

**TRENDS IN INTERNATIONAL MATHEMATICS AND
SCIENCE STUDY 2015 (TIMSS 2015)
MAIN STUDY DATA COLLECTION**

OMB# 1850-0695 v.5

SUPPORTING STATEMENT PART A

Submitted by:

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Washington, DC**

July 2014

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PREFACE

The National Center for Education Statistics (NCES), within the U.S. Department of Education (ED), Institute of Education Sciences, is requesting clearance for data collection materials and procedures for the 2015 Trends in International Mathematics and Science Study (TIMSS 2015) full scale data collection. In November 2013, NCES received clearance (OMB# 1850-0695 v.3) for the TIMSS 2015 field test data collection and recruitment for the TIMSS 2015 full scale data collection (also referred to as the main study). The materials to be used in the main study are based upon those that were approved in November 2013. With that submission, NCES adequately justified the need for and overall practical utility of the full study as proposed and an overarching plan for the phases of the data collection over the next 3 years, and provided as much detail on the measures to be used as was available at the time of the submission. Thus OMB approved the initial phase of this collection in November 2013, and now NCES published a notice in the Federal Register allowing a 30-day public comment period on the details of the subsequent study components (the TIMSS 2015 main study) described in this submission.

This submission is a request for OMB's approval of the final versions of the 2015 TIMSS and TIMSS Advanced full-scale non-cognitive data collection instruments. A description of the modifications that have been made to the previously approved international versions of the grades 4 and 8 field test instruments, which was approved on February 10, 2014 (OMB # 1850-0695 v.4), is also included in this submission (Appendix C). The Supporting Statements Parts A and B are the same as those approved in November 2013 (OMB# 1850-0695 v.3), with the following changes:

- References to a computer-based assessment pilot were deleted as it will not be conducted in the main study;
- School sample size for TIMSS Advanced was increased to ensure sufficient numbers of students eligible to take the assessments;
- Florida was included as a benchmarking participant at grades 4 and 8;
- References were deleted to 9 benchmarking states and Puerto Rico for grades 4 and 8 as they are not participating;
- References were deleted to 10 benchmarking states and Puerto Rico for TIMSS Advanced at grade 12 as they are not participating; and
- References were deleted to a possible parent questionnaire as it will not be administered in the main study in the United States.

The *Trends in Mathematics and Science Study* (TIMSS) is an international assessment of fourth- and eighth-grade students' achievement in mathematics and science. Since its inception in 1995, TIMSS has continued to assess students every 4 years (1995, 1999, 2003, 2007, 2011), with the next TIMSS assessment, TIMSS 2015, being the sixth iteration of the study. Participation in this study by the United States at regular intervals provides data on current and past education policies and a comparison of U.S. education policies with its international counterparts. In TIMSS 2011, 50 countries and 7 other education systems participated at grade 4, and 42 countries and 14 other education systems participated at grade 8. The United States will participate in TIMSS 2015 to continue to monitor the progress of its students compared to that of other nations and to provide data on factors that may influence student achievement. TIMSS 2015 will be administered in the spring of the 2014-15 school year in the United States and in more than 50 other nations or education systems during the comparable school year.

Periodically, TIMSS has also conducted an assessment of advanced mathematics and physics of students at the end of secondary school (1995 and 2008). The United States participated in TIMSS Advanced in 1995, but not in 2008. Because of the current strong policy interest in preparedness for college and for careers in science, technology, engineering, and mathematics (STEM) fields, the U.S. plans to participate in TIMSS Advanced in 2015. It will also

be administered in the spring of the 2014-15 school year in the United States and in 10 other nations during the comparable school year.

TIMSS is conducted by the International Association for the Evaluation of Educational Achievement (IEA), an international collective of research organizations and government agencies that create the frameworks used to develop the assessment, the background questionnaires, and the studies' timeline. IEA decides and agrees upon a common set of standards and procedures for collecting and reporting data, and defines the studies' timeline, all of which must be followed by all participating countries. As a result, TIMSS is able to provide a reliable and comparable measure of student skills in participating countries. In the U.S., the National Center for Education Statistics (NCES) sponsors this study in collaboration with the IEA and other contractors (Westat, Avar Consulting (Avar), AIR, and Hager Sharp) to ensure proper implementation of the study and adoption of practices in adherence to the IEA's standards. Participation in TIMSS also allows NCES to meet its mandate of acquiring and disseminating data on educational activities and student achievement in the United States compared with foreign nations [The Educational Sciences Reform Act of 2002 (ESRA 2002) 20 U.S.C., Section 9543].

In reporting achievement in mathematics and science at grades 4 and 8, TIMSS results provide four benchmarks (*Advanced, High, Medium, and Low*) for each content domain depending on the grade and subject assessed (fourth and eighth grades in mathematics and science). Although the fourth and eighth grade content domains differ, the cognitive domains (knowing, applying, and reasoning) remain the same for both grades and subjects to understand the problem-solving skills learned and applied throughout primary and middle school years. TIMSS also reports on a variety of issues related to the education context for the students in the sample, including instructional practices, school resources, and curriculum implementation.

TIMSS Advanced will report the numbers and proportions of the overall population who are participating in physics and advanced mathematics at the end of secondary school. In advanced mathematics, the assessment framework covers algebra, calculus, and geometry. In physics, the framework covers mechanics, electricity/magnetism, heat/temperature, and atomic/nuclear physics. Student achievement will be reported based on international benchmarks (*Advanced, High, Medium, and Low*), and will include contextual data about education practices, resources, and student preparation and attitudes, that can be used to inform education policy discussions about STEM fields.

Compared to previous assessment cycles, TIMSS 2015 differs in several ways:

- Unlike TIMSS 2011, TIMSS 2015 will not involve the IEA's bilateral coordination of TIMSS with the International Study Center's Progress in International Reading Literacy Study (PIRLS) assessment.
- Unlike the 2011 assessment, there will be no federally funded state benchmarking.
- Participation in TIMSS Advanced, which will measure achievement in advanced mathematics and physics for students in their last year of secondary school, represents the first U.S. participation since 1995.
- For TIMSS 2015, class and student lists from participating schools will be gathered electronically using an adaptation of a secure E-filing process. E-filing provides advantageous features such as efficiency and data quality checks. Schools will access the E-filing system through the new MyTIMSS web site.
- TIMSS 2015 will include a parent questionnaire at grade 4; however, the United States will not participate in the parent questionnaire.

In preparation for the TIMSS 2015 main study, all countries were asked to implement a 2014 field test. The United States participated in the TIMSS Advanced field test but not the TIMSS field test at grades 4 and 8. Based on the field test results for TIMSS Advanced, along with information about participation in Advanced Placement (AP)

Calculus and Physics courses provided by the College Board, the main study sample of grade 12 schools has been increased from 250 to 350 schools to ensure sufficient numbers of students eligible to take the assessments. It is anticipated that approximately 50 of the initially selected schools will not be eligible for TIMSS Advanced because they do not offer the requisite advanced mathematics and physics courses.

Also since the field test, the state of Florida contacted Westat (TIMSS 2015 contractor) to request that Florida participate in the TIMSS 2015 main study as a benchmarking participant at grades 4 and 8. This request was approved by the IEA, and NCES has drawn a state sample for Florida to participate.

The U.S. TIMSS main study will be conducted from March 30 through May 29, 2015. The main study will involve a nationally-representative sample of students in the target population for each subject from 300 schools at each grade (4 and 8), and about 300 schools for TIMSS Advanced in grade 12 (with both the advanced mathematics and physics assessments administered in the same schools whenever possible).

This submission describes the TIMSS 2015 main study. In addition to the supporting statements Parts A and B, Appendix A provides main study recruitment materials, consisting of letters to state and district officials and school principals, and text for a TIMSS brochure, “Frequently Asked Questions,” and a “Summary of Activities”. Parental consent materials are provided in Appendix B. All materials in Appendix A and B were approved on November 14, 2013. Also approved on February 10, 2014, was the revised version of Appendix C containing the international versions of the TIMSS 2015 field test questionnaire items and U.S. version of the TIMSS Advanced 2015 field test questionnaire items. Because TIMSS is a collaborative effort among many parties, the United States must adhere to the international schedule set forth by the IEA, including the availability of draft and final questionnaires. For this submission, the contents of Appendix C have been updated with the latest drafts of the U.S. versions of the 2015 TIMSS and TIMSS Advanced main study questionnaires. We expect the final U.S. versions of these questionnaires to be approved by the IEA in mid-October, at which point we will submit them to OMB for approval as a change request. We expect the final versions to be very similar to the drafts included in this submission.

A. Justification

A.1 Importance of Information

Benchmarking of U.S. student achievement against other countries continues to be of high interest to education policymakers, and informs policy discussions of economic competitiveness and workforce and post-secondary preparedness. TIMSS provides a unique opportunity to compare U.S. students’ mathematics and science knowledge and skills at fourth and eighth grade with that of their peers in countries around the world. Science, technology, engineering, and mathematics (STEM) preparedness is key to economic improvement. The TIMSS Advanced component is the only international assessment that provides information about the achievement and educational context of students who take advanced mathematics and physics courses in high school, preparing them for further education and careers in science, engineering, and technology fields.

The continuation of U.S. participation allows for the study of past and current education policies that have shaped science and mathematics achievement over the past 20 years. Furthermore, participating countries are not only able to obtain information about students’ knowledge and abilities in the specified subjects, but also about the cultural environments, teaching practices, curriculum goals, and institutional arrangements that are associated with student achievement in the respective subject areas.

TIMSS complements what we learn from national assessments such as the National Assessment of Educational Progress (NAEP) by identifying the strengths and weaknesses of student science and mathematics achievement relative to participating countries around the world. It provides valuable benchmarking information about educational policies enacted in other countries and policies that could be applied to U.S. educational practices.

Based on earlier TIMSS data releases, it is likely that the results of these studies will draw great attention in the United States and elsewhere. It is therefore expected that TIMSS will contribute to ongoing national and international debates and efforts to improve mathematics and science learning and achievement.

A.2 Purposes and Uses of Data

TIMSS assesses mathematics and science knowledge and skills at grades 4 and 8, and advanced mathematics and science knowledge and skills of select students at grade 12. TIMSS is designed to align broadly with curricula in the participating countries. The results, therefore, suggest the degree to which students have learned concepts and skills likely to have been taught in school. TIMSS also collects background information on students, teachers, schools, curricula, and official education policies in order to allow cross-national comparison of educational contexts that may be related to student achievement.

Data compiled and collected from TIMSS 2015 allows for evidence-based decisions to be made for the purposes of educational improvement. Each successive participation in TIMSS provides trend information about student achievement in mathematics and science relative to other countries, as well as indicators that show how this achievement relates to demographic and curricular, school, teacher, and student factors that provide the educational context for achievement. This high quality, internationally comparative trend data provides key information to inform education policy discussions.

Through the participation in TIMSS and other international assessment programs, NCES is able to provide comparative indicators on student performance and school practices across countries in order to benchmark U.S. student performance, and to suggest hypotheses about the relationship between student performance and factors that may influence performance as well as areas in which students have strengths or weaknesses. The international studies identify differences among countries over time in instructional practices, school policies, and opportunity-to-learn that can lead to discussions about how to organize instruction.

This collection of data is consistent with the NCES mandate. The enabling legislation of the National Center for Education Statistics [Section 406 of the General Education Provisions Act, as amended (20 U.S.C. 1221e-1)] specifies that "The purpose of the Center [NCES] shall be to collect and analyze and disseminate statistics and other information related to education in the United States and in other nations." The Educational Sciences Reform Act of 2002 (ESRA 2002: 20 U.S.C., Section 9543) also specifies that NCES shall collect, report, analyze, and disseminate statistical data related to education in the United States and in other nations, including acquiring and disseminating data on educational activities and student achievement in the United States compared with foreign nations. In addition to being essential for any international perspective on mathematics and science knowledge and skills, U.S. participation fulfills both the national and international aspects of NCES' mission.

TIMSS 2015 Components

The mathematics and science assessments at grades 4 and 8 are organized around a content dimension that specifies the subject matter to be assessed and a cognitive dimension that specifies the thinking processes to be assessed. The cognitive domains are the same in mathematics and science: knowing, applying, and reasoning. The TIMSS 2015 frameworks are similar to 2011, but have been slightly revised or updated to provide more specificity for item writers, and to better reflect current curricula in participating countries. There were no revisions to the content domains or cognitive domains, nor were there changes to the target percentages for the content domains or cognitive domains at either subject at either grade.

In fourth grade mathematics the cognitive content domains include: number, geometric shapes and measures, and data display. More advanced content in these three domains are assessed in eighth grade, supplemented by a data

and chance domain. TIMSS assesses a range of problem-solving situations within mathematics, with about two-thirds of the questions requiring students to use applying and reasoning skills.

In science at fourth grade, the content domains include: life science, physical science, and earth science. At eighth grade the content domains transition to a more discipline-based approach, reflecting the differences in instruction from elementary school. The content domains at eighth grade are: biology, chemistry, physics, and earth science. TIMSS 2015 will also measure science practices and science inquiry, reflecting recent emphasis on these skills in many countries' curricula and content standards.

TIMSS Advanced assesses students in the twelfth grade who have taken advanced mathematics and physics coursework. The cognitive domains are the same as fourth and eighth grade (knowing, applying, and reasoning), and emphasize the thinking processes students are expected to use when answering the advanced mathematics and physics questions.

The advanced mathematics framework has three content domains: algebra, calculus, and geometry. In physics, the content domains are: mechanics and thermodynamics, electricity and magnetism, wave phenomena, and atomic/nuclear physics.

Assessment Instruments

TIMSS. In order to minimize burden and to ensure broad subject-matter coverage, TIMSS will use a matrix sampling approach where the mathematics and science items at each grade level are organized into a set of test booklets, with each student taking only one booklet.

TIMSS Advanced. Matrix sampling will also be used in TIMSS Advanced so that students will take only a subset of the items in one subject: advanced mathematics or physics.

Questionnaires

The background questionnaires for TIMSS 2015 are being developed to address a background questions framework developed internationally. The United States will adapt the questions to fit the U.S. education context, including adding a few questions, such as about the race/ethnicity of students. All but the student questionnaire will be offered online, with a paper and pencil backup. Students will only receive a paper and pencil questionnaire.

School Questionnaire. A representative from each participating school will be asked to provide information on mathematics and science resources, teacher availability and retention, principal leadership, school emphasis on academic success, school climate, and parental involvement in school activities.

Teacher Questionnaire. At grades 4 and 8, mathematics and science teachers of students in selected classes will be asked to complete a teacher questionnaire. For the Advanced study, all teachers of the eligible courses in selected schools will be asked to complete the relevant teacher questionnaire (for either advanced mathematics or physics).

Teacher questionnaires will include questions about teacher preparation and experience, mathematics and science topics taught, instructional resources and technology, instructional time, instructional engagement, and classroom assessment.

Student Questionnaire. Student information will be collected about home resources, motivation, self-concept, self-efficacy, and student characteristics such as gender and race/ethnicity.

A.3 Improved Information Technology (Reduction of Burden)

The TIMSS 2015 design and procedures are prescribed internationally and data collection involves paper and pencil student assessments and questionnaires, as well as optional online or paper and pencil school, teacher, and parent questionnaires. Each participating nation is expected to adhere to the internationally prescribed design. In the United States, the school and teacher questionnaires will be made available to school administrators and teachers online as the main mode of administration, with a paper and pencil backup to facilitate user preference for participation. The online questionnaires will be provided on the secure NCES server, so that NCES will be able to control access to the data to ensure confidentiality and minimize disclosure risk.

A communication website, MyTIMSS USA, will be used for TIMSS 2015 during the main study in order to provide a simple, single source of information to engage and maintain high levels of school involvement. This portal will be used throughout the assessment cycle to inform schools of their tasks and to provide them with easy access to information tailored for their anticipated needs. We plan to gather class and student lists from participating schools electronically using an adaptation of Westat's secure E-filing process. E-filing is an electronic system for submitting lists of student information, including student background information in school records. It has been used successfully in NAEP for about 10 years, and was used in the PISA 2012 assessment. The E-filing system provides advantageous features such as efficiency and data quality checks. Schools will access the E-filing system through the MyTIMSS web site.

A.4 Efforts to Identify Duplication

In the United States, mathematics and science achievement is systematically assessed at (1) the Federal level, where trend data have been collected on a fairly regular basis since 1971, through the National Assessment of Educational Progress (NAEP); (2) the state level, where data are routinely collected as part of state testing programs, though they vary across the states in terms of the frequency of testing, age/grades tested, and types of cognitive items administered; and (3) the district level, where data are collected through the use of commercially or locally developed standardized tests as well as tests developed in conjunction with the instructional programs used in schools. TIMSS 2015 does not duplicate these assessments.

TIMSS 2015 is part of a program of international cooperative studies of educational achievement supported and funded, in part, by the U.S. Department of Education. These studies represent the U.S. participation in international studies involving approximately 60-65 countries. As part of international cooperative studies, the United States must collect the same information at the same time as the other nations for purposes of making both valid international comparisons with other countries and with the previous TIMSS data. While some studies in the United States collect similar, though not identical, kinds of information (e.g., NAEP), the data from those studies cannot be substituted for the information collected in TIMSS in that they do not allow for comparisons outside the United States. Furthermore, the data collected through TIMSS is based on unique frameworks that are not shared by any other state, national, or international data collection effort. In order to participate in these international studies, the United States must agree to administer the same core instruments that are administered in the other countries. Because the items measuring mathematics and science achievement have been developed with intensive international coordination, any changes to the instruments require international coordination and approval.

The TIMSS Advanced study will provide the only international measure of the achievement of students who have opportunity to learn advanced mathematics and physics. No other study provides information about how many students are participating in highly specialized STEM course materials in a global context, along with their achievement and educational context supporting that achievement.

A.5 Minimizing Burden for Small Entities

No small entities are part of this sample. The school samples for TIMSS contain small-, medium- and large-size schools, including private schools, selected based on probability proportionate to their size. All school sizes are needed to ensure an appropriate representation of each type of school in the selected sample of schools. Burden will be minimized wherever possible. For example, schools will be selected so as to avoid overlap with other NCES assessments such as NAEP and PISA. In addition, contractor staff will conduct all test administration, and will assist with parental notification, sampling, and other tasks as much as possible within each school. In grades 4 and 8 the assessment will be administered to intact classes to minimize disruption to school schedules.

A.6 Frequency of Data Collection

The main study data collection for the 2015 TIMSS at grades 4 and 8 and TIMSS Advanced at grade 12 is scheduled for March 30 through May 29, 2015. This schedule is prescribed by the international collective for TIMSS, and adherence to this schedule is necessary to establish consistency in survey operations among participating countries as well as to maintain trend lines.

A.7 Special Circumstances

None of the special circumstances identified in the Instructions for Supporting Statement apply to the TIMSS study.

A.8 Consultations outside NCES

Consultations outside NCES have been extensive and will continue throughout the life of the project. The IEA studies are developed as a cooperative enterprise involving all participating countries. An International Steering Committee has general oversight of the study and each National Research Coordinator participates in extensive discussions concerning the projects, usually with advice from national subject matter and testing experts. In addition, the IEA convened separate panels of mathematics and science experts from around the world to develop cognitive items.

The majority of the consultations (outside NCES) have involved the TIMSS International Study Center at Boston College in the United States. Key to these ongoing consultations are: Dirk Hastedt (executive director of the IEA); Michael Martin, Ina V.S. Mullis, and Victoria Centurino, all of whom have extensive experience in developing and operating international education surveys (especially related to TIMSS).

A.9 Payments or Gifts to Respondents

In order to achieve acceptable school response rates, schools have historically been offered compensation for the time they invest in and the space they make available for the international assessments. High response rates are required by both IEA and NCES, and are difficult to achieve in school-based studies. The U.S. has historically had difficulties in achieving sufficient participation levels. Based on incentives provided in past administrations of TIMSS and currently offered in international assessments, schools will be offered \$200 for their time.

The school staff serving as School Coordinators will receive \$100 for their time and effort. The School Coordinator serves a critical role in data collection, functioning as the central school contact and facilitating arrangements for the assessments. They are asked to file class and student listing forms; arrange the date, time and space for the assessment; and disseminate information to parents and students.

Consistent with prior administrations of TIMSS, as a token of appreciation for their participation, students will receive a small gift valued at approximately \$2. In the TIMSS Advanced 2015 field test, each participating student received a small flashlight that could be clipped securely (with an attached karabiner) to a backpack or belt loop. The same product will be distributed to participating students for the TIMSS 2015 data collection. Students will also receive a certificate with their name thanking them for participating in and representing the United States in

TIMSS 2015. Some schools also offer recognition parties with pizza or other treats for students who participate; however these are not reimbursed by NCES or the contractor.

High school students participating in the TIMSS Advanced study will receive a certificate from the U.S. Department of Education for four hours of volunteer service.

A.10 Assurance of Confidentiality

The laws pertaining to the collection and use of personally identifiable information are clearly communicated in correspondence with states, districts, schools, teachers, and students. Letters and information materials will be sent to parents and school administrators describing the study, its voluntary nature, and the extent to which respondents and their responses will be kept confidential (see copies in Appendix B):

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002), 20 U.S. Code, § 9543. By law, the data provided [by your schools, staff, and students] may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S. Code, § 9573).

The following statement will appear on the front cover of the questionnaires (the phrase “search existing data resources, gather the data needed” will not be included on the student questionnaire):

U.S. participation in this study is sponsored by the National Center for Education Statistics (NCES), U.S. Department of Education, and authorized by the Education Sciences Reform Act of 2002 (20 U.S.C., § 9543). Your responses are protected by federal statute (20 U.S.C., § 9573) and may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average XX minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s), suggestions for improving the form, or comments or concerns regarding the status of your individual submission of this form, write directly to: Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, U.S. Department of Education, 1990 K Street, N.W., Washington, D.C. 20006.

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The TIMSS 2015 confidentiality plan includes signing confidentiality agreements and notarized nondisclosure affidavits by all contractor and subcontractor personnel and field workers who will have access to individual identifiers. Also included in the plan is personnel training regarding the meaning of confidentiality, particularly as it relates to handling requests for information and providing assurance to respondents about the protection of their responses; controlled and protected access to computer files under the control of a single data base manager; built-in safeguards concerning status monitoring and receipt control systems; and a secured and operator-manned in-house computing facility. Data files, accompanying software, and documentation will be delivered to NCES at the end of the project. Neither names nor addresses will be included on any data file.

NCES understands the legal and ethical need to protect the privacy of the TIMSS respondents and has extensive experience in developing data files for release that meet the government’s requirements to protect individually identifiable data from disclosure. The contractor will conduct a thorough disclosure analysis of the TIMSS 2015 data when preparing the data files for use by researchers, in compliance with 20 U.S.C., § 9573. Schools with high disclosure risk will be identified and, to ensure that individuals may not be identified from the data files, a variety of masking strategies will be used, including swapping data and omitting key identification variables (i.e., school name and address) from both the public- and restricted-use files (though the restricted-use file will include an NCES school ID that can be linked to other NCES databases to identify a school); omitting key identification

variables such as state or ZIP Code from the public-use file; and collapsing or developing categories for continuous variables to retain information for analytic purposes while preserving confidentiality in public-use files.

A.11 Sensitive Questions

None of the TIMSS questionnaires that the United States is administering—the student, school, and teacher questionnaires—have items considered to be of sensitive nature.

A.12 Estimates of Burden

This package shows estimated burden to respondents for all TIMSS 2015 activities, and requests approval for burden to respondents for the 2015 TIMSS and TIMSS Advanced main study data collection portions of the total study burden. Burden estimates are shown in Table A.1. The time required for students to respond to the assessment (cognitive items) portion of the study, and associated directions, are shown in gray font and are not included in the totals because they are not subject to the PRA. Student, administrator, and teacher questionnaires are included in the requested burden totals. Recruitment and pre-assessment activities include the time to review study requirements in the districts that require approval before contacting the school, and the time involved in a school deciding to participate, completing teacher and student listing forms, distributing parent consent materials, and arranging assessment space.

The main study burden estimates reflect burden for the inclusion of Florida as a benchmarking participant at grades 4 and 8. For the 2015 TIMSS and TIMSS Advanced main study national and Florida samples, the total student response burden of 19,259 hours from 23,111 students is based on a 50-minute background questionnaire. At \$7.25 per hour (the 2009 Federal minimum wage) cost to students, the burden cost of the main study for students is estimated at \$139,628.

For the main study school administrator 30-minute questionnaire and recruitment and pre-assessment activities for the national and Florida samples, burden cost is calculated at an estimated \$50.00 per hour cost to school and district administrators (for 2,666 hours), and an estimated \$35.00 per hour cost for school staff, coordinators, and teachers (for 5,376 hours), and the burden cost of the main study recruitment and pre-assessment activities for 6,150 district and school staff is estimated at \$321,460.

The total response burden for schools in the main study national and Florida samples is based on the following:

- A 120-minute study review and approval by 100 district IRB staff;
- A 60-minute study review and approval by 600 district IRB panel members;
- A 90-minute recruitment activities with school administrators in 934 schools;
- A 30-minute course catalog collection from school staff in 350 schools;
- A 30-minute school questionnaire for school administrators in 934 schools;
- A 30-minute teacher questionnaire for 3,274 teachers;
- A 50-minute student questionnaire for 23,111 students; and
- An average of 4 hours for school coordinators to coordinate logistics with the data collection contractor; supply a list of eligible students and teachers for sampling; communicate with teachers, students, and parents about the study to encourage participation; assist the test administrator in ensuring the sampled students attend the testing sessions; and assist the test administrator in arranging make-up sessions as needed in 891 schools.

Table A.1. Burden estimates for TIMSS and TIMSS Advanced 2015 Main Study (continued on the next page).

Data collection instrument	Sample size	Expected response rate	Number of respondents	Number of responses	Minutes Per respondent	Total burden Hours
National sample						
Student Grades 4 & 8 Directions (sample size 5,650 each)	11,300	0.93	10,509	10,509	10	1,752
Student Assessment Grade 4	5,650	0.93	5,255	5,255	72	6,306
Student Assessment Grade 8	5,650	0.93	5,255	5,255	90	7,882
Student Grades 4 & 8 Questionnaire (sample size 5,650 each)	11,300	0.93	10,509	10,509	50	8,758
Student Directions Advanced Math. & Physics	8,550	0.93	7,952	7,952	10	1,325
Student Assessment Advanced Math. & Physics	8,550	0.93	7,952	7,952	90	11,928
Student Questionnaire Advanced Mathematics & Physics (sample size 8,550 each)	8,550	0.93	7,952	7,952	50	6,626
School Administrators Questionnaire Grade 4, 8, & Advanced	836	0.99	828	828	30	414
Teachers Questionnaire Grade 4, 8, & Advanced	2,975	0.97	2,886	2,886	30	1,443
School Administrator Recruitment	950	0.88	836	836	90	1,254
School Staff Course Catalogue	350	1.00	350	350	30	175
School Coordinator Grade 4	300	0.88	264	264	240	1,056
School Coordinator Grade 8 & 12	600	0.88	528	528	240	2,112
District IRB Staff Study Approval	100	1.00	100	100	120	200
District IRB Panel Study Approval	600	1.00	600	600	60	600
State benchmarking - Florida Grades 4 and 8						
Student Grades 4 & 8 Directions (sample size 2,500 each)	5,000	0.93	4,650	4,650	10	775
Student Assessment Grade 4	2,500	0.93	2,325	2,325	72	2,790
Student Assessment Grade 8	2,500	0.93	2,325	2,325	90	3,488
Student Grades 4 & 8 Questionnaire (sample size 2,500 each)	5,000	0.93	4,650	4,650	50	3,875
School Administrators Questionnaire Grade 4 and 8	99	0.99	98	98	30	49
Teachers Questionnaire Grade 4 and 8	400	0.97	388	388	30	194
School Administrator Recruitment	100	0.99	99	99	90	149
School Coordinator Grades 4 and 8	100	0.99	99	99	240	396
Total Burden Requested in this Submission			29,261	30,187		27,301
<i>Note: Total Burden includes the already approved burden associated with recruitment for the TIMSS 2015 Main Study (items in bold) and burden associated with conducting the main study. Total student burden does not include the time for the cognitive assessment and its associated instructions (items in gray font).</i>						

A.13 Total Annual Cost Burden

Other than the burden associated with completing these pre-assessment activities and questionnaires (estimated above in Section A.12), the study imposes no additional cost to respondents nor the imposition of any record-keeping requirement.

A.14 Annualized Cost to Federal Government

The total cost to the federal government for conducting TIMSS 2015 full scale study (grades 4 and 8 and TIMSS Advanced) is estimated to be \$10,658,124 over a 5-year period. These figures include all direct and indirect costs, and are based on the national data collection contract, valued at \$6,087,960 over five years, from February 2013 to January 2018, for the core activities at grades 4 and 8, and \$3,770,164 for the TIMSS Advanced option.

A.15 Program Changes or Adjustments

This request is for the recruitment and data collection for the main study. There is a change in burden in relation to the burden approved in the current record because the last approval was for the field test and for the main study recruitment (OMB# 1850-0695 v.3), which included estimates for 10 states plus Puerto Rico. However, only Florida will participate at grades 4 and 8 as a benchmarking state. In addition, the school sample size for TIMSS Advanced was increased somewhat in order to achieve the needed number of student participants.

A.16 Plans for Tabulation and Publication

The TIMSS International Study Center will prepare separate reports for mathematics and science at grades 4 and 8, for advanced mathematics at grade 12, and for physics at grade 12. These reports will be released in December 2016. As has been customary, NCES will also release a report for each study at the same time as the international reports are released, interpreting the results for the U.S. audience. NCES reports on initial data releases are generally limited to simple bivariate statistics. There are currently no plans to conduct complex statistical analyses of either dataset. Examples of past reports on TIMSS can be found at <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2013009>. In the spring of 2017, the International Study Center will also prepare technical reports for both TIMSS 2015 and TIMSS Advanced, describing the design and development of the assessments as well as the scaling procedures, weighting procedures, missing value imputation, and analyses. After the release of the international data, NCES plans to release the national data and an accompanying User's Guide for each study.

Electronic versions of each publication are made available on the NCES website. Schedules for tabulation and publication of TIMSS 2015 and TIMSS Advanced results in the United States are dependent upon receiving data files from the international sponsoring organization. With this in mind, the expected data collection dates and a tentative reporting schedule are as follows:

Dates	Activity
April—December 2013	Prepare data collection manuals, forms, assessment materials, questionnaires for field test
November 2013—February 2014	Contact and gain cooperation of states, districts, and schools for field test
February 2014—March 2014	Select student samples
March 2014—April 2014	Collect field test data
May 15, 2014	Deliver raw data to international sponsoring organization
July 2014—August 2014	Review field test results
October 2014	Final U.S. versions of the 2015 main study questionnaires approved by IEA
May 2014—December 2014	Prepare for the main study/recruit schools
March 2015—May 2015	Collect main study data
June 2016	Receive final data files from international sponsors
June 2016—December 2016	Produce reports

A.17 Display OMB Expiration Date

The OMB expiration date will be displayed on all data collection materials.

A.18 Exceptions to Certification Statement

No exceptions to the certifications are requested.