

**Department of Commerce**  
**U.S. Census Bureau**  
**OMB Information Collection Request**  
**Business Enterprise Research and Development Survey**  
**(Form BRD-1)**  
**OMB Control Number: 0607-0912**

**Supporting Statement Part A. Justification**

**1. Necessity of the Information Collection**

The Census Bureau is requesting clearance to conduct the Business Enterprise Research and Development Survey (BERD) for the 2021-2023 survey years with the revisions outlined in this document. 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 expenditures 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 must be known and analyzed. 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.

BERD is a joint statistical project between the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF) and the Census Bureau. The National Science Foundation Act of 1950 as amended authorizes and directs the National Science Foundation "...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" and the authority was renewed by Section 505 of the America COMPETES Reauthorization Act of 2010. This mandate is fulfilled by NCSES. One of the methods used by NCSES to fulfill this mandate is the BERD (and its predecessor surveys)—the primary federal source of information on R&D in the business sector. NCSES together with the Census Bureau, the collecting and compiling agent, analyze the data and publish the resulting statistics.

NCSES has published annual R&D statistics collected from the Survey of Industrial Research and Development (1953 – 2007), the Business R&D and Innovation Survey (2008 – 2016), the Business Research and Development Survey (2017 and 2018), and the Business Enterprise Research and Development Survey (2019 and 2020) for 67 years. The results of the surveys are used to assess trends in R&D expenditures by industry sector, investigate productivity determinants, formulate science and tax policy, and compare individual company performance with industry averages. This survey is the Nation's primary source for international comparative statistics on business R&D spending.

BERD will continue to collect the following types of information:

- R&D expense based on accepted accounting standards.
- Worldwide R&D of domestic companies.
- Business segment detail.
- R&D related capital expenditures.
- Detailed data about the R&D workforce.
- R&D strategy and data on the potential impact of R&D on the market.

Beginning in 2020, in an effort to reduce burden, BERD began rotating select content off the survey in alternating years. In 2020, questions related to detail of R&D performed by others, activities with academia, industries of business and specific federal agency funding R&D, and areas of application for R&D were removed from BERD. In 2021, all of those questions will be reintroduced to the survey and the Intellectual Property and Technology Transfer Section will be removed from the survey. BERD plans to continue rotating this content in alternating years.

Beginning in 2021, the BERD will revise its existing Capital Expenditures section to collect additional information on assets. Cognitive testing on these questions conducted by the Census Bureau in 2018 revealed that these questions pose no substantive impact on burden (the data requested are all readily available in most companies' books) and would provide context on capital stock of R&D active companies not currently available in any other data source. After collecting two consecutive years of data (for 2021 and 2022), BERD plans to collect the additional assets questions in alternating years, similar to the other rotating content. So, in 2023, BERD would have the smaller [previously collected] Capital Expenditures section, and in 2024 would reinstate the more robust Assets section and so on.

The survey form used for BERD is the BRD-1 (Attachment A).

Information from BERD will continue to support NCSSES' responsibility to collect information on Research and Development for overall support for Federal policy discussions, as required under the America COMPETES Reauthorization Act of 2010.

The survey is conducted under the authority of Title 13, United States Code, Sections 8(b), 131, and 182; Title 42, United States Code, Sections 1861-76 (National Science Foundation Act of 1950, as amended); and Section 505 within the America COMPETES Reauthorization Act of 2010 (Attachment D).

## 2. **Need and Uses**

Policy officials from many Federal agencies rely on these statistics for essential information. Businesses and trade organizations rely on BERD data to benchmark their industry's performance against others. For example, total U.S. R&D expenditures statistics are used by the Bureau of Economic Analysis (BEA) for incorporating R&D as fixed investment in updates to the National Income and Product Accounts (NIPAs). . . Also, NCSSES, BEA and the Census Bureau periodically seek to use BERD data to augment global R&D investment information that is obtained from BEA's Foreign Direct

Investment (FDI) and U.S. Direct Investment Abroad (USDIA) surveys. Further, the Census Bureau links data collected by BERD 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 can analyze the relationships between R&D funding and other economic variables by using micro-level data.

Individuals and organizations access the survey statistics via the Internet in annual InfoBriefs published by NCSSES that announce the availability of statistics from each cycle of BERD and detailed statistical table reports that contain all of the statistics NCSSES produces from BERD. Information about the kinds of projects that rely on statistics from BERD is available from internal records of Census' Center for Economic Studies. In addition, survey statistics are regularly cited in trade publications and many researchers use the survey statistics from these secondary sources without directly contacting NCSSES or the Census Bureau. Some of the users of the survey statistics and the types of information they request are described below.

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.

### **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 use of R&D statistics in preparing tax legislation, contacting NCSSES or the Census Bureau directly through their own staffs, through one of the House or Senate science committees, the Congressional Budget Office (CBO), the Congressional Research Service (CRS), or the Congressional Joint Economic Committee.

NCSSES staff also work closely with the Office of Science and Technology Policy (OSTP), providing R&D statistics and indicators of emerging trends to assist the OSTP staff in their analyses of the status of science and technology in the United States. In addition, NCSSES has frequent contact with the Office of Management and Budget (OMB). Statistics produced from BERD also have been requested by officials from a host of other Federal government and quasi-governmental agencies including the various federal reserve banks. Also, as states and local governments seek to attract high-tech industries to their areas, NCSSES and the Census Bureau are frequently asked to provide R&D funding and employment figures to state governments and state organizations. Further, information and statistics from BERD also are supplied to internal NCSSES organizations. For example, survey statistics are used in the "Research and Development: U.S. Trends and International Comparisons" and "Invention, Knowledge Transfer and Innovation" thematic reports of the Congressionally mandated Science and Engineering Indicators series, a biennial report in which the National Science Board continues to describe quantitatively the condition of U.S. science and research. Survey results are also

included in NCSES' annual National Patterns of R&D Resources tabulations and reports.

### **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 BERD 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 Canadian Ministry of Treasury and Economics, Credit Suisse Securities, Deloitte-Touche Tohmatsu (Japan), European Commission's Joint Research Center, French Embassy, Embassy of Finland, Embassy of Germany, Hungarian Academy of Sciences, Industry Canada, Instituto Nacional de Estadística (Madrid), London School of Economics, National Technology Agency of Finland, Natural Sciences and Engineering Research Council of Canada, Oxford Institute for Energy Studies, Puerto Rico Planning Board, Office of the Representative of the Republic of Taiwan, Statistics Canada, and Statistics Quebec. Domestic research organizations focusing on international issues also have requested survey statistics.

### **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. 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 NCSES and the Census Bureau receive many requests for R&D information from business users of the statistics.

In addition to industry researchers who utilize the R&D statistics directly from the NCSES website and publications, there are many who have used BERD statistics and information in their own trade reports. Trade associations that have contacted NCSES include the Aerospace Industries Association, American Chemical Council, American Power Association, American Society for Engineering Education, Center for Automotive Research, Manufacturers' Alliance, Natural Gas Supply Association, Pharmaceutical Research & Manufacturers of America, and the Small Business High Tech Institute. Consultants to trade associations and industry also contact NCSES. Among them have been: Booz-Allen Hamilton; Boston Consulting Group; McKinsey and Company; Northstar Economics, Inc.; PricewaterhouseCoopers; SRI International; Stroock and Stroock and Lavan LLP; and the William Burn Company.

R&D statistics also have been used by research organizations devoted to the study of industry, R&D, science and technology and related topics. These organizations include the Boston Analytics, Competitiveness Policy Council; 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 Economic Research Association; The Urban Institute, and World Wildlife Federation. The statistics also have been used for R&D spending projections published by the Battelle Memorial Institute.

### **Other Users**

Research undertaken at colleges and universities on innovation and economic growth has relied heavily on the detailed R&D time series from NCSSES' business R&D surveys. Research projects that have used R&D statistics obtained from the surveys have been conducted at a host of domestic and international colleges and universities. In addition, inquiries are regularly received from the media.

In summary, each item in BERD has been the subject of research by someone interested in business R&D performance. Although the consumers of the R&D statistics from BERD 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 BERD 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**

The 2021 BERD will follow a primarily electronic collection strategy, where all respondents will be directed to use the internet reporting platform, Centurion, but paper forms will be made available to those who call to request one and will be included in the fourth follow-up mailing.

The Centurion instrument will mirror the paper form, BRD-1 (Attachment A). Advantages to using Centurion 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 an electronic version (pdf) of submitted data for their own records, and the ability to consolidate and upload data directly from Excel spreadsheet versions of the survey.

Through the Economic Respondent Portal, respondents will have access to frequently asked questions and general information about the survey. They will also have direct access to Centurion, and will have the ability to request time extensions, check their filing status or send secure email messages to the Census Bureau.

### **4. Efforts to Identify Duplication**

The Census Bureau and NCSES jointly assess results of discussions with respondents who also participate in other surveys to avoid possible duplication of R&D data collection. In addition, the Census Bureau and NCSES 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.

BERD is the only annual survey measuring national business R&D spending of businesses with 10 or more employees. 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 BERD.

## **5. Minimizing Burden**

R&D is a rare activity in businesses. Many companies surveyed by BERD have no R&D activity. Companies with R&D have a highly skewed distribution with the vast majority of BERD R&D estimates coming from a relatively small number of companies.

Companies reporting \$0 R&D are skipped through almost the entire survey. Companies reporting less than \$1 Million R&D are skipped through more than half of the survey. These skip patterns significantly reduce the response burden for vast majority of companies in the survey, historically about 80% of the companies sampled.

Additionally, the sampling methodology is based on selection probabilities that are proportional to a measure of size. The measure of size is R&D costs for companies that are known to perform or fund R&D and is annual payroll for companies with unknown R&D activity. This makes smaller companies less likely to be selected for the sample. More information on the sample design can be found in Part B of the Supporting Statement.

## **6. Consequences of Less Frequent Collection**

Users who depend on BERD statistics in NCSES' annual BERD detailed statistical tables reports, the National Patterns of R&D Resources reports, and the National Science Board's Science and Engineering Indicators reports require annual updates to create and analyze the size of and trends in the national R&D enterprise. Also, the Department of

Commerce's Bureau of Economic Analysis (BEA) has emphasized the crucial importance of an annually updated series for the R&D portion of the National Income and Product Accounts (NIPAs), Industry Economic Accounts (IEAs) and linkages with the BEA Foreign Direct Investment and U.S. Direct Investment Abroad data. Without annual BERD data, BEA would be unable to estimate R&D investment and output in its accounts.

**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 June 28, 2021 the Census Bureau published a notice in the Federal Register (Volume 86, No. 121, pages 33978-33979) inviting the general public and other Federal agencies to comment on plans to submit this request. We received only a letter of support from BEA (Attachment E).

The Census Bureau and the NCSES conduct annual debriefings with respondents to the survey. These debriefings inform the agencies on potential improvements to the survey or survey processes. NCSES and the Census Bureau routinely present research findings at various conferences both internal and external.

**9. Paying Respondents**

No payments or gifts are given to respondents of BERD.

**10. Assurance of Confidentiality**

The information collected in this survey is confidential under Title 13, United States Code, Section 9. Title 13, United States Code, Sections 224 and 225 make reporting mandatory.

Respondents are informed of the confidentiality of their response and the mandatory nature of the survey in our initial letter (Attachment B1), follow-up letters (Attachments B2 and B3), paper form (Attachment A), and Electronic Instrument (Attachment C).

**11. Justification for Sensitive Questions**

There are no questions on BERD that are commonly considered sensitive.

**12. Estimate of Hour Burden**

The total annual burden estimate we are requesting for this collection is 124,450 hours.

According to the May 2017 Occupational Employment Statistics from the Bureau of Labor Statistics (BLS) website, the average wage rate for a staff level accountant is \$39.26 per hour. The total dollar cost for all respondents annually surveyed will be approximately  $(124,450 * 39.26) = \$4,885,907$ .

The additional asset questions to be introduced on 2021 BERD and asked in alternating years are not expected to have a substantive effect on burden. These questions were cognitively tested by the Census Bureau and the data are readily available in most companies' books.

See Table A for details of the burden estimate. The average burden per response is developed through discussions with respondents. Additionally, we include a question on the form asking the length of time it took to complete the survey.

**Table A.**

	Out-of-Scope [Out-of-Business / Acquired by another U.S. company / <10 Employees]	\$0 Total R&D	<b>Both</b> R&D Paid for by the Company <b>and</b> R&D Paid for by Others < \$1 Mil	<b>One of</b> R&D Paid for by the Company <b>or</b> R&D Paid for by Others > \$1 Mil	<b>Both</b> R&D Paid for by the Company <b>and</b> R&D Paid for by Others > \$1 Mil	<b>TOTAL</b>
Count of Companies	3,500	28,550	6,300	8,500	650	47,500
Burden Estimate	15 Minutes	30 Minutes	2 Hours	10 Hours	18 Hours	Between 15 minutes and 18 hours, with an average of 2 hours and 37 minutes.
Total Burden Hours	875	14,275	12,600	85,000	11,700	<b>124,450</b>

### 13. Estimated Cost to Respondents

It is expected that respondents will not incur any cost other than that of their time to respond. The information requested is of the type and scope normally carried in company 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 to be approximately \$5.4 million per survey year. This cost is expected to be relatively constant for 2021-2023. The U.S. Census Bureau pays 20% of costs and NCSES pays 80%. The cost includes, but is not limited to, costs associated with data collection, processing, data review, data tabulation, disclosure avoidance, overhead, printing, postage, and support staff.

**15. Reason for Change in Burden**

The change in burden is due to a thorough analysis of three years (2017-2019) of responses to the question on the form asking the length of time it took to complete the survey, as well as dozens of company debriefs conducted during the same time span.

**16. Project Schedule**

Task	Time Frame
2021 Survey Launch/Initial Mail-out	February-2022
2021 Micro Data Review	Mar -> Dec 2022
2021 Survey Closeout	Late December-2022
2021 Macro Data Review	January-2023
2021 Table/Disclosure Review	Jan -> Mar 2023
2021 Data Tables Delivered to NCSES	Mar -> Jun 2023
2022 Survey Launch/Initial Mail-out	February-2023
2022 Micro Data Review	Mar -> Dec 2023
2022 Survey Closeout	Late December-2023
2022 Macro Data Review	January-2024
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2023 Table/Disclosure Review	Jan -> Mar 2025
2023 Data Tables Delivered to NCSES	Mar -> Jun 2025

**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 BERD complies with 5 CFR 1320.9 without exception.