for the new data to be included, and actually be the centerpiece of the National Science Board's *Science and Engineering Indicators: 2012* report, NSF has required delivery of results from the redesigned survey in December 2010. To ensure this delivery, there are a number of groups composed of Census Bureau and SRS staff that have been working on components of the redesigned survey, such as; content testing, instrument development, frame creation, and sampling, edit, imputation and estimation methodologies as well as tabulation design and data dissemination. In addition, NSF is consulting with Dr. Donald Dillman of Washington State University, a noted survey methodology expert and scholar, on best approaches to the extensive questionnaire redesign and methods of response.

The result of this redesign will be a substantially new survey, and to emphasize that fact a new name has been selected, the Business R&D and Innovation Survey (BRDIS). This name was selected not only to highlight

the emergence of the new survey, but also to emphasize that the survey covers the R&D and innovation activities of service as well as manufacturing companies. The 2008 BRDIS is being conducted as a pilot of the new survey, hence the possibility of releasing two years worth of data as reflected in the project schedule (section 16). Results from the 2008 BRDIS will be evaluated and may bring about changes for the 2009 BRDIS.

The BRDIS questions have been divided into 5 sections in order to accommodate the collection of information from different parts of the companies. The content of each section are defined as follows:

- 1 Financial Section
 - Detail on global R&D activity as well as domestic U.S. R&D*
 - Company R&D expense and performance
 - by line of business/business segment*
 - by country location and state location (for U.S. R&D)
 - by type of expense (wages, materials, etc.)
 - outsourced R&D by sector (universities, other companies, etc.)
 - Capital expenditures for R&D (buildings, software, equipment)*
 - Projections of current year R&D spending*
- 2 R&D Management and Strategy Section
 - Share of R&D devoted to new business areas for the company*
 - Share of R&D involving science or technology new to the company*
 - Share of R&D spent on research vs. development
 - Share of R&D on science or technology that is new to the market*
 - Counts of R&D projects*
 - total number of active projects
 - number of projects started in a given year
 - number of projects moved from R&D to production/marketing in a given year
 - Share of R&D devoted to specific application areas such as health, defense, energy, and transportation*
 - Share of R&D involving specific types of science or technology such as biotechnology, nanotechnology, software, or social sciences
 - Country location of planned new R&D facilities*
 - Share of R&D devoted to partnerships, by type of partner organization (academia, government agencies, other companies)*
3. R&D Funded or Paid for by others Section
 - This section asks a cross-section of questions from the Financial and R&D Management sections regarding outsourced R&D expense and performance.

4. Human Resources Section
 - R&D headcount
 - U.S. headcount vs. global headcount*
 - R&D employment by occupational category (scientists and engineers, technicians, support staff), gender, and level of educational attainment*
 - Number of U.S. R&D employees working under a visa (H-1B, L-1, etc.)*
 - R&D FTEs

5. Intellectual Property, Technology Transfer, and Innovation Section
 - Innovative activities*
 - Patent-related data*
 - number of patents owned or controlled
 - number of patents applied for and issued in a given year
 - percent of discoveries the company attempted to patent
 - Relative importance of different types of IP protection to the company*
 - Whether the company participated in specific technology transfer activities*
 - Information about licensing of IP (in and out)*
 - Number of collaborative R&D agreements the company is a party to and who the partners were (universities, suppliers, federal agencies, etc.)*

* The questions within these areas are new or have been expanded or modified from the current version of the survey.

On 01/14/08, OMB granted clearance to the Census Bureau to continue the annual collection of **research and development** data from businesses via the **Survey of Industrial Research and Development (SIRD)** (OMB 0607-0912), which has been conducted jointly by the Census Bureau and the National Science Foundation (NSF) since 1957. Clearance was granted through 01/31/11. As a result of the comprehensive survey redesign just described, the **Census Bureau** is requesting a revision of that collection under the new name, the **Business R&D and Innovation Survey (BRDIS)**.

The National Science Foundation Act of 1950 as amended authorizes and directs NSF “...to provide a central clearinghouse for the collection, interpretation, and analysis of data on scientific and engineering resources and to provide a source of information for policy formulation by other agencies of the Federal government.” The SIRD has been and the new BRDIS will be the vehicle with which NSF carries out the business portion of this mandate. NSF together with the Census Bureau, the

collecting and compiling agent, analyze the data and publish the resulting statistics.

Companies are the major performers of research and development (R&D) in the United States, accounting for over 70 percent of total U.S. R&D outlays each year. A consistent business R&D information base is essential to government officials formulating public policy, industry personnel involved in corporate planning, and members of the academic community conducting research. To develop policies designed to promote and enhance science and technology, past trends and the present status of R&D and innovation must be evaluated. The survey, as now designed, will be the platform through which data on innovation activities in the business sector will be collected. Without comprehensive business R&D statistics, it would be impossible to evaluate the health of science and technology in the United States or to make comparisons between the technological progress of our country and that of other nations.

In addition, information from the new BRDIS will support the following initiatives:

Innovation Measurement-Tracking the State of Innovation in the American Economy, the U.S. Department of Commerce's Advisory Committee's guidance to the Federal government, business, and researchers on what should be done to set "this nation on a course toward effectively measuring the impact of innovation on the economy." The report specifically calls for the improved measurement of intangibles, building on the work currently under way at the National Science Foundation.

Science of Science and Innovation Policy (SciSIP), NSF's program to foster the development of the knowledge, theories, data, tools, and human capital needed to underwrite fundamental research that creates new explanatory models and analytic tools designed to inform the Nation's public and private sectors about the processes through which investments in science and engineering are transformed into social and economic outcomes.

America Competes Act of 2007, which calls for the doubling of funding for basic research in physical sciences, improvement of math instruction, and expand low-income students' access to AP coursework through AP/Int'l Baccalaureate Program to, as The White House fact sheet on the America Competes Act says, "encourage scientists to explore promising and critical areas such as nanotechnology, supercomputing, and alternative energy sources." Further, the act places substantial emphasis on understanding and enhancing the role of innovation in the US economy.

Rising Above the Gathering Storm, the NRC report that recommends increasing America's talent pool by improving K-12 and math & science education; sustain and strengthen the Nation's commitment to long-term basic research; develop and recruit top students, scientists & engineers from U.S. and abroad; and ensure that the U.S. is the premier place in the world for innovation. The chairman of the committee that prepared the report and who continues to advocate for implementation of its recommendations, Norman Augustine, has written an endorsement letter that will be included in the mail package for the new BRDIS.

The Census Bureau conducts this survey under the mandatory requirements of Title 13, United States Code, Sections 182, 224, 225, to provide key measures of economic activity during intercensal periods.

Need and Uses

Information quality is an integral part of the pre-dissemination review of the information disseminated by the Census Bureau (fully described in the Census Bureau's Information Quality Guidelines). Information quality is also integral to the information collections conducted by the Census Bureau and is incorporated into the clearance process required by the Paperwork Reduction Act.

Policy officials from many Federal agencies rely on these statistics for essential information. For example, total U.S. R&D expenditures statistics have been used by the Bureau of Economic Analysis (BEA) to update the System of National Accounts and, in fact, the BEA recently has established a separate R&D satellite account as well as the beginning work on a satellite account on innovation. Accurate R&D data are needed to continue the development and effect subsequent updates to this detailed satellite account. Also, a data linking project has been designed to augment the Foreign Direct Investment (FDI) data collected by BEA. The initial attempt to link the SIRD data with BEA's FDI benchmark files was successful, and plans now call for the annual linkage of the R&D data to the Foreign Direct Investment (FDI) and U.S. Direct Investment Abroad (USDIA) data. Further, the Census Bureau links data collected by the Survey with other statistical files. At the Census Bureau, historical company-level R&D data are linked to a file that contains information on the outputs and inputs of companies' manufacturing plants. Researchers are able to analyze the relationships between R&D funding and other economic variables by using micro-level data.

A limited set of first-time collected questions about innovation is included in the BRDIS. These data will serve as the beginning benchmark on

innovation. Understanding and promoting innovation are needed to better understand how the U.S. economy operates.

Many individuals and organizations access the survey statistics via the Internet and hundreds have asked to have their names placed on the mailing list for a paper copy of the annual *SRS InfoBrief* that announces the availability of statistics from each cycle of the Survey. Information about the kinds of projects that rely on statistics from the Survey is available from internal records of NSF's Division of Science Resources Statistics (SRS). In addition, survey statistics are regularly printed in trade publications and many researchers use the survey statistics from these secondary sources without directly contacting NSF or the Census Bureau. Some of the users of the survey statistics and the types of information they request are described below.

Government Users

Government policy officials who are involved in assessing the role of the Federal government in promoting economic growth use R&D statistics in their decision-making processes since R&D results affect technological and economic progress. Members of Congress make extensive use of R&D statistics in preparing tax legislation, contacting NSF or the Census Bureau directly through their own staffs, through one of the House or Senate science committees, or through the Congressional Research Service.

NSF staff also work closely with the Office of Science and Technology Policy (OSTP), providing R&D statistics and indications of emerging trends to assist the OSTP staff in their analyses of the status of science and technology in the United States. In addition, NSF has frequent contact with the Office of Management and Budget (OMB), the Congressional Budget Office (CBO), the Congressional Research Service (CRS), and the Congressional Joint Economic Committee which use R&D statistics in their studies.

Statistics produced from the Survey also have been requested by officials from other Federal government and quasi-governmental agencies including the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Labor, State, and Treasury; the Bureau of Economic Analysis, Bureau of Labor Statistics, Congressional Joint Committee on Taxation, Consumer Products Safety Commission, Environmental Protection Agency, Federal Reserve Banks of Chicago, Dallas, New York, and San Francisco, Government Accountability Office, Government Printing Office, International Trade Administration (Department of Commerce), International Trade

Commission, National Aeronautics and Space Administration, National Institute of Standards and Technology, National Institutes of Health, National Oceanic and Atmospheric Administration, Oakridge National Laboratory, Office of Naval Research, President's Council of Economic Advisors, Office of Trade Policy Analysis, U.S. Federal Trade Commission, U.S. Patent Office, and U.S. Small Business Administration.

As states and local governments seek to attract high-tech industries to their areas, NSF and the Census Bureau are frequently asked to provide R&D funding and employment figures. Among the state governments and state organizations requesting industry R&D statistics have been Alabama, Arkansas, California Energy Commission, Center for Innovative Technology (VA), Georgia, Indiana, Maine Development Foundation, Maine Science and Technology Foundation, Maryland, Massachusetts Department of Revenue, Michigan Department of Labor and Economic Growth, Michigan Economic Development Corporation, Minnesota, Mississippi, New Jersey Research and Development Council, New York State Department of Taxation and Finance, New York State Economic Development Authority, North Carolina, North Dakota Department of Commerce, Ohio, Oklahoma, Pennsylvania, South Carolina, Southern Growth Policies Board (representing Alabama, Arkansas, Georgia, Kentucky, Louisiana, Missouri, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Virginia, and West Virginia), and Utah.

Information and statistics from the Survey also are supplied to internal NSF organizations. For example, survey statistics are used in the "Research and Development: National Trends and International Linkages" and "Industry, Technology, and the Global Marketplace" chapters of the Congressionally mandated *Science and Engineering Indicators* series, a biennial report in which the National Science Board continues its effort to describe quantitatively the condition of U.S. science and research. Survey results are also included in NSF's annual *National Patterns of R&D Resources* tabulations.

International Users

The international community uses R&D spending information as part of its comparisons of the economic performance among nations. U.S. R&D statistics are compiled in a format that can be compared with those of other countries. These statistics are transmitted to the Organization for Economic Cooperation and Development (OECD) that relies on the Survey as its primary source for comparative business R&D statistics for the United States. Also, R&D statistics are used by multi-national committees and subcommittees studying and maintaining the North American Industry Classification System (NAICS) and North American Product Classification System (NAPCS).

Other international and foreign entities that have requested statistics on U.S. business R&D expenditures include the Brazilian National Council for Scientific and Technological Development, Canadian Ministry of Treasury and Economics, CARSA (Spain), Central Research Institute of the Electric Power Industry of Japan, Credit Suisse Securities, Delegation of the European Communities, Deloitte-Touche Tohmatsu (Japan), Department of State and Regional Development (Australia), Department of Technology Policy (Austria), European Commission's Joint Research Center, French Embassy, French Federal Institute of Research, Embassy of Finland, Embassy of Germany, Hungarian Academy of Sciences, The Impact Group (Canada), Industry Canada, Instituto Nacional de Estadística (Madrid), London School of Economics, Natexis Capital (France), National Technology Agency of Finland, Natural Sciences and Engineering Research Council of Canada, Office of Pharmaceutical Industry Research (Japan), Oxford Institute for Energy Studies, Puerto Rico Planning Board, Office of the Representative of the Republic of Taiwan, Queens University (Canada) Research Center for Advanced Science and Technology (Japan), Royal United Services Institute for Defence and Security Studies (UK), Statistics Canada, Statistics Quebec, VM Institute (Japan), and the Universities of Auckland, Campinas (Brazil), Maastricht (Germany), Melbourne, Quebec, Shanghai, Sussex, and Tokyo. Domestic research organizations focusing on international issues also have requested survey statistics. These organizations include the U.S. Council for International Business and the Center for Strategic and International Programs.

Business Users

Although the primary purpose of the survey is to provide accurate R&D statistics for well-informed public policy decisions, business users also benefit from the survey figures, and one of the goals of the redesign is to increase the utility of the information to companies. There is a special obligation to keep the survey relevant to industry users particularly because business personnel spend time answering the annual questionnaire. Firms and trade associations in all industries, whether large or small in terms of R&D performance, are interested in making intra-industry comparisons, as well as comparing other industries' performance with their own.

Each year the NSF and Census Bureau receive many requests for R&D information from business users of the statistics. Some of the industry users who have requested information are AT&T, Bayer, Bell Atlantic, Bellcore, Blue Cross/Blue Shield, Boeing, Agilex Technologies, Alcatel-Lucent, Amgen, Chevron, Conoco-Phillips, Control Data, Corning, DuPont, Eastman Chemical, Eli Lilly, Environmental Sciences, Inc.,

Ethyl, Exxon, Fisher Scientific, Ford, General Electric, General Motors, Glaxo, Google, GTE Technologies, Johnson and Johnson, Hearst, Hershey, H.J. Heinz, Hewlett-Packard, IBM, IBM-Canada, Illinois Power Company, Intel, Kodak, Lockheed-Martin, McDonald-Douglas, Merck, Mid-Atlantic Healthcare, Parke-Davis, Pfizer, Potlatch, Pratt and Whitney, Science Applications International Corp., South California Edison, Symantec, Taratec, Unnext, Wachovia, WEFA Petroleum, Weyerhaeuser, and Xerox.

In addition to industry researchers who utilize the R&D statistics directly from the NSF website and publications, there are many who use the Survey's tabulations in their own trade reports. For example, *Chemical and Engineering News*, a publication of the American Chemical Society, prints a special yearly supplement on R&D in the chemical industry that is based on the Survey's statistics. It also prints many tables verbatim, citing NSF as the source. A yearly special issue of *Research and Development* magazine publishes survey tables and an analysis of current R&D trends based on interviews with research directors as well as conversations with NSF staff.

Other trade publications that regularly print statistics directly from the Survey include *Aerospace Facts and Figures* (Aerospace Industries Association), *Industrial Research and Development Facts* (Industrial Research Institute), and *Physics Today* (American Institute of Physics). Other trade associations that have contacted NSF include the American Chemical Council, American Entrepreneur Association, American Forestry and Paper Association, American Iron and Steel Institute, American Power Association, American Society for Engineering Education, Center for Automotive Research, Elsevier Engineering Information, Inc., Gas Operations Innovation Alliance, Manufacturers' Alliance, Hartford (CT) Area Business Associates, National Center for Manufacturing Sciences, Natural Gas Supply Association, Pharmaceutical Research & Manufacturers of America, Refractories Institute, and the Small Business High Tech Institute. Consultants to trade associations and industry also contact NSF. Among them have been: Booz-Allen Hamilton; Boston Consulting Group; DRI, Inc.; Ernst and Young, J. Orban and Company; Mayer, Brown, Rowe, and Associates; McKinsey and Company; Northstar Economics, Inc.; PricewaterhouseCoopers; SRI International; Stroock and Stroock and Lavan LLP; Waldman Associates; William Blair and Company; and the William Burn Company.

Unions also consider business R&D statistics relevant to their members' well-being. NSF has received requests from the United Auto Workers, the International Brotherhood of Printers and Xerographers, and the International Union of Brick Layers and Allied Craftsmen.

R&D statistics also are used by research organizations devoted to the study of business, R&D, science, technology and related topics. These organizations include the Academy of Technology Entrepreneurs and Innovators; Boston Analytics, Competitiveness Policy Council; Corporation for Enterprise Development; Council for Chemical Research; Council on Competitiveness; Information Technology and Innovation Foundation, National Academy of Sciences' Academy of Engineering, Committee on National Statistics, National Research Council, and Board on Science, Technology, & Economic Policy; National Bureau of Economic Research; National Economic Research Association; Potomac Knowledgeway Project; Research and Development Council; United Technologies Research Center; The Urban Institute, and World Wildlife Federation. The statistics also are the basis for R&D spending projections published by the Battelle Memorial Institute.

Other Users

Research undertaken at universities on innovation and economic growth has relied heavily on the detailed R&D time series from the Survey. Research projects that have used R&D statistics obtained from the Survey have been conducted at many colleges and universities including American, Clemson, Columbia, Georgia Institute of Technology, Georgia State, George Mason, Georgetown, George Washington, Harvard, Harvard Business School, Kansas State, Lehigh, Macalester, Marshall, Michigan State, New York University Stern School of Business, Ohio State, Pennsylvania State, Princeton, Purdue, Rutgers, Texas A&M, Tufts, the Massachusetts Institute of Technology, Southern Methodist University, the Virginia Polytechnic Institute, Yale, and the Universities of California, Delaware, Florida, Georgia, Maryland, Michigan, Minnesota, New York, North Carolina, Oregon, Pittsburgh, South Carolina, Tennessee, Texas, Virginia, and Wisconsin.

In addition, inquiries are regularly received from the news media. Inquiries have been received from: *Aviation Daily, Business Week, Chemical & Engineering News, Chemical Week, Chicago Tribune, DRI/McGraw-Hill Publications Co., Elsevier Science Publishing, Forbes, flatironreport.com, Fortune, Indianapolis Star, Information Week, Journal of Commerce, Los Angeles Times, Manufacturer, Manufacturing News, Modern Maturity Magazine, National Geographic, Newsweek, New York Times, Owner-Manager Magazine, Physics Today, Research & Development, Research and Technology Management, Science, Science & Government Report, USA Today, U.S. News & World Report, Wall Street Journal, Washington Post, and Washington Times.*

And finally, Internet sites continue to link with the Survey's results. These linkages are usually not known, but some of the organizations that

have contacted NSF for information regarding the Survey are economy.com, globalinsights.com, monitor.com, and NineSigma.com.

The list below shows the type of requester and the percentage of industry R&D information requests received via telephone and email from each group during CY 2007. The "NSF and type of organization undefined" category includes, but is not limited to, requests from inside NSF, libraries, and students below the university level. The percentages below **do not** include visits to the NSF website.

<u>Type of User</u>	<u>Percentage of requests</u>
University	20
Federal and State government	19
Foreign government and international research	14
Consultants	11
Research and nonprofit	10
Industry	9
NSF and type of organization undefined	7
Media	6
Trade association	3
Congressional	1

In summary, each item in the Survey has been the subject of research by someone interested in business R&D performance. Although the consumers of the R&D statistics from the Survey are diverse, there is one common element underlying all the uses of the survey statistics—an attempt to gain a better understanding of some aspect of the nation's scientific and technological resources. The detailed statistics provided by the Survey are the most complete set of elements for assessing the impact of R&D on business development and the nation's economy.

3. Use of Information Technology

Respondents will be able to respond by either mailing the questionnaire back to the Census Bureau or electronically by using Census Taker, the Census Bureau's internet reporting option. Explanatory materials accompanying the questionnaires will notify respondents that they can access Census Taker by going to www.census.gov/econhelp/rd. Advantages to using Census Taker include: reduced time and expense to

report, improved data quality through automatic data checks, the ability to exit the form and resume at a later time without losing the data already entered, the ability to save a paper or electronic version (pdf) of the completed form. Respondents will also be able to use the website to access the following information: general information regarding the BRDIS, frequently asked questions, sample questionnaires, and worksheets for each question in various formats designed to allow respondents the ability to email the information to the appropriate person within their company to obtain the information. Respondents will also be able to request an extension and update their contact information at the web site.

NSF and the Census Bureau are currently assessing how the Telephone Data Entry (TDE) system can be utilized for the BRDIS given all the changes from the historic SIRD. We anticipate using the technology to further reduce the burden of BRDIS respondents.

4. Efforts to Identify Duplication

The Census Bureau and NSF jointly assess results of discussions with major respondents who also participate in other conducted surveys to avoid possible duplication of R&D data collection. In addition, the Census Bureau and NSF maintain close liaison and share information with other Government agencies that have an interest in R&D statistics to ensure that duplication of data collection does not occur.

The Survey is the only annual survey measuring total national business R&D spending and will be the only national annual survey beginning the measurement of innovation. The Securities and Exchange Commission (SEC) collects only partial data on R&D expenditures and R&D scientists and engineers employed by U.S. companies on Forms 10-K and 10-Q and these data are not aggregated to a national total. In addition, privately held companies, regulated utilities, transportation companies, and companies with only small amounts of R&D spending do not report R&D expenditures to the SEC.

Occasionally, various interested groups, such as the Aerospace Industries Association, Pharmaceutical Manufacturers Association, and the Industrial Research Institute conduct R&D canvasses of their own members. These studies cannot, however, be used as the basis for national R&D totals, nor do they have the variety of R&D detail necessary for policy decisions. There is, therefore, no other source for the R&D data collected by the Survey.

5. Minimizing Burden

To minimize burden, about 90 percent of the companies selected for the survey are asked to respond to the abbreviated version of the questionnaire (BRDI-1A). Further, only companies with five or more paid employees are asked to participate in the Survey. The descriptive codes and information on the Business Register (BR), the basis for the survey's sampling frame (see Section B.1.), are used extensively to select minimal samples in industries that traditionally do not perform R&D.

The majority of companies sent the Form BRDI-1A do not perform R&D. In the past, the burden on these respondents had been lessened by allowing them to fulfill their reporting obligation by calling the TDE (Telephone Data Entry) number, enter their identification number and, using their telephone keypad, report that they do not conduct R&D. Starting in 2008, the survey will ask the non R&D performers two basic innovation questions to begin to gauge the innovative activity of smaller companies. This information will be used to evaluate the collection of data related to innovation in future survey cycles. The questions are yes – no checkbox questions and the estimated burden is .5 hrs. The respondents will be able to answer them electronically through Census Taker or by mailing their response to the Census Bureau

6. Consequences of Less Frequent Collection

During 1999 and 2000, the National Academy of Sciences (NAS) conducted an NSF-sponsored portfolio review of NSF's statistical program and published the results in a report entitled *Measuring the Science and Engineering Enterprise-Priorities for the Division of Science Resources Studies*². Among the aspects of the NSF statistical program that were reviewed was the consequence to Federal program or policy activities if data collections, including the collection by the Survey, are not conducted or are conducted less frequently, and the technical or legal obstacles to reducing burden. A recommendation to discontinue the Survey or to collect business R&D data less frequently was not included in the Academy's report. Also, the BEA has emphasized the importance of an annually updated series recently because of the linkage with the BEA FDI and USDIA data and inclusion of an R&D satellite account in the System of National Accounts administered.

7. Special Circumstances

This information collection will be conducted in a manner consistent with OMB guidelines and there are no special circumstances.

8. Consultations Outside the Agency

On April 21, 2008, the Census Bureau published a notice in the Federal Register (Volume 73, pages 21309-10) inviting the general public and other Federal agencies to comment on plans to submit this request. No formal comments were received.

Outside Consultations on Data by NSF: In late 2001, NSF's Division of Science Resources Statistics (SRS) sought a comprehensive review of the portfolio of activities that comprise the SRS Research and Development Statistics Program (RDS). NSF awarded a sole source cost reimbursement, no fee contract to the National Academy of Sciences (NAS) to review existing R&D data collection systems and relevant literature in the field, commission appropriate papers, identify gaps in current methodology, and hold workshops on its findings. Work began in January 2002 and was performed primarily by the Committee on National Statistics (CNSTAT) with contributions by the Board on Science, Technology and Economic Policy (STEP). An assessment was made of the content, coverage, focus, substance and methodology of data collection and analyses on research and development and related science and engineering activities. The assessment included a review of current and necessary statistical and measurement issues, including (but not limited to) sampling design, periodicity, and construct validity and respondent burden. The Committee addressed how the current RDS data collection system can be improved to reflect the changing nature of research, development, and innovation, and include recommendations on the issues of composition, structure, sourcing and location, particularly in the context of the business R&D and federal funds surveys, covering the majority of U.S. R&D funding and performance. CNSTAT appointed a panel of experts representing the fields of statistics, survey research, economics, data analysis, research policy, and research and development to review current data collection systems and methodology, and to hold a workshop on R&D measurement methodology.³ NAS' National Research Council (NRC) independently reviewed the CNSTAT interim report to "provide candid and critical comments that will assist the institution [NAS] in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge." The final report detailing overall findings and recommending priorities and options for revised or enhanced R&D data collection and acquisition activities was published in early 2005.

The CNSTAT panel recommended "that NSF again develop a panel of R&D experts, broadly representative of the R&D performing and R&D data-using communities, to serve as a

feedback mechanism to provide advice on trends and issues of importance to maintaining the relevance of the R&D data.” In 2006, NSF assembled a panel of executives and experts from the business community to advise SRS on priorities and strategies for improving the accuracy and relevance of statistics on R&D in the business sector. This 16-member Industry Expert Panel (IEP) met three times in 2006 and provided critical insights to SRS on issues such as ongoing changes in the conduct of business R&D, globalization and collaboration, and R&D definitions. In May 2008, the panel was reconvened as the Business Experts Panel (BEP), to provide additional perspectives on the fast-changing environment for the conduct and organization of business R&D and business user data needs, identify emerging issues and trends that are important for maintaining the accuracy and relevance of the BRDIS, develop recommendations on priorities and strategies for ongoing activities and new directions to maintain the relevance and utility of the statistics produced from the BRDIS, and develop recommendations on ways to introduce the new survey to the business community, make companies aware of the importance of the survey data to the Nation and for their own purposes, and generate support for completing the survey.

NSF plans to continue to obtain outside advice on the content, design, and conduct of the Survey and to fund measured quality improvement initiatives that call upon outside resources for input as part of a continual data quality improvement program after the redesigned survey is implemented.

Outside Consultations on Data by the Census Bureau: Recommendations resulting from periodic meetings of the Census Bureau’s Advisory Committee of Professional Associations are evaluated and implemented as appropriate. The American Economic Association (AEA) component of the Committee targets areas of potential enhancements to the Survey, and the Census Bureau, with NSF input, responds to these as staffing and resources permit. Also, with NSF input, the Census Bureau regularly conducts nonresponse evaluations and suggests ways to revise questionnaires or streamline collection and processing.

9. Paying Respondents

No payments or gifts are given to respondents of the Survey.

10. Assurance of Confidentiality

A notice on the first page of each questionnaire announces to the respondent:

Your Response is Required by Law

Title 13, U.S. Code, requires businesses and other organizations that receive this questionnaire to answer the questions and return the report to the Census Bureau.

Your Response is Confidential by Law

Title 13, U.S. Code, requires that your response be seen only by persons sworn to uphold the confidentiality of Census Bureau information and may be used only for statistical purposes. The law also provides that copies retained in this company's files are immune from legal process.

Similar language is used in the accompanying letters, as well.

11. Justification for Sensitive Questions

There are no questions on the Survey that are commonly considered sensitive.

12. Estimate of Hour Burden

¹ National Research Council (2005). *Measuring Research and Development Expenditures in the U.S. Economy*. Panel on Research and Development Statistics at the National Science Foundation, Committee on National Statistics, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

² National Academy Press, Washington, DC, 2000. Note that NSF's Division of Science Resources Studies is now the Division of Science Resources Statistics.

³ The panel included Lawrence D. Brown (chair), Meirs Busch professor in the Department of Statistics at the Wharton School of the University of Pennsylvania; John L. Adams, a senior statistician with the RAND Corporation; Barbara A. Bailar, statistical consultant and former Associate Director for Statistical Standards and Methodology at the Census Bureau; Wesley M. Cohen, professor of economics and management at the Fuqua School of Business at Duke University; Fred Gault, the director of the Science, Innovation, and Electronic Information Division at Statistics Canada; Jay Hakes, director of the Jimmy Carter Library and Museum; Brownwyn Hall, professor of economics in the Department of Economics at the University of California, Berkeley; Christopher T. Hill, vice provost for research and professor of public policy and technology at George Mason University; Steven Klepper, professor of economics and social science in the Department of Social and Decision Sciences at Carnegie Mellon University; Joshua Lerner, the Jacob H. Schiff professor of investment banking at the Harvard Business School; Baruch Lev, professor of accounting and finance at the Stern School of Business of New York University; Gary McDonald, retired head of the Mathematics Department of General Motors Research and Development Center; Michael McGeary, political scientist with the Institute of Medicine and other units of the National Academy of Sciences; Thomas J. Plewes, study director and former associate commissioner for employment and unemployment statistics of the Bureau of Labor Statistics; Nora Cate Schaeffer, professor in the Department of Sociology at the University of Wisconsin, Madison; and Richard Valliant, senior research professor at the University of Michigan and professor in the Joint Program on Survey Methodology at the University of Maryland.

Approximately 5,000 companies will receive Form BRDI-1 (attachment B) and 35,000 companies will receive Form BRDI-1A (attachment C) for a total sample of 40,000 companies. See Tables 12A – 12C for details of the burden estimates. The number of zero R&D performers, companies with funded R&D, and companies without funded R&D in the tables below are estimated based on the results of the current SIRD.

Table 12A BRDI-1

Type of Respondent	Companies	Burden Estimate	Total Burden Hrs.
Zero R&D	1,000	0.5 Hrs.	500
Companies with Funded R&D	300	25 Hrs.	7,500
Companies without Funded R&D	3,700	18 Hrs	66,600

Average Burden = 14.92 Hrs.

Table 12B BRDI-1A

Type of Respondent	Companies	Burden Estimate	Total Burden Hrs.
Zero R&D	27,000	0.5 Hrs.	13,500
Companies with Funded R&D	800	12 Hrs.	9,600
Companies without Funded R&D	7,200	8 Hrs.	57,600

Average Burden = 2.31 Hrs.

The number of companies was estimated using historical information from the Survey of Industrial Research and Development. The burden estimate was derived using historic information and results from the cognitive testing that have been conducted to date.

Table 12C Total Sample

Type of Respondent	Companies	Avg. Burden Hour Estimate	Total Burden Hrs.
BRDI-1	5,000	14.92	74,600
BRDI-1A	35,000	2.31	80,850
Total	40,000	N/A	155,450

Using the average wage rate for a staff level accountant from the BLS website of \$32.21 per hour, the average dollar cost per company surveyed will be approximately \$130.00.

13. Estimated Cost to Respondents

We do not expect respondents to incur any cost other than that of their time to respond. The information requested is of the type and scope normally carried in agency records and no special hardware or software is necessary to provide answers to this information collection. Therefore, respondents are not expected to incur any capital and startup costs or systems maintenance cost in responding. Further, purchasing of outside information collection services, if performed by the respondent, is part of usual and customary business practices and not specifically required for this information collection.

14. Costs to the Federal Government

We expect the total cost to the Federal Government (including the planned methodological research) to be approximately \$3.9m for FY 2008 and \$5.8m for FY 2009 and annually thereafter. The Census Bureau and the National Science Foundation share this cost.

15. Reason for Change in Burden

The increased burden results from the extensive redesign of the Survey as detailed herein.

16. Project Schedule

Task	Time Frame
2008 Pre-survey letter mailed	Oct/Nov 08
2008 BRDIS Mail-out	Jan 09
2008 BRDIS Response Analysis Study (includes follow-up activities)	Feb – Aug 09
2009 Questionnaire Complete	Sept 09

2009 Pre-survey letter mailed	Oct/Nov 09
2009 BRDIS Mail-out	Jan 10
2009 BRDIS non-response follow-up	Mar 10 – June 10
2008/2009 Micro data analysis	Sept 09 – Aug 10
2008/2009 Macro data analysis	Mar 10 – Oct 10
2008/2009 Table/Disclosure Review	Oct /Nov 10
2008/2009 Data Tables delivered to NSF	Dec 10

17. Request to Not Display the Expiration Date

The expiration date of OMB approval will be displayed on questionnaires.

18. Exceptions to the Certification

The collection of information for the Survey complies with 5 CFR 1320.9 without exception.

