

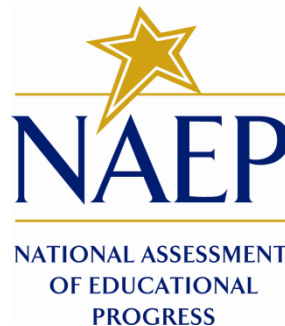
*NATIONAL CENTER FOR EDUCATION STATISTICS  
NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS*

*Appendix C*

*Example of Sample Design Document (2013 Assessment)*

*Request for System Clearance for  
NAEP Assessments for 2014-2016*

*OMB# 1850-0790*





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**Date:** May 24, 2012

**Memo:** 2013-

1.3A/1.3B/1.3G/1.3D/1.E/1.3R

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**From:** Keith Rust

**Subject:** Sample Design for 2013 NAEP

## I. Introduction

For 2013, the NAEP assessment involves the following components:

- National assessments in reading and math at grades 4, 8, and 12;
- State-by-state and Trial Urban District Assessment (TUDA) assessments in reading and math for public schools at grades 4 and 8;
- State-by-state assessments in reading and math for 13 selected states at grade 12;
- A special study to link NAEP and the High School Longitudinal Study (HSLs), for mathematics at grade 12;

- A special study to link NAEP and the Lexile assessment, for reading at grade 8;
- A special study of Knowledge and Skills Appropriate (KaSA) items in mathematics, at grades 4 and 8, including Puerto Rico;
- A special study of Accessible Booklets, for reading at grades 4 and 8;
- A special study of Read-Aloud Accommodations, for reading at grade 4;
- A special study to link NAEP and PISA, for mathematics, in certain schools selected for grade 12 NAEP;
- Pilot tests in reading and math at grades 4 and 8;
- A pilot test of the Technology and Engineering Literacy (TEL) Assessment at grade 8.

Below is a summary list of the features of the 2013 sample design.

1. As in recent NAEP studies, Trial Urban District Assessment (TUDA) samples will form part of the corresponding state samples, and the state samples will form part of the national sample. The same twenty-one Trial Urban District Assessment (TUDA) participants as in 2011 will be involved.
2. At grade 8 there will be two public school samples, and two private school samples. A relatively small PSU-based sample, known as the beta sample (for public schools) and the epsilon sample (for private schools), will be used for the computer-based TEL pilot assessment. The alpha samples for grades 4 and 8 public, the gamma sample for grade 12 public, and the delta samples for private schools at grades 4, 8, and 12 will be used for the operational assessments in reading and mathematics, and for the pilot test samples for reading and mathematics, and all special studies except for the Read-Aloud Accommodations Study.
3. Oversampling of private schools at grades 4 and 8 will be scaled back to the level of 2009. Response rates permitting, this will allow separate reporting, for reading and mathematics, for Catholic, and non-Catholic schools, but not further breakdown. As in 2009 there will be no oversampling of private schools at grade 12.
4. There will be no samples in territories, other than for Puerto Rico at grades 4 and 8 for the KaSA study.
5. For the first time since 2003, there is no National Indian Education Study (NIES). This means that less extensive sampling of BIE schools is required. To ensure sound results for AIAN students at the national level, at grades 4 and 8 BIE students will be sampled at the same rate as students in Oklahoma, the state with the largest AIAN population.
6. As in 2011, the Department of Defense Schools are expected to be reported as a single jurisdiction (DoDEA), instead of the two components of domestic (DDESS) and

overseas (DoDDS). However, for design purposes, we will still sample these as two separate entities.

7. At grade 12, there will state-level samples for 13 states. Eleven of these also participated at the state level in 2009. As at grades 4 and 8, state and national samples will be integrated. The 13 states participating at the state level for reading and mathematics are Arkansas, Connecticut, Florida, Idaho, Illinois, Iowa, Massachusetts, Michigan, New Hampshire, New Jersey, South Dakota, Tennessee, and West Virginia. The NAEP-PISA linking study will be conducted in the grade 12 sample schools in Connecticut, Florida, and Massachusetts. These three states will conduct state-level PISA in the fall of 2012.
8. The Read-Aloud Accommodations study will be conducted in special sample of grade 4 public schools, to be referred to as the rho sample. This sample will be restricted to a small number of states, and will not have any overlap schools with any of the other 2013 NAEP assessments. The sample will not be a nationally representative probability sample of schools.
9. The sample sizes of assessed students for these various components are shown in Table 1 (which also shows the approximate numbers of participating schools).

Note that the figures in Table 1 (and also Tables 3 and 4) do not reflect the fact that, at grade 4, certain schools in the pencil and paper assessments may elect to include all students in the sample, rather than the sample size targeted by NAEP. This will lead to an increase in sample size, likely to be about five percent overall. The increase will vary by state, depending on the size of the state and the size of its schools – obviously there is no addition in states where the design calls for the selection of all students.

**Table 1. Target sample sizes of assessed students, and expected number of participating schools, for 2013 NAEP**

	Spiral	Jurisdictions		Students		Total
	Spiral Indic.	States (incl. DC, BIE, DoDEA)	Urban districts	Public school students	Private school students	
<b>Grade 4</b>						
nat'l/state math	RM	53	21	163,000	3,000	166,000
nat'l/state reading	RM	53	21	163,000	3,000	166,000
math Pilot	RM			4410	90	4500
reading Pilot	RM			5145	105	5250
math KaSA	RM			3920	80	4000
Reading accessible booklet study	RM			2940	60	3000
Puerto Rico KaSA	PR	1		5000	0	5000
<b>Total - alpha</b>	<b>2</b>			<b>347,415</b>		
<b>Total- delta</b>	<b>1</b>				<b>6,335</b>	

**Table 1. Target sample sizes of assessed students, and expected number of participating schools, for 2013 NAEP (Continued)**

	Spiral	Jurisdictions		Students		Total
	Spiral Indic.	States (incl. DC, BIE, DoDEA)	Urban districts	Public school students	Private school students	
<b>Grade 4 (Continued)</b>						
Typical max. no. students/school				60	64	
Average assessed students/school				44	24	
<b>Total schools - alpha, delta</b>				7,900	265	<b>8,183</b>
Reading Aloud Study	RA, RB, RC			2,100		2,100
<b>Total - Rho</b>	<b>3</b>			2,100		
Typical max. no. students/school				27		
Average assessed students/school				27		
<b>Total schools - rho</b>				78	0	<b>78</b>
<b>Total number of students grade 4</b>				349,515	6,335	<b>355,850</b>
<b>Total number of schools grade 4</b>				7,970	265	<b>8,243</b>
<b>Grade 8</b>						
nat'l/state math	RM	53	21	159,080	3,000	162,080
nat'l/state reading	RM	53	21	159,080	3,000	162,080
math Pilot	RM			4,410	90	4,500
reading Pilot	RM			5,145	105	5,250
math KaSA	RM			3,920	80	4,000
Reading accessible booklet study	RM			2,940	60	3,000
Lexile Linking Study	RM			7,840	160	8,000
Puerto Rico KaSA	PR	1		5,000	0	5,000
<b>Total - alpha</b>	<b>2</b>			347,415		
<b>Total - delta</b>	<b>1</b>				6,495	
Typical max. no. students/school				60	65	
Average assessed students/school				50	25	
<b>Total schools - alpha, delta</b>				6,950	260	7,210
TEL Pilot	TL			13,500	1,500	15,000
<b>Total - beta</b>	<b>1</b>			13,500		
<b>Total - epsilon</b>	<b>1</b>				1,500	
Typical max. no. students/school				30	30	
Average assessed students/school				25	25	
<b>Total schools - beta, epsilon</b>				540	60	600
<b>Total number of schools grade 8</b>				7,410	320	7,810
<b>Total number of students grade 8</b>				360,915	7,995	368,910

**Table 1. Target sample sizes of assessed students, and expected number of participating schools, for 2013 NAEP (Continued)**

	Spiral	Jurisdictions		Students		Total
	Spiral Indic.	States (incl. DC, BIE, DoDEA)	Urban districts	Public school students	Private school students	
<b>Grade 12</b>						
national and state reading	RM	13		41,120	1,500	42,620
National and state math	RM	13		38,380	1,400	39,780
HSLs Linking Study	ML			6,000		6,000
NAEP-PISA Linking Study	MP	3		18,000		18,000
<b>Total - gamma</b>	<b>3</b>			<b>103,500</b>		
<b>Total- delta</b>	<b>1</b>				2,900	
Typical max. no. students/school (excluding HSLs)				60	60	
Average assessed students/school				50	40	
<b>Total schools - gamma, delta</b>				<b>1,690</b>	73	1,763
<b>GRAND TOTAL STUDENTS</b>				<b>813,930</b>	<b>17,230</b>	<b>831,160</b>
<b>GRAND TOTAL SCHOOLS</b>				<b>17,070</b>	<b>658</b>	<b>17,736</b>

## II. Assessment Types

The assessment spiral types are shown in Table 2. At grade 4 there will be five different spirals used, with three at grade 8 and three at grade 12. Session IDs contain six digits, traditionally. The first two digits identify the assessment “type” (subjects and type of spiral in a general way). Grade is contained in the second pair of digits, and the session sequential number (within schools) in the last two digits. For example, session RM 0401 denotes the first grade 4 reading and mathematics operational assessment in a given school.

**Table 2. NAEP 2013 assessment types and IDs**

<b>ID</b>	<b>Type</b>	<b>Subjects</b>	<b>Grades</b>	<b>Schools</b>	<b>Comments</b>
RM	Operational Pencil & Paper	Reading (including pilot, accessible booklets), math (including pilot, KaSA)	4	Public and Private	Includes all grade 4 assessment components, except for Puerto Rico and Reading Aloud
RM	Operational- Pencil & Paper	Reading (including pilot, accessible booklets, Lexile linking), math (including pilot and KaSA)	8	Public and Private	Includes all grade 8 components except Puerto Rico and TEL pilot
RM	Operational- Pencil & Paper	Reading, math	12	Public and private	
TL	Pilot- Computer-based	Technology and Engineering Literacy	8	Public and Private	National sample, not in Puerto Rico
ML	Special Study - Pencil & Paper	HSLs Linking Study	12	Public	
MP	Special Study - Pencil & Paper	PISA Linking Study	9, 10, 11	Public	In three states only
RA	Special Study - Pencil & Paper	Reading Aloud Study	4	Public	In a small number of states; no special accommodations
RB	Special Study - Pencil & Paper	Reading Aloud Study	4	Public	In a small number of states; Read Aloud Items
RC	Special Study - Pencil & Paper	Reading Aloud Study	4	Public	In a small number of states; Read Aloud Everything
PR	Puerto Rico	KaSA math	4 & 8	Public	Booklets will not be used in any other jurisdiction.

### III. Sample Types and Sizes

In similar fashion to past years (but somewhat different), we will identify six different types of school samples: Alpha, Beta, Gamma, Delta, Epsilon, and Rho. These distinguish sets of schools that will be conducting distinct portions of the assessment. The Rho sample is new for 2013; this will be used for the grade 4 Read-Aloud Accommodations study which has a unique design.

#### 1. Alpha Samples at Grades 4 and 8

These are public school samples for grades 4 and 8. They will be used for the operational state-by-state assessments in reading and math, and contribute to the national samples for these subjects as

well. The will also be used for pilot tests and special studies, and outlined in Tables 1 and 2. There will be alpha samples for each state, DC, DoDEA, BIE, and Puerto Rico.

The details of the target student sample sizes for the alpha samples are as follows:

- With the exception of BIE, the target sample size for each state and grade is 6,600 students. For BIE, the sample will be selected at the same rate as Oklahoma. This is to ensure adequate samples of American Indian students for national reporting. The rate from Oklahoma is being used since it has the largest American Indian population of any state. Therefore using this rate ensures that the BIE sample will not be so small as to unduly inflate the standard errors of estimates for American Indian/Alaska Native students, while at the same time not placing undue burden on BIE schools, for which no jurisdiction level results are to be reported, in the absence of the NIES.
- There will be samples for twenty-one TUDA districts. For the five largest (New York City, Los Angeles, Chicago, Miami-Dade, and Houston), the student target sample sizes for reading and mathematics are three-quarters the size of a state sample (2,475 per subject). For the other fifteen districts the student target sample sizes for reading and math are one-half the size of a state sample (1,650 per subject). An exception will be made in the case of Detroit, where the target sample sizes will be increased in anticipation of substantial numbers of schools closings where the particular schools affected have not yet been identified.

Note, that above, there is a conflict between sample size requirements at the state level, and the TUDA district level. This will be resolved as in previous years: the districts will have the target samples indicated in B, and reflected in Table 3. For the states that contain one or more of these districts, the target sample size indicated in A (and shown in Table 3) will be used to determine a school sampling rate for the state, which will be applied to the balance of the state outside the TUDA district(s). Thus the target student sample sizes, shown in Table 3, for states that contain a TUDA district, are only 'design targets', and are smaller than the final total sample size for the state, but larger than the sample for the balance of the state, exclusive of its TUDA districts. In the case of the District of Columbia, the state sample size requirement is that all schools and students be included. This renders moot any requirements for the DC TUDA sample, which by default consists of all schools operated by the DCPS district (but excludes charter schools in DC, even though those are all included in the state sample, as these are not operated by DCPS).

In Puerto Rico, the target sample size is 5,800 per grade (grades 4 and 8), with the goal of assessing 5,000 students. Only KaSA mathematics will be assessed in Puerto Rico (PR session type).



As in past state-by-state assessments, schools with fewer than 20 students in the grade in question will be sampled at a moderately lower rate than other schools (at least half, and often higher, depending upon the size of the school). This is in implicit recognition of the greater cost and burden associated with surveying these schools.

Table 3 shows the target student sample sizes, and the approximate counts of schools to be selected in the alpha samples, along with the school and student frame counts, by state and TUDA districts for grades 4 and 8. The table also identifies the jurisdictions where we take all schools and where we take all students.

**Table 3. Grade 4 and 8 school and student frame counts, expected school sample sizes, and initial target student sample sizes for the 2013 state-by-state and TUDA district assessments (alpha samples)**

Jurisdiction	Grade 4					Grade 8				
	Schools in frame	Schools in sample	Students in frame	Overall target student sample size		Schools in frame	Schools in sample	Students in frame	Overall target student sample size	
Alabama	748	117	59,269	6,600		484	112	57,283	6,600	
Alaska	365	197	9,827	6,600		285	144	9,701	6,600	
Arizona	1,179	120	83,555	6,600		769	118	81,283	6,600	
Arkansas	496	119	37,017	6,600		315	112	35,831	6,600	
Bureau Of Indian Education	135	16	3,246	411		109	13	2,785	375	
California	5,846	113	463,973	6,600		2,818	113	456,125	6,600	
Colorado	1,013	122	63,266	6,600		520	116	59,357	6,600	
Connecticut	604	116	41,489	6,600		306	110	42,667	6,600	
Delaware	115	95	9,647	6,600		60	60	9,398	6,600	*
District Of Columbia	131	131	4,907	4,907	**	79	79	4,307	4,307	**
DoDEA Schools	108	108	7,507	7,507	**	63	63	5,589	5,589	**
Florida	2,097	110	202,702	6,600		1,150	112	196,792	6,600	
Georgia	1,242	107	130,245	6,600		548	106	124,307	6,600	
Hawaii	202	117	14,155	6,600		80	60	12,843	6,600	
Idaho	368	128	21,351	6,600		200	103	20,466	6,600	
Illinois	2,343	123	154,495	6,600		1,603	119	154,308	6,600	
Indiana	1,101	116	80,245	6,600		485	107	79,856	6,600	
Iowa	674	137	35,421	6,600		387	118	34,991	6,600	
Kansas	729	141	35,907	6,600		412	126	34,645	6,600	
Kentucky	731	117	51,685	6,600		391	114	49,403	6,600	
Louisiana	789	120	55,300	6,600		531	119	50,584	6,600	
Maine	341	159	13,945	6,600		211	115	14,205	6,600	
Maryland	887	115	61,870	6,600		356	109	60,987	6,600	
Massachusetts	973	117	71,298	6,600		482	108	71,962	6,600	
Michigan	1,856	121	118,242	6,600		1,042	114	120,377	6,600	
Minnesota	952	126	61,086	6,600		695	125	61,246	6,600	
Mississippi	436	114	38,958	6,600		290	108	36,999	6,600	
Missouri	1,170	131	68,189	6,600		727	124	68,007	6,600	

**Table 3. Grade 4 and 8 school and student frame counts, expected school sample sizes, and initial target student sample sizes for the 2013 state-by-state and TUDA district assessments (alpha samples) (Continued)**

Jurisdiction	Grade 4					Grade 8				
	Schools in frame	Schools in sample	Students in frame	Overall target student sample size		Schools in frame	Schools in sample	Students in frame	Overall target student sample size	
Montana	400	199	10,863	6,600		289	151	10,912	6,600	
Nebraska	568	165	22,085	6,600		339	131	21,503	6,600	
Nevada	379	112	33,851	6,600		158	88	33,028	6,600	
New Hampshire	265	133	14,495	6,600		137	88	15,191	6,600	
New Jersey	1,366	117	100,453	6,600		741	110	99,535	6,600	
New Mexico	431	127	25,731	6,600		203	105	24,183	6,600	
New York	2,368	113	192,295	6,600		1,335	109	193,235	6,600	
North Carolina	1,414	112	118,129	6,600		694	110	111,343	6,600	
North Dakota	260	260	6,995	6,995	**	188	188	7,330	7,330	**
Ohio	1,877	119	133,358	6,600		1,090	112	132,686	6,600	
Oklahoma	895	137	49,300	6,600		593	128	46,433	6,600	
Oregon	767	129	42,827	6,600		414	120	42,949	6,600	
Pennsylvania	1,742	116	129,550	6,600		914	109	132,799	6,600	
Puerto Rico	1,017	160	38,842	5,800		407	123	37,363	5,800	
Rhode Island	170	117	10,437	6,600		57	57	10,842	6,600	*
South Carolina	618	112	55,228	6,600		298	107	52,433	6,600	
South Dakota	328	194	9,380	6,600		254	153	9,306	6,600	
Tennessee	998	116	75,934	6,600		565	112	71,570	6,600	
Texas	4,277	112	373,404	6,600		2,165	112	348,907	6,600	
Utah	582	112	46,508	6,600		232	106	42,593	6,600	
Vermont	224	224	6,419	6,419	**	122	122	6,364	6,364	**
Virginia	1,137	112	93,610	6,600		388	106	92,179	6,600	
Washington	1,214	119	77,826	6,600		606	115	77,099	6,600	
West Virginia	425	146	20,875	6,600		202	109	20,637	6,600	
Wisconsin	1,111	131	60,997	6,600		633	118	61,063	6,600	
Wyoming	188	188	6,849	6,849	**	93	93	6,568	6,568	**
Albuquerque	99	56	7,594	3,300		42	42	6,903	3,300	*
Atlanta	61	61	4,264	4,264	**	26	26	3,369	3,369	**

**Table 3. Grade 4 and 8 school and student frame counts, expected school sample sizes, and initial target student sample sizes for the 2013 state-by-state and TUDA district assessments (alpha samples) (Continued)**

Jurisdiction	Grade 4					Grade 8				
	Schools in frame	Schools in sample	Students in frame	Overall target student sample size		Schools in frame	Schools in sample	Students in frame	Overall target student sample size	
Austin	80	54	6,862	3,300		24	24	5,360	3,300	*
Baltimore City	124	68	6,292	3,300		93	62	5,501	3,300	
Boston	79	79	4,106	4,106	**	38	38	3,808	3,808	**
Charlotte	105	54	11,245	3,300		38	38	9,852	3,300	*
Chicago	488	96	29,942	4,950		470	95	29,469	4,950	
Cleveland	83	83	3,573	3,573	**	81	81	3,550	3,550	**
Dallas	147	53	12,932	3,300		38	38	10,113	3,300	*
Detroit	121	81	7,584	4,470		74	65	5,001	4,240	
Fresno	70	54	5,823	3,300		26	26	5,457	3,300	*
Hillsborough County	164	55	15,161	3,300		80	48	15,020	3,300	
Houston	179	82	16,525	4,950		64	49	12,738	4,950	
Jefferson County	96	54	7,617	3,300		42	42	7,030	3,300	*
Los Angeles	516	82	51,516	4,950		162	77	46,818	4,950	
Miami-Dade	274	83	26,903	4,950		160	76	25,573	4,950	
Milwaukee	115	67	5,807	3,300		89	56	5,371	3,300	
New York City	709	82	63,731	4,950		458	82	61,278	4,950	
Philadelphia	177	60	12,098	3,300		142	58	10,970	3,300	
San Diego	138	57	10,040	3,300		63	40	9,691	3,300	
District of Columbia PS	87	87	3,369	3,369	**	37	37	2,357	2,357	**

Counts for states *do not* reflect the oversampling for their constituent TUDA districts, nor the grade 4 'take all' option.

Target student sample sizes reflect sample sizes prior to attrition due to exclusion, ineligibility, and nonresponse.

\* identifies jurisdictions where all schools (but not all students) for the given grade are included in the NAEP sample.

\*\* identifies jurisdictions where all students for the given grade are included in the NAEP sample.

Table 4 consolidates the target student (and resulting school) sample size numbers, to show the total target sample sizes in each state, combining the TUDA targets with those for the balance of the state.

**Table 4. Total sample sizes, combining state and TUDA samples**

Jurisdiction	Grade 4					Grade 8				
	Schools in frame	Schools in sample	Students in frame	Overall target student sample size		Schools in frame	Schools in sample	Students in frame	Overall target student sample size	
Alabama	748	117	59,269	6,600		484	112	57,283	6,600	
Alaska	365	197	9,827	6,600		285	144	9,701	6,600	
Arizona	1,179	120	83,555	6,600		769	118	81,283	6,600	
Arkansas	496	119	37,017	6,600		315	112	35,831	6,600	
Bureau Of Indian Education	135	16	3,246	411		109	13	2,785	375	
California	5,846	290	463,973	17,189		2,818	241	456,125	17,251	
Colorado	1,013	122	63,266	6,600		520	116	59,357	6,600	
Connecticut	604	116	41,489	6,600		306	110	42,667	6,600	
Delaware	115	95	9,647	6,600		60	60	9,398	6,600	*
District Of Columbia	131	131	4,907	4,907	**	79	79	4,307	4,307	**
DoDEA Schools	108	108	7,507	7,507	**	63	63	5,589	5,589	**
Florida	2,097	225	202,702	13,479		1,150	213	196,792	13,486	
Georgia	1,242	164	130,245	10,648		548	129	124,307	9,790	
Hawaii	202	117	14,155	6,600		80	60	12,843	6,600	
Idaho	368	128	21,351	6,600		200	103	20,466	6,600	
Illinois	2,343	194	154,495	10,267		1,603	190	154,308	10,285	
Indiana	1,101	116	80,245	6,600		485	107	79,856	6,600	
Iowa	674	137	35,421	6,600		387	118	34,991	6,600	
Kansas	729	141	35,907	6,600		412	126	34,645	6,600	
Kentucky	731	156	51,685	8,929		391	139	49,403	8,963	
Louisiana	789	120	55,300	6,600		531	119	50,584	6,600	
Maine	341	159	13,945	6,600		211	115	14,205	6,600	
Maryland	887	170	61,870	9,229		356	160	60,987	9,305	
Massachusetts	973	188	71,298	10,326		482	140	71,962	10,059	
Michigan	1,856	194	118,242	10,646		1,042	174	120,377	10,566	
Minnesota	952	126	61,086	6,600		695	125	61,246	6,600	
Mississippi	436	114	38,958	6,600		290	108	36,999	6,600	
Missouri	1,170	131	68,189	6,600		727	124	68,007	6,600	
Montana	400	199	10,863	6,600		289	151	10,912	6,600	

**Table 4. Total sample sizes, combining state and TUDA samples (Continued)**

Jurisdiction	Grade 4					Grade 8				
	Schools in frame	Schools in sample	Students in frame	Overall target student sample size		Schools in frame	Schools in sample	Students in frame	Overall target student sample size	
Nebraska	568	165	22,085	6,600		339	131	21,503	6,600	
Nevada	379	112	33,851	6,600		158	88	33,028	6,600	
New Hampshire	265	133	14,495	6,600		137	88	15,191	6,600	
New Jersey	1,366	117	100,453	6,600		741	110	99,535	6,600	
New Mexico	431	149	25,731	7,938		203	119	24,183	8,008	
New York	2,368	159	192,295	9,361		1,335	156	193,235	9,456	
North Carolina	1,414	156	118,129	9,271		694	138	111,343	9,315	
North Dakota	260	260	6,995	6,995	**	188	188	7,330	7,330	**
Ohio	1,877	197	133,358	9,996		1,090	189	132,686	9,973	
Oklahoma	895	137	49,300	6,600		593	128	46,433	6,600	
Oregon	767	129	42,827	6,600		414	120	42,949	6,600	
Pennsylvania	1,742	165	129,550	9,283		914	156	132,799	9,355	
Puerto Rico	1,017	160	38,842	5,800		407	123	37,363	5,800	
Rhode Island	170	117	10,437	6,600		57	57	10,842	6,600	*
South Carolina	618	112	55,228	6,600		298	107	52,433	6,600	
South Dakota	328	194	9,380	6,600		254	153	9,306	6,600	
Tennessee	998	116	75,934	6,600		565	112	71,570	6,600	
Texas	4,277	293	373,404	17,665		2,165	216	348,907	17,792	
Utah	582	112	46,508	6,600		232	106	42,593	6,600	
Vermont	224	224	6,419	6,419	**	122	122	6,364	6,364	**
Virginia	1,137	112	93,610	6,600		388	106	92,179	6,600	
Washington	1,214	119	77,826	6,600		606	115	77,099	6,600	
West Virginia	425	146	20,875	6,600		202	109	20,637	6,600	
Wisconsin	1,111	185	60,997	9,270		633	163	61,063	9,321	
Wyoming	188	188	6,849	6,849	**	93	93	6,568	6,568	**

Sample sizes for each state *do* reflect the samples in the TUDA districts within the state, but not the grade 4 take-all option.

\* identifies jurisdictions where all schools (but not all students) for the given grade are included in the NAEP sample.

\*\* identifies jurisdictions where all students for the given grade are included in the NAEP sample.

## **Stratification**

Each state and grade will be stratified separately, but using a common approach in all cases. TUDA districts will be separated from their state, and each part stratified separately. The first level of stratification will be based on urban-centered type of location. This variable has 12 levels (some of which may not be present in a given state or TUDA district), and these will be collapsed so that each of the resulting location categories contains at least nine percent of the student population. Within each of the resulting location categories, schools will be assigned a minority enrollment status. This is based on the two race/ethnic groups that are the second and third most prevalent within the location category. If these groups are both low in percentage terms, no minority classification will be used. Otherwise three (or occasionally four) equal-sized groups (generally high, medium, and low minority) will be formed based on the distribution across schools of the two minority groups.

Within the resulting location and minority group classes (of which there are likely to be from three to fifteen, depending upon the jurisdiction), schools will be sorted by a measure derived from school level results from the most recent available state achievement tests at the relevant grade. In general, mathematics test results will be used, but where these are not available, reading results will be used. In the few states that do not have math or reading tests at grades 4 and 8 (or where we are unable to match the results to the NAEP school frame), instead of achievement data, schools will be sorted using a measure of socio-economic status. This is the median household income of the 5-digit ZIP Code area where the school is located, based on 2000 Population Census data.

Once the schools are sorted by location class, minority enrollment class, and achievement data (or household income), a systematic sample of schools will be selected using a random start. Schools will be sampled with probability proportional to size. The exact details of this process are described in the individual sampling specification memos.

## **2. Beta Sample**

The beta sample at grade 8 is a public school sample. This sample will be used to conduct the TEL pilot assessment. Although only a pilot test sample, this will be a nationally representative sample, with the exception that schools that are included in the grade 8 alpha sample with certainty will not be represented. This is because there is to be no overlap with the grade 8 alpha school sample.



The first stage of sampling for the beta sample is the selection of a sample of geographic primary sampling units (PSUs). These will be selected using the same design as for other recent PSU-based assessments. However, with the advent of county-level census and ACS data following the 2010 Census, a new PSU frame is being created, and stratified. A total 67 PSUs will be selected, representing the U.S. (but not including Puerto Rico, or DODEA schools that are located outside the 50 states and D.C.). This PSU component is needed because of the operational complexities of administering the computer-based assessment. A select group of staff will be trained to administer those assessments. The school stratification of the beta sample within PSUs will be by type of location and median household income. Schools with more than 15 percent black or Hispanic students will be sampled at twice the rate of other schools, so as to increase the student sample sizes for these two groups.

### **3. Gamma Sample**

This is the public school sample at grade 12, used for the reading and mathematics assessments. It will consist of a single sample of schools covering both national- and state-level estimates.

As in past assessments, modest oversampling of Black and Hispanic students will be undertaken in this sample, in the balance of the country outside the 13 participating states. This will be carried out at the school level. Each school with more than 15 percent Black and Hispanic students will be given twice the selection probability of other schools of comparable size. This means that while about 53 percent of the student population (including over 90 percent of the Black and Hispanic students) are in the oversampled schools, about 70 percent of the sample students will come from these schools.

Table 5 shows the sample size targets for each of the 13 state-specific samples. Note that the target student sample sizes vary slightly by state. These are target sampled, rather than assessed, and have been estimated based on experience from 2009. Of the 13 states, 11 participated at the state level in 2009, and so ineligibility, nonresponse, and exclusion rates from 2009 have been used to derive targets for those states. For the other two states (Michigan and Tennessee), national rates from 2009 were used. The goal in each case is to assess about 2,300 students in each of the two subjects (reading and mathematics).

**Table 5. Grade 12 school and student frame counts, expected school sample sizes, and initial target student sample sizes for the 2013 state-by-state assessments (gamma samples)**

Jurisdiction	Grade 12			Overall target student sample size
	Schools in frame	Schools in sample	Students in frame	
Arkansas	297	101	32,035	6,200
Connecticut	245	110	41,607	6,750
Florida	965	116	176,821	6,600
Idaho	210	95	19,057	6,250
Illinois	954	125	149,998	7,250
Iowa	408	121	37,793	6,850
Massachusetts	371	107	67,923	6,250
Michigan	1032	136	126,382	7,400
New Hampshire	89	77	15,749	8,350
New Jersey	432	110	97,690	6,500
South Dakota	191	140	8,796	6,500
Tennessee	369	126	67,111	7,400
West Virginia	147	92	18,796	6,650

## Stratification

Unlike the other samples, the Gamma sample will have an explicit stratification at the highest level. The schools will be stratified by state, for the thirteen state-by-state participants, and the balance of the US, giving 14 explicit strata. In each of the thirteen states, stratification will be carried out in the same way as for the alpha samples. The last level sorting variable will be median household income, as there are no achievement data available at the school level for grade 12.

For the explicit stratum containing the balance of the US, the highest level of sorting will be by Census Division. This gives 8 implicit strata (the balance of New England is too small to be an effective stratum, and is combined with the balance of the Mid-Atlantic Division). The next stratifier in the hierarchy is type of location, which has twelve categories. Many of the type of location strata nested within Census divisions will be collapsed with neighboring type of location cells (this will occur if the expected school sample size within the cell is less than 4.0). These geographic strata will be subdivided using a dichotomous high minority status category. Schools are in the oversampling stratum if they had more than 10 Black or Hispanic students and greater than 15 percent Black or Hispanic students. Otherwise the school will be put in a regular sampling stratum. If the expected sample size within these strata is less than 8.0, they will be left as is. If the expected sample size is greater than 8.0, then each of these two categories will be subdivided into up to four substrata (two for expected sample size up to 12.0, three for expected sample size up to 16.0, and four for expected

sample size greater than 16.0). For the category of no oversampling, the subdivision will be by state or groups of contiguous states. For the oversampling strata, the subdivision will be by percentage Black and Hispanic. Within these substrata, the schools are to be sorted by school type (public, BIE, DoDEA) and median household income from the 2000 Census (using a serpentine sort within the school type substrata).

### ***High School Longitudinal Study (HSLs) Linking Study Sample***

The sample of students for the HSLs linking study will be obtained as follows. For the whole gamma sample, the NAEP school sample will be selected so as to maximize the overlap with the HSLs school sample. Then at the time of student sampling, any student who is in the HSLs sample, but is not selected for NAEP (the RM spiral), will be included in the study and assigned the ML spiral. This is expected to be about 6,000 students from about 300 schools, after accounting for schools that are not responding to the HSLs.

### ***NAEP-PISA Linking Study Sample***

The sample of students for this study will be obtained as follows. For all gamma sample schools in Connecticut, Florida, and Massachusetts, samples of students will be selected from each of grades 9, 10, and 11 (from among those grades offered by the school). The procedure for selecting the student samples will be similar to that used to select grade 12 students, and is described in the student sampling section below. The selected students will be assigned the MP spiral appropriate for their grade.

## **4. Delta Samples**

These are the private school samples at grades 4, 8, and 12 for conducting the operational assessments in reading and math, as well as the special studies that are incorporated into the RM spiral. The number of students targeted per schools will be 64 at grade 4, 65 at grade 8, and 60 at grade 12 – 30 for reading, 30 for math, with 4 at grade 4 and 5 at grade 8 for pilot tests and special studies. The sample sizes are large enough to report results by Catholic and non-Catholic at grades 4 and 8, but at grade 12 only for private schools as a whole. Approximately half the sample at each grade will be from Catholic schools. This is very similar to the design used in 2009, at each grade.

**Stratification**

The private schools are to be explicitly stratified by private school type (Catholic/Other). Within each private school type, stratification will be by Census region (4 categories), type of location (12 categories), and enrollment size. In general, where there are few or no schools in a given stratum, categories will be collapsed together, always preserving the private school type.

**5. Epsilon Sample**

This sample is analogous to the beta sample, but for private schools, at grade 8. The same PSUs will be used as for the beta sample, and the TL session type will be conducted. There will be no oversampling of private schools for this sample. The epsilon sample schools will not overlap with the delta sample schools.

**6. Rho Sample**

This sample will be used to conduct the grade 4 Reading Aloud Accommodations study. It will consist of about 70 schools from a small number of states, with the selected schools each having enough SD and ELL students so that nine students can be selected who are SD, nine who are ELL, and nine who are neither. These students will then be randomly assigned to one of three conditions, and assessed with a NAEP reading assessment. The three conditions are a) standard conditions; b) read aloud the test questions, but not the stimulus passage; c) read aloud all of the assessment material. These schools will not be included in any other NAEP 2013 sample, at any grade.

**IV. New Schools**

To compensate for the fact that files used to create the NAEP school sampling frames are at least two years out of date at the time of frame construction, we will supplement the Alpha, Gamma, and Delta sample with new school samples at each grade.

The new school samples will be drawn using a two-stage design. At the first stage, a minimum of ten school districts (in states with at least ten districts) will be selected from each state for public

schools, and ten Catholic dioceses will be selected nationally for the private schools. The sampled districts and dioceses will be asked to review lists of their respective schools and identify new schools. Frames of new schools will be constructed from these updates, and new schools will be drawn with probability proportional to size using the same sample rates as their corresponding original school samples.

The school sample sizes in the above tables do not reflect new school samples.

## **V. Substitute Samples**

Substitute samples will be selected for each of the Beta, Gamma, Delta, and Epsilon samples. The substitute school for each original will be the next “available” school on the sorted sampling frame, with the following exceptions:

- Schools selected for any NAEP samples will not be used as substitutes.
- Private schools whose school affiliation is unknown will not be used as substitutes. Also, unknown affiliated private schools in the original samples will not get substitutes.
- A school can be a substitute for one and only one sample. (If a school is selected as a substitute school for grade 12, for example, it cannot be used as a substitute for either grade 4 or grade 8.)
- A public school substitute will always be in the same state as its original school.

## **VI. Contingency Samples**

The districts that are taking part in the TUDA program are volunteers. Thus it is possible that at some point over the next few months, a given district might choose to opt out of the TUDA program for 2013. However, it is not acceptable for all schools in such a district to decline NAEP, as then the state estimates will be adversely affected. Thus to deal with this possibility, in each TUDA district, subsamples of the alpha sample schools will be identified as contingency samples. In the event that the district withdraws from the TUDA program prior the selection of the student sample, all alpha sampled schools from that district will be dropped from the sample, with the exception of those selected in the contingency sample. The contingency sample will provide a proportional representation of the district, within the aggregate state sample. Student sampling in those schools will then proceed in the same way as for the other schools within the same state.

Similarly, in the thirteen states participating at grade 12, in the gamma sample contingency samples will be identified in those states. If the state decides to withdraw from the state-level assessment, the contingency sample schools will be retained, as part of the grade 12 national sample.

## **VII. Student Sampling**

Students within the sampled schools will be selected with equal probability. The student sampling parameters vary by sample type (Alpha, Beta, Gamma, Delta, Epsilon, and Rho) and grade, as described below.

### **Alpha Sample, Grade 4 Schools (Except Puerto Rico)**

- All students, up to 70, will be selected.
- If the school has between 71 and 90 students (inclusive), the school will be asked if it wishes to have all students selected, or a sample of 63. If the school elects to have all students selected, all students will be selected. If the school asks for a sample of 63 students, a systematic sample of 63 students will be selected.
- If the school has more than 90 students, a systematic sample of 63 students will be selected.
- In some schools, the school may be assigned more than one 'hit' in sampling. In these schools we will select a sample of size 63 times the number of hits, taking all students if this target is greater than or equal to  $63/70$  of the total grade 4 enrolment.
- All students will be assigned to assessment type RM.

### **Alpha Sample, Grade 8 Schools (Except Puerto Rico)**

- All students, up to 70, will be selected.
- If the school has more than 70 students, a systematic sample of 63 students will be selected.
- In some schools, the school may be assigned more than one 'hit' in sampling. In these schools we will select a sample of size 63 times the number of hits, taking all students if this target is greater than or equal to  $63/70$  of the total grade 8 enrolment.
- All students will be assigned to assessment type RM.

**Alpha Sample, Puerto Rico Grades 4 and 8**

- All students, up to 55, will be selected.
- If the school has more than 55 students, a systematic sample of 50 students will be selected with no oversampling.
- All students will be assigned to assessment type PR.

**Delta Samples, Grades 4 and 8**

- All students, up to 72, will be selected.
- If the school has more than 72 students, a systematic sample of 64 students (grade 4), or 65 students (grade 8) will be selected.
- All students will be assigned to assessment type RM.

**Beta and Epsilon Samples, Grade 8**

- In each school, a sample for computer-based testing will be selected as follows: All students up to 30 will be selected. If there are more than 30 students enrolled, a sample of 30 students will be selected.
- All students will be assigned to the TL session.

**Gamma and Delta Samples, Grade 12**

- All students, up to 66, will be selected.
- If the school has more than 66 students, a systematic sample of 60 students will be selected.
- In some schools, the school may be assigned more than one 'hit' in sampling. In these schools we will select a sample of size 60 times the number of hits, taking all students if this target is greater than or equal to 60/66 of the total grade enrollment.
- All students so selected will be assigned to assessment type RM.
- For the gamma sample, any grade 12 HSLS students not selected in the above steps will be added to the sample and assigned assessment type ML.
- For the gamma sample, in Connecticut, Florida, and Massachusetts, in each school a sample of students from grades 9, 10, and 11 will be selected. For grades 10 and 11, the sample will be drawn as for grade 12, but using 30 in place of 60, and 33 in place of 66,

in the above algorithm. For grade 9, the same procedure will be used, but using figures of 18 and 20. These students will be assigned assessment type MP.

### **Rho Sample, Grade 4**

Details of the student sampling procedures for the grade 4 Reading Aloud Accommodations study have yet to be finalized. However, they will be something like the following. On the basis of e-filed student data for all grade 4 students in the school, students will be classified into four groups: SD only, ELL only, neither SD nor ELL, and Other (including students who are both SD and ELL, and students for whom complete data on SD and ELL status is not available). A random sample of nine students will be selected from each of the first three of these groups. The students from each group will be randomly assigned in equal numbers to each of the three assessment conditions.

## **VIII. Weighting Requirements**

Weighting activities for the 2013 NAEP assessments are not covered under the current NAEP contracts. However, based on past experience, below is a description of the likely weighting requirements.

### **The Operational Samples**

These samples will have a single set of weights for each subject (reading and math at grades 4, 8, and 12) applied to reflect probabilities of selection, school and student nonresponse, any trimming, and the random assignment to the particular subject. There will be a separate replication schemes by grade and public/private. Such weights will also be derived for the Puerto Rico KaSA assessment.

### **The Pilot Test and Special Study Samples**

Fully adjusted weights will not be provided for the students in the pilot test studies and special studies. However, with the exception of the grade 4 Reading Aloud Accommodations study, preliminary weights will be available for these samples. These will reflect the school and student selection probabilities, but with no adjustments for nonresponse.



### **The HSLs Linking Sample**

Weights may be required for the linking sample, which account for the sampling procedures and nonresponse for both the HSLs and the NAEP assessment. Clearly this will require collaboration between the next NAEP contractor responsible for weighting, and RTI International, the contractor for the HSLs study. Once the analysis plan for this study has been specified, a weighting plan can be developed.