

Appendix D

NAEP 2015 Sample Design Memo



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Memo: 2015-
1.1A/1.1B/1.1G/1.1D/1.1E

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Subject: Sample Design for 2015 NAEP - Draft

I. Introduction

For 2015, the NAEP assessment involves the following components:

- A. National assessments in reading, mathematics, and science at grades 4, 8, and 12;
- B. State-by-state and Trial Urban District Assessment (TUDA) assessments in reading and mathematics for public schools at grades 4 and 8;
- C. A state-by-state assessment in science for public schools at grades 4 and 8;
- D. No state-by-state assessments in any states at grade 12;

- E. Technology-based assessment (TBA) start-ups in reading, mathematics, and science at grades 4, 8, and 12;
- F. Pilot assessments of science interactive computer tasks (ICTs) and hybrid hands-on tasks (HOTs) at grades 4, 8, and 12;
- G. A special national study of Knowledge and Skills Appropriate (KaSA) items in mathematics, at grades 4 and 8, including Puerto Rico.

Below is a summary list of the features of the 2015 sample design.

1. 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, mathematics, science, and meaning vocabulary. These samples will also be used for the national KaSA special studies at grades 4 and 8.
2. There will be two sets of relatively small PSU-based samples for the TBA start-up assessments and for the pilot assessments of science ICTs/HOTs at grades 4, 8, and 12. The public school samples for these assessments are known as the Beta samples and the corresponding private samples are known as the Epsilon samples.
3. 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. There are twenty-one Trial Urban District Assessment (TUDA) participants. Twenty of the twenty-one participated also participated in 2013. Milwaukee WI is no longer participating, but Duvall County FL has been added in.
4. All states but Alaska, California, Colorado, Pennsylvania, and Vermont have signed on to do science at grades 4 and 8. BIE schools will not be doing science either.
5. Most schools in states doing science will receive a 1:1:1 RMS spiral (1/3 reading, 1/3 math, and 1/3 science). Most schools in states not doing science will receive a 10:10:1 RMS spiral (10/21 reading, 10/21 math, and 1/21 science) to ensure that these states are sufficiently represented in the national science sample.
6. All TUDAs but Albuquerque, NM, Chicago, IL, and New York City, NY – those that constitute a relatively large proportion of their state population – will receive the 10:10:1 RMS spiral. Albuquerque, Chicago, and New York will receive the 1:1:1 RMS spiral (note that they are in states that have signed on for science).
7. A small subset of schools from each jurisdiction, regardless of whether they are doing science, will receive a spiral that includes meaning vocabulary and KaSA booklets at a rate that will support national level reporting. This spiral, the NL spiral, will consist of 6/21 reading, 6/21 math, 6/21 science, 2/21 meaning vocabulary, and 1/21 KaSA booklets. The subsample of schools selected for the NL spiral in each state is proportional to the representation of each state in the nation.

8. There will be no samples in territories, other than for Puerto Rico at grades 4 and 8 for the KaSA study.
9. Most BIE schools will receive a 10:10:1 RMS spiral and a small subset will receive the NL spiral.
10. All BIE schools and students will be included in the operational samples at grades 4 and 8. This is because, after a hiatus in 2013, the National Indian Education Study (NIES) is resuming. Having all BIE students in sample is designed to provide detailed national results for American Indian and Alaskan Native (AIAN) students in reading and mathematics, as part of the National Indian Education Study (NIES). Because science will be spiraled with math and reading, the science sample will be spread across almost all BIE schools at grades 4 and 8.
11. As in 2013, 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). DoDEA schools will receive either the 1:1:1 RMS spiral or the NL spiral.
12. At grade 12, there will be no state-level samples.
13. All private schools will receive a NL spiral.
14. Oversampling of private schools at grades 4 and 8 will be done at the same level as 2013. Response rates permitting, this will allow separate reporting for reading, mathematics, and science for Catholic and non-Catholic schools, but no further. As in 2013 there will be no oversampling of private schools at grade 12.
15. The sample sizes of assessed students for these various components are shown in Table 1 (which also shows the approximate numbers of participating schools).

Table 1. Target sample sizes of assessed students, and expected number of participating schools, for 2015 NAEP

	Spiral	Jurisdictions		Students		Total
	Spiral Indic.	States (Incl. DC, BIE, DoDEA)	Urban districts	Public school students	Private school students	
Grade 4						
nat'l/state reading	RS, RM, NL	53	21	133,000	3,000	136,000
nat'l/state math	RS, RM, NL	53	21	133,000	3,000	136,000
nat'l/state science	RS, RM, NL	47		105,000	3,000	108,000
reading - vocabulary	NL			7,200	800	8,000
math KaSA	NL			3,600	400	4,000
Puerto Rico KaSA	PR	1		5,000	0	5,000
Total - alpha	4			386,800		386,800
Total- delta	1				10,200	10,200
Typical max. no. students/school				90	105	
Average assessed students/school				51	25	50
Total schools - alpha, delta				7,550	410	7,960
Reading - TBA Start-up	TB			10,800	1,200	12,000
Mathematics - TBA Start-up	TB			10,800	1,200	12,000
Science - TBA Start-up	TB			7,200	800	8,000
Science ICT Pilot	TB			3,600	400	4,000
Science HOT Pilot	TB			2,700	300	3,000
Total - beta	1			35,100		35,100
Total - epsilon	1				3,900	3,900
Typical max. no. students/school				50	50	
Average assessed students/school				41	25	39
Total schools - beta, epsilon				855	155	1,010
Total number of students grade 4				421,900	14,100	436,000
Total number of schools grade 4				8,405	565	8,970

Table 1. Target sample sizes of assessed students, and expected number of participating schools, for 2015 NAEP (Continued)

	Spiral	Jurisdictions		Students		Total
	Spiral Indic.	States (Incl. DC, BIE, DoDEA)	Urban districts	Public school students	Private school students	
Grade 8						
nat'l/state reading	RS, RM, NL	53	21	133,000	3,000	136,000
nat'l/state math	RS, RM, NL	53	21	133,000	3,000	136,000
nat'l/state science	RS, RM, NL	47		105,000	3,000	108,000
reading - vocabulary	NL			7,200	800	8,000
math KaSA	NL			3,600	400	4,000
Puerto Rico KaSA	PR	1		5,000	0	5,000
Total - alpha	4			386,800		386,800
Total- delta	1				10,200	10,200
Typical max. no. students/school				90	105	
Average assessed students/school				64	26	62
Total schools - alpha, delta				6,020	400	6,420
Reading - TBA Start-up	TB			15,300	1,700	17,000
Mathematics - TBA Start-up	TB			10,800	1,200	12,000
Science - TBA Start-up	TB			7,200	800	8,000
Science ICT Pilot	TB			3,600	400	4,000
Science HOT Pilot	TB			2,700	300	3,000
Total - beta	1			39,600		39,600
Total - epsilon	1				4,400	4,400
Typical max. no. students/school				50	50	
Average assessed students/school				44	25	41
Total schools - beta, epsilon				900	175	1,075
Total number of students grade 8				426,400	14,600	441,000
Total number of schools grade 8				6,920	575	7,495

Table 1. Target sample sizes of assessed students, and expected number of participating schools, for 2015 NAEP (Continued)

	Spiral	Jurisdictions		Students		Total
	Spiral Indic.	States (Incl. DC, BIE, DoDEA)	Urban districts	Public school students	Private school students	
Grade 12						
nat'l/state reading	NL			11,700	1,300	13,000
nat'l/state math	NL			12,600	1,400	14,000
nat'l/state science	NL			9,900	1,100	11,000
reading - vocabulary	NL			5,400	600	6,000
Total - gamma	1			39,600		39,600
Total- delta	1				4,400	4,400
Typical max. no. students/school				100	100	
Average assessed students/school				76	80	77
Total schools - gamma, delta				520	55	575
Reading - TBA Start-up	TB			13,500	1,500	15,000
Mathematics - TBA Start-up	TB			10,800	1,200	12,000
Science - TBA Start-up	TB			8,100	900	9,000
Science ICT Pilot	TB			3,600	400	4,000
Science HOT Pilot	TB			2,700	300	3,000
Total - beta	1			38,700		38,700
Total - epsilon	1				4,300	4,300
Typical max. no. students/school				50	50	
Average assessed students/school				42	43	42
Total schools - beta, epsilon				920	100	1,020
Total number of students grade 12				78,300	8,700	87,000
Total number of schools grade 12				1,440	155	1,595
GRAND TOTAL STUDENTS				926,600	37,400	964,000
GRAND TOTAL SCHOOLS				17,510	1,990	19,500

II. Assessment Types

The assessment spiral types are shown in Table 2. Five different spirals will be used at each of the grades 4 and 8, and two 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 RS0401 denotes the first grade 4 reading, mathematics, and science operational assessment in a given school.

Table 2. NAEP 2015 assessment types and IDs

ID	Type	Subjects	Grades	Schools	Comments
RS	Operational P&P	Reading, math, science (1:1:1)	4, 8	Public	Most public schools in states doing science, plus TUDAs in some of those states
RM	Operational P&P	Reading, math, science (10:10:1)	4, 8	Public	Most public schools in states not doing science, plus TUDAs in those states and most others
NL	Operational P&P	Reading, math, science, Meaning Vocab, KaSA (6:6:6:2:1, grades 4 & 8; 13:14:11:6:0, grade 12)	4, 8, 12	Public, private	All private schools; all public schools at Grade 12; some public schools in each jurisdiction (except Puerto Rico and DoD overseas) at grades 4 and 8
PR	Operational P&P	KaSA Mathematics	4, 8	Public	Puerto Rico only
TB	TBA start-ups & pilots	Reading, math, science, science ICT, science HOT	4, 8, 12	Public, private	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 five different types of school samples: Alpha, Beta, Gamma, Delta, and Epsilon. These distinguish sets of schools that will be conducting distinct portions of the assessment.

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, math, and science and contribute to the national samples for these subjects as well. They will also be used for the national meaning vocabulary assessment and for the national KaSA special studies. There will be alpha samples for each state, DC, DoDEA, BIE, and Puerto Rico. The alpha samples will not be used for any TBA start-up assessments or pilot assessments.

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

- A. At each grade, the target student sample size for a state depends on whether or not it signed on for science. For each state that signed on for science, the target student sample size is

7,600: roughly 2,200 assessed each for math, reading, and science. In these states the RS session type will be used. For the four states not signed on for science and BIE, the target student sample sizes are 5,300: 2,200 (assessed) each for math and reading and 220 for science. In these jurisdictions the RM session type will be used.

- B. A national-level subsample will be applied to the sample schools at each grade with a target student sample size of 86,600. Schools that are selected for this subsample will be given the NL spiral.
- C. There will be samples for twenty-one TUDA districts. For two of the five largest (New York City and Chicago) where we require a sizeable science sample so as to ensure an adequate state sample, the student target sample sizes are three-quarters the size of a science state (5,670). For the remaining three large TUDA districts (Los Angeles, Miami-Dade, and Houston) where only a smaller science sample is required, the student target sample sizes are three-quarters the size of a non-science state sample (4,000). For Albuquerque, a small TUDA where a sizeable science sample is required, the student target sample size is half the size of a science state (3,780), whereas the remaining small TUDA districts where only a smaller science sample is required, the student target sample sizes are one-half the size of a non-science state sample (2,650).
- D. 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 4. For the states that contain one or more of these districts, the target sample size indicated in A (and shown in Table 4) 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 4, 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).
- E. In Puerto Rico, the target sample size is 5,750 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.

As mentioned above, the NAEP 2015 design includes an oversample of high proportion American Indian schools in certain states (as part of the NIES design). These schools will be sampled at higher rates than the other schools. The NIES oversample will take place in Arizona, Minnesota, North

Carolina, Oregon, Utah, and Washington. Schools with relatively large percentages of American Indian students will be separately stratified, as explained below, and oversampled by factors ranging from 2 to 6 based on state and grade. Table 3 below shows the thresholds used to define the NIES oversampling strata along with their corresponding oversampling factors.

Table 3. Percent American Indian thresholds and oversampling factors for the NIES school oversample by state and grade

State	Grade 4		Grade 8	
	Percent American Indian thresholds	Oversampling factor	Percent American Indian thresholds	Oversampling factor
Arizona	50	3	50	2
Utah	5	5	5	5
Minnesota	10	5	10	4
North Carolina	15	6	10	6
Oregon	10	6	15	6
Washington	10	6	15	6

Table 4 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 4. 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	719	110	57,293	7,600		462	96	58,020	7,600	
Alaska	361	158	9,870	5,300		276	118	9,865	5,300	
Arizona	1,184	111	83,596	7,600		784	104	82,121	7,600	
Arkansas	488	113	36,667	7,600		300	99	35,481	7,600	
Bureau of Indian Education	136	136	3,330	3,330	**	112	112	2,904	2,904	**
California	5,907	103	470,328	7,600		2,876	96	454,580	7,600	
Colorado	1,041	97	65,699	5,300		554	93	62,665	5,300	
Connecticut	575	114	40,276	7,600		315	96	41,529	7,600	
Delaware	118	94	10,099	7,600		61	61	9,885	7,600	*
District of Columbia	122	122	5,113	5,113	**	73	73	4,539	4,539	**
DoDEA Schools	108	108	7,514	7,514	**	63	63	5,596	5,596	**
Florida	2,183	96	204,096	7,600		1,173	94	201,815	7,600	
Georgia	1,248	92	130,599	7,600		552	87	129,337	7,600	
Hawaii	203	112	14,902	7,600		83	62	13,132	7,600	
Idaho	373	127	22,095	7,600		212	101	21,610	7,600	
Illinois	2,310	121	152,571	7,600		1,610	110	153,611	7,600	
Indiana	1,059	110	78,537	7,600		496	90	80,280	7,600	
Iowa	647	138	36,039	7,600		374	108	35,713	7,600	
Kansas	704	145	36,223	7,600		395	115	35,689	7,600	
Kentucky	734	113	51,728	7,600		407	99	50,978	7,600	
Louisiana	754	115	54,823	7,600		479	102	52,027	7,600	
Maine	326	169	13,609	7,600		199	116	13,687	7,600	
Maryland	893	110	64,759	7,600		379	93	60,562	7,600	
Massachusetts	955	111	70,874	7,600		477	90	71,996	7,600	
Michigan	1,731	119	113,008	7,600		1,071	102	116,734	7,600	
Minnesota	934	117	62,923	7,600		702	114	62,522	7,600	
Mississippi	422	106	38,029	7,600		286	95	37,697	7,600	
Missouri	1,160	130	68,565	7,600		691	110	68,104	7,600	

Table 4. 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	392	214	11,146	7,600		273	157	10,789	7,600	
Nebraska	536	167	22,939	7,600		303	126	21,793	7,600	
Nevada	385	97	33,934	7,600		161	84	33,313	7,600	
New Hampshire	268	141	13,975	7,600		141	90	14,348	7,600	
New Jersey	1,360	114	99,003	7,600		750	97	98,145	7,600	
New Mexico	440	130	25,977	7,600		225	102	25,261	7,600	
New York	2,397	104	199,215	7,600		1,443	94	198,874	7,600	
North Carolina	1,422	103	116,094	7,600		703	91	116,743	7,600	
North Dakota	258	258	7,760	7,760	**	183	183	7,403	7,403	**
Ohio	1,778	115	129,775	7,600		1,118	100	132,975	7,600	
Oklahoma	872	136	50,101	7,600		584	120	47,828	7,600	
Oregon	750	131	42,558	7,600		422	108	42,917	7,600	
Pennsylvania	1,649	91	129,728	5,300		900	87	133,900	5,300	
Puerto Rico	988	171	33,865	5,750		401	125	32,888	5,750	
Rhode Island	166	121	10,751	7,600		59	59	10,248	7,600	*
South Carolina	633	101	55,665	7,600		307	89	55,154	7,600	
South Dakota	314	197	10,084	7,600		245	160	9,476	7,600	
Tennessee	989	109	76,003	7,600		581	97	73,679	7,600	
Texas	4,373	99	386,022	7,600		2,224	95	372,168	7,600	
Utah	613	102	48,529	7,600		244	91	45,931	7,600	
Vermont	218	218	6,247	6,247	**	122	122	6,138	6,138	**
Virginia	1,115	100	95,536	7,600		384	86	94,826	7,600	
Washington	1,231	116	79,005	7,600		610	99	78,960	7,600	
West Virginia	423	157	20,728	7,600		196	98	20,744	7,600	
Wisconsin	1,090	136	61,306	7,600		642	109	61,502	7,600	
Wyoming	185	185	7,185	7,185	**	87	87	6,902	6,902	**

Table 4. 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	
Albuquerque	95	52	7,426	3,780		40	32	6,721	3,780	
Atlanta	55	42	4,238	2,650		24	24	3,509	3,509	**
Austin	79	44	6,988	2,650		24	24	5,542	2,650	*
Baltimore City	127	56	6,385	2,650		102	53	5,654	2,650	
Boston	72	52	4,165	2,650		41	41	3,867	2,650	*
Charlotte	103	43	11,447	2,650		45	32	10,717	2,650	
Chicago	501	102	29,331	5,670		482	100	28,794	5,670	
Cleveland	71	71	2,970	2,970	**	66	66	2,755	2,755	**
Dallas	147	43	13,031	2,650		42	42	10,799	2,650	*
Detroit	66	48	4,213	2,650		50	50	3,224	3,224	**
Duval County, FL	115	44	9,999	2,650		48	31	9,098	2,650	
Fresno	71	44	5,854	2,650		23	23	5,086	2,650	*
Hillsborough County, FL	171	44	15,515	2,650		85	43	15,159	2,650	
Houston	176	64	17,149	4,000		64	46	13,400	4,000	
Jefferson County, KY	100	44	7,589	2,650		46	29	7,345	2,650	
Los Angeles	556	66	50,563	4,000		191	64	45,215	4,000	
Miami	271	67	26,278	4,000		162	65	27,130	4,000	
New York City	768	74	72,429	5,670		527	71	68,327	5,670	
Philadelphia	162	48	11,438	2,650		126	46	9,573	2,650	
San Diego	145	47	10,378	2,650		62	36	9,231	2,650	
District of Columbia PS	80	80	3,291	3,291	**	32	32	2,289	2,289	**
Total	52,240	7,831	3,776,296	443,343		28,770	6,215	3,725,584	441,811	

Counts for states *do not* reflect the oversampling for their constituent TUDA districts.

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 5 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 5. 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	719	109	57,293	7,600		462	96	58,020	7,600	
Alaska	361	158	9,870	5,300		276	118	9,865	5,300	
Arizona	1,184	111	83,596	7,600		784	104	82,121	7,600	
Arkansas	488	113	36,667	7,600		300	99	35,481	7,600	
Bureau Of Indian Education	136	136	3,330	3,330	**	112	112	2,904	2,904	**
California	5,907	277	470,328	15,818		2,876	229	454,580	15,902	
Colorado	1,041	97	65,699	5,300		554	93	62,665	5,300	
Connecticut	575	114	40,276	7,600		315	96	41,529	7,600	
Delaware	118	94	10,099	7,600		61	61	9,885	7,600	*
District Of Columbia	122	122	5,113	5,113	**	73	73	4,539	4,539	**
DoDEA Schools	108	108	7,514	7,514	**	63	63	5,596	5,596	**
Florida	2,183	227	204,096	14,969		1,173	209	201,815	14,962	
Georgia	1,248	130	130,599	10,004		552	108	129,337	10,903	
Hawaii	203	112	14,902	7,600		83	62	13,132	7,600	
Idaho	373	127	22,095	7,600		212	101	21,610	7,600	
Illinois	2,310	197	152,571	11,805		1,610	185	153,611	11,842	
Indiana	1,059	110	78,537	7,600		496	90	80,280	7,600	
Iowa	647	138	36,039	7,600		374	108	35,713	7,600	
Kansas	704	145	36,223	7,600		395	115	35,689	7,600	
Kentucky	734	142	51,728	9,137		407	113	50,978	9,157	
Louisiana	754	115	54,823	7,600		479	102	52,027	7,600	
Maine	326	169	13,609	7,600		199	116	13,687	7,600	
Maryland	893	150	64,759	9,501		379	133	60,562	9,541	
Massachusetts	955	155	70,874	9,803		477	125	71,996	9,842	
Michigan	1,731	162	113,008	9,966		1,071	149	116,734	10,614	
Minnesota	934	117	62,923	7,600		702	114	62,522	7,600	
Mississippi	422	106	38,029	7,600		286	95	37,697	7,600	
Missouri	1,160	130	68,565	7,600		691	110	68,104	7,600	
Montana	392	213	11,146	7,600		273	157	10,789	7,600	

Table 5. 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	536	167	22,939	7,600		303	126	21,793	7,600	
Nevada	385	97	33,934	7,600		161	84	33,313	7,600	
New Hampshire	268	141	13,975	7,600		141	90	14,348	7,600	
New Jersey	1,360	114	99,003	7,600		750	97	98,145	7,600	
New Mexico	440	151	25,977	9,188		225	111	25,261	9,347	
New York	2,397	142	199,215	10,507		1,443	132	198,874	10,659	
North Carolina	1,422	137	116,094	9,500		703	116	116,743	9,551	
North Dakota	258	258	7,760	7,760	**	183	183	7,403	7,403	**
Ohio	1,778	182	129,775	10,396		1,118	162	132,975	10,198	
Oklahoma	872	136	50,101	7,600		584	120	47,828	7,600	
Oregon	750	131	42,558	7,600		422	108	42,917	7,600	
Pennsylvania	1,649	131	129,728	7,482		900	126	133,900	7,571	
Puerto Rico	988	171	33,865	5,750		401	125	32,888	5,750	
Rhode Island	166	121	10,751	7,600	*	59	59	10,248	7,600	*
South Carolina	633	101	55,665	7,600		307	89	55,154	7,600	
South Dakota	314	197	10,084	7,600		245	160	9,476	7,600	
Tennessee	989	109	76,003	7,600		581	96	73,679	7,600	
Texas	4,373	250	386,022	16,167		2,224	202	372,168	16,291	
Utah	613	102	48,529	7,600		244	91	45,931	7,600	
Vermont	218	218	6,247	6,247	**	122	122	6,138	6,138	**
Virginia	1,115	100	95,536	7,600		384	86	94,826	7,600	
Washington	1,231	116	79,005	7,600		610	99	78,960	7,600	
West Virginia	423	157	20,728	7,600		196	98	20,744	7,600	
Wisconsin	1,090	136	61,306	7,600		642	109	61,502	7,600	
Wyoming	185	185	7,185	7,185	**	87	87	6,902	6,902	**
Total	52,240	7,831	3,776,296	443,343		28,770	6,215	3,725,584	441,811	

Sample sizes for each state *do* reflect the samples in the TUDA districts within the state.

* 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 the 2012 ACS (5-year) 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 comprises the national public school samples at grades 4, 8, and 12. This sample will be used to conduct the TBA start-ups in reading, mathematics, and science and the pilot assessments in science interactive computer tasks (ICTs) and hybrid hands-on tasks (HOTs) at all three grades. Each of these samples will be nationally representative, with the exception that schools that are included in the grades 4 and 8 alpha samples with certainty will not be represented. This is because there is to be no overlap with the grade 4 and 8 alpha school samples.

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 the 2014 assessments, but minimizing the overlap with PSUs in that assessment. 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.

The number of students targeted per school will be 50 (either 25 start-up and 25 ICT/HOT or 50 start-up).

3. Gamma Sample

This is the public school sample at grade 12, used for the reading, mathematics, science, and meaning vocabulary assessments. It will consist of a single sample of schools covering only national-level estimates. The number of students targeted per school will be 95 (28 reading, 30 for math, 24 science, and 13 meaning vocabulary).

As in past assessments, modest oversampling of Black and Hispanic students will be undertaken in this sample. 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.

Stratification

The Gamma sample will have an implicit stratification, using a hierarchy of stratifiers and a serpentine sort. The highest level of the hierarchy is Census division (9 implicit strata). 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 for oversampling purposes. Schools with more than 10 Black or Hispanic students and greater than 15 percent Black or Hispanic students will be considered high minority and placed in an oversampling stratum. All other schools will be considered low minority and placed in a regular sampling stratum. If the expected sample size for a high or low minority stratum is less than 8.0, it will be left as is. If the expected sample size is greater than 8.0, then the stratum 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 regular sampling strata, 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 2012 5-year ACS (using a serpentine sort within the school type substrata).

4. Delta Samples

These are the private school samples at grades 4, 8, and 12 for conducting the operational assessments in reading, mathematics, science, and meaning vocabulary, as well as the KaSA special studies at grades 4 and 8 that are incorporated into the NL spiral. The number of students targeted per schools will be 105 (30 reading, 30 math, 30 science, 10 meaning vocabulary, and 5 KaSA) at grades 4 and 8, and 95 (28 reading, 30 for math, 24 science, and 13 meaning vocabulary) at grade 12. 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 2013, 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 grades 4, 8, and 12. The same PSUs will be used as for the beta sample. There will be no oversampling of private schools for this sample. The epsilon sample schools will not overlap with the delta sample schools.

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:

- A. Schools selected for any NAEP samples will not be used as substitutes.
- B. 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.
- C. 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.)

- D. 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 2015. 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.

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, and Epsilon) and grade, as described below.

Alpha Sample, Grades 4 and 8 Schools (Except Puerto Rico)

- A. The sample size for each school will depend upon which spiral the school was assigned, either RS, RM or NL.
- B. In schools assigned the RS spiral, all students will be selected, up to 100. If the school has more than 100 students, 90 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 90 times the number of hits, taking all students if this target is greater than or equal to 90/100 of the total enrollment.
- C. In schools assigned the RM spiral, all students, up to 70, will be selected. If the school has more than 70 students, 63 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 enrollment.
- D. In schools assigned the NL spiral, all students will be selected, up to 100. If the school has more than 100 students, 90 will be selected.
- E. The student sampling procedures for DC at grades 4 and 8 have yet to be determined.

Alpha Sample, Puerto Rico Grades 4 and 8

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

Delta Samples, Grades 4 and 8

- A. All students, up to 115, will be selected.
- B. If the school has more than 115 students, a systematic sample of 105 students will be selected.
- C. All students will be assigned to assessment type NL.

Beta and Epsilon Samples, Grade 8

- A. In each school, a sample for computer-based testing will be selected as follows: All students up to 50 will be selected. If there are more than 50 students enrolled, a sample of 50 students will be selected.
- B. All students will be assigned to the TB session.

Gamma and Delta Samples, Grade 12

- A. All students, up to 105, will be selected.
- B. If the school has more than 105 students, a systematic sample of 95 students will be selected.
- C. All students will be assigned to assessment type NL.

VIII. Weighting Requirements

Weighting activities for the 2015 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, math, science, and meaning vocabulary 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 and the national KaSA special studies at grades 4 and 8.

The Pilot Test Samples

Fully adjusted weights will not be provided for the students in the TBA start-up and science ICT and HOT pilot test studies. However, preliminary weights will be available for these samples. These will reflect the school and student selection probabilities, but with no adjustments for nonresponse.

The NIES Samples

The NIES survey samples consist of two grade-specific samples, comprising students selected for each of the grade 4 and 8 operational samples. We will create one set of weights for each grade-specific sample. The NIES weights are designed for any aggregation of the NIES data, not involving NAEP achievement data. NIES analyses involving NAEP achievement data should use the appropriate NAEP operational weights.