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Calculation of the High School API

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AB 484

- Assembly Bill (AB) 484 suspends non-Elementary and Secondary Education Act (ESEA) required tests
- AB 484 also provides the SSPI, with the approval of the SBE, the authority to determine if API scores would be a valid measure of school and district performance in the 2013–14 and 2014–15 school years only

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Calculation of the 2014 High School API

- Tests available for the calculation of a "Lite" high school API in 2014 and 2015 include:
  - Grade 10 CAHSEE English language arts (ELA) and math
  - Grade 10 Life Science California Standards Test (CST), California Modified Assessment (CMA), and California Alternate Performance Assessment (CAPA)
  - Grade 10 CAPA ELA and math

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Calculation of the 2014 High School API (Cont.)

- The first step to produce a “Lite” API, that would be highly correlated to the current or “Full” API, is to determine the weights for the assessments:
  - CDE staff used a regression analysis to obtain coefficient estimates to guide the choice of weights

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Regression Model

1. Basic Model:

$$\text{Actual API} = \beta_0 + \beta_1 \text{ ELA CAHSEE} + \beta_2 \text{ Math CAHSEE} + \beta_3 \text{ Science}$$

2. Calculate content area aggregates for the above content areas using 2011 and 2012 test data
3. “Stack” or combine 2011 and 2012 data to extract cycle-specific information
4. Run regression to obtain parameter coefficients

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Number of Regression Records Used to Determine Weights

High schools in 2011 with CAHSEE or Life Science Data		1,704
High schools in 2012 with CAHSEE or Life Science Data		1,686
Total Observations		**3,390**
Observations with <30 Valid Scores	625	
Total Observations for Regression		**2,765**

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Current Performance Scores

- Life Science and CAPA (5 performance levels)

Far Below Basic	Below Basic	Basic	Proficient	Advanced
200	500	700	875	1000

- CAHSEE ELA & Math (4 performance levels)

Results	Fail	Pass	Proficient	Advanced
Scale Score	<350	>=350 - 379	380 - 424	>=425
API Points	200	1000	1000	1000

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Proposed Performance Scores

- CDE staff are proposing:
  - To use the current five performance levels for grade 10 Life Science and CAPA ELA and math
  - Two options for using four performance levels for CAHSEE ELA and math

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Proposed Performance Scores (Cont.)

- Below are the two proposed performance point options for CAHSEE ELA and math results

Options	Below Basic (fail)	Basic (pass)	Proficient (pass)	Advanced (pass)
200 Lowest Points	200	700	875	1000
450 Lowest Points	450	700	875	1000

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Regression Versus Current Content Area Test Weights

Option	Proposed ELA	Current ELA	Proposed Math	Current Math	Proposed Life Science	Current Life Science
200 Lowest Points	0.175	0.30	0.248	0.30	0.290	0.10
450 Lowest Points	0.418		0.324		0.299	

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Simulation Criteria

(a) High schools in 2011 and 2012 with 100% enrollment in grades 9-12		1,769
(b) High schools in **2011** with CAHSEE or Life Science Data		1,704
(c) High schools in **2012** with CAHSEE or Life Science Data		1,686
High schools in both (a), (b), and (c)		**1,686**
High schools with <100 Valid Scores*	638	
Total High Schools for Analysis		**1,048**

* Number of students who have a score for either Life Science, CAHSEE/CAPA ELA, or CAHSEE/CAPA math. Simulation excluded special education and ASAM schools and most schools with flags.

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Simulation Criteria (Cont.)

The scale calibration factors (SCFs) were:

Simulation SCFs Grade 10 *Used for 2011 Lite Base and 2012 Lite Growth APIs*	Current SCFs Grades 9-12 *Used for 2011 Base and 2012 Growth APIs*
200 point structure:	• SWD: -12.58
• SWD: -91.65	• Non-SWD: 17.28
• Non-SWD: 14.34	
450 point structure:	
• SWD: -118.38	
• Non-SWD: -15.55	

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Correlation Analysis

- Determined correlation between the:
  1. 2012 Full Growth API versus the 2012 Lite Growth API (herein Status)
  2. Change from Base to Growth using two different methodologies (herein Change)

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Status

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Correlation for Status

- At the July 18, 2013 Technical Design Group (TDG) meeting, CDE staff presented simulation data based on:
  - Four different weighting schemes
  - Three different point structures for the CAHSEE ELA and math results
- The two simulations with the highest correlations are being presented to the PSAA Advisory Committee

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Correlation for Status

- To obtain the correlation for the status methodology, the 2012 Full Growth API was compared to the 2012 Lite API using the two point structures and weighting schemes (see slide 44)

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Correlation for Status (Cont.)

Correlation between 2012 **Full** Growth API and 2012 **Lite** Growth API

Correlation and Point Category	2012 Growth API	Mean	Standard Deviation	Minimum Growth API	Maximum Growth API
Correlation = .97 **200** Lowest Level*	Full Growth	763.60	80.6	409	975
	Lite Growth	763.67	90.4	405	982

Correlation and Point Category	2012 Growth API	Mean	Standard Deviation	Minimum Growth API	Maximum Growth API
Correlation = .97 **450** Lowest Level**	Full Growth	763.60	80.6	409	975
	Lite Growth	762.35	74.7	512	954

* API Points = 200, 700, 875, 1000
** API Points = 450, 700, 875, 1000

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Analysis of Status Model

- The correlation in the status model is high for both weight and point structures (i.e., lowest points 200 or 450)

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Change

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Correlations for Change

- Because schools are held accountable for meeting growth targets, the TDG recommended that CDE staff also look at the correlation of the “Change” between the Base to Growth for the Full API and the Lite API
- CDE staff used two methodologies to obtain the change correlations

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Correlations for Change (Cont.)

1. The first methodology, to obtain the growth correlation, compared the change from:
   - 2011 Full Base to the 2012 Full Growth API *(current Base to Growth comparison)*
   - 2011 **Full Base** API to the 2012 **Lite Growth** API

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Correlations for Change (Cont.)

2. The second methodology, to obtain the growth correlation, compared the change from:
   - 2011 Full Base to the 2012 Full Growth API *(current Base to Growth comparison)*
   - 2011 **Lite Base** to the 2012 **Lite Growth** API

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Correlations for Change:

Results from First Methodology

Correlation and Point Structure	Change Comparison	Mean	Standard Deviation	Minimum Change in API Pts.	Maximum Change in API Pts.
Correlation = .64 **200** Lowest Points*	Full Base to Full Growth	7.56	18.1	-138	94
	Full Base to Lite Growth	7.63	28.9	-151	123

Correlation and Point Structure	Change Comparison	Mean	Standard Deviation	Minimum Change in API Pts.	Maximum Change in API Pts.
Correlation = .67 **450** Lowest Points**	Full Base to Full Growth	7.56	18.1	-138	94
	Full Base to Lite Growth	6.31	25.6	-104	123

* API Points = 200, 700, 875, 1000
** API Points = 450, 700, 875, 1000

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Results from First Methodology:

(Lite API Lowest Points: 200)

Change Between Full Base & Full Growth		Change Between 2011 Full Base & 2012 Lite Growth								
Change in API Points	# of Schools	-150 to -101	-100 to -51	-50 to -25	-24 to -1	0	1 to 24	25 to 50	51 to 100	101 to 150
-150 to -101	1	**100.0%**								
-100 to -51	2		**100.0%**							
-50 to -25	34	**5.9%**	**29.4%**	**29.4%**	**26.5%**		**8.8%**			
-24 to -1	252		**4.8%**	**23.4%**	**36.1%**	**1.2%**	**28.2%**	**6.0%**	**0.4%**	
0	33			**9.1%**	**21.2%**		**48.5%**	**18.2%**	**3.0%**	
1 to 24	588		**0.2%**	**3.2%**	**22.8%**	**1.7%**	**46.4%**	**20.9%**	**4.8%**	
25 to 50	124			**2.4%**	**8.1%**		**29.8%**	**41.1%**	**17.7%**	**0.8%**
51 to 100	14						**14.3%**	**7.1%**	**64.3%**	**14.3%**

Total Schools: 1,048

Explanation: The last row identifies 14 schools that had a change in API points between 51 and 100 based on the current API methodology. Under the new Lite API methodology, 9 of those 14 schools (64.3%) fell within the same range of 51 to 100 points.

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Results from First Methodology:

(Lite API Lowest Points: 450)

Change Between Full Base & Full Growth | **Change Between 2011 Full Base & 2012 Lite Growth**

Change in API Points	# of Schools	-150 to -101	-100 to -51	-50 to -25	-24 to -1	0	1 to 24	25 to 50	51 to 100	101 to 150
-150 to -101	1	**100.0%**								
-100 to -51	2				**100.0%**					
-50 to -25	34		**20.6%**	**26.5%**	**35.3%**		**14.7%**	**2.9%**		
-24 to -1	252		**1.2%**	**19.0%**	**50.0%**	**3.2%**	**20.6%**	**5.6%**	**0.4%**	
0	33			**3.0%**	**45.5%**	**6.1%**	**39.4%**	**3.0%**	**3.0%**	
1 to 24	588			**3.2%**	**32.8%**	**2.4%**	**44.9%**	**13.9%**	**2.6%**	**0.2%**
25 to 50	124				**5.6%**	**0.8%**	**26.6%**	**45.2%**	**21.0%**	**0.8%**
51 to 100	14							**28.6%**	**57.1%**	**14.3%**

Total Schools: 1,048

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Correlations for Change:
Results from Second Methodology

Correlation and Point Structure	Change Comparison	Mean	Standard Deviation	Minimum	Maximum
Correlation = .67 **200** Lowest Points*	Full Base to Full Growth	7.56	18.1	-138	94
	Lite Base to Lite Growth	-1.13	30.1	-131	144

Correlation and Point Structure	Change Comparison	Mean	Standard Deviation	Minimum	Maximum
Correlation = .64 **450** Lowest Points**	Full Base to Full Growth	7.56	18.1	-138	94
	Lite Base to Lite Growth	-5.64	23.0	-103	93

* API Points = 200, 700, 875, 1000
** API Points = 450, 700, 875, 1000

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Results from Second Methodology:

(Lite API Lowest Points: 200)

Change Between Full Base & Full Growth / **Change Between 2011 Lite Base & 2012 Lite Growth**

Change in API Points	# of Schools	-150 to -101	-100 to -51	-50 to -25	-24 to -1	0	1 to 24	25 to 50	51 to 100	101 to 150
-150 to -101	1	**100.0%**								
-100 to -51	2		**100.0%**							
-50 to -25	34	**14.7%**	**35.3%**	**26.5%**	**17.6%**		**5.9%**			
-24 to -1	252	**0.4%**	**8.7%**	**27.4%**	**45.6%**	**0.8%**	**15.9%**	**0.4%**	**0.8%**	
0	33			**6.1%**	**42.4%**	**3.0%**	**45.5%**	**3.0%**		
1 to 24	588		**0.7%**	**7.8%**	**35.0%**	**1.5%**	**43.7%**	**9.2%**	**1.9%**	**0.2%**
25 to 50	124			**4.0%**	**7.3%**	**1.6%**	**35.5%**	**33.9%**	**15.3%**	**2.4%**
51 to 100	14				**7.1%**		**14.3%**		**57.1%**	**21.4%**

Total Schools: 1,048

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Results from Second Methodology:

(Lite API Lowest Points: 450)

Change Between Full Base & Full Growth / **Change Between 2011 Lite Base & 2012 Lite Growth**

Change in API Points	# of Schools	-150 to -101	-100 to -51	-50 to -25	-24 to -1	0	1 to 24	25 to 50	51 to 100	101 to 150
-150 to -101	1	**100.0%**								
-100 to -51	2		**50.0%**	**50.0%**						
-50 to -25	34	**2.9%**	**41.2%**	**32.4%**	**17.6%**		**5.9%**			
-24 to -1	252		**4.4%**	**29.4%**	**52.4%**	**1.2%**	**11.9%**	**0.4%**	**0.4%**	
0	33			**6.1%**	**57.6%**		**33.3%**	**3.0%**		
1 to 24	588		**0.5%**	**8.3%**	**48.0%**	**2.9%**	**35.7%**	**3.6%**	**1.0%**	
25 to 50	124			**3.2%**	**19.4%**		**46.0%**	**25.8%**	**5.6%**	
51 to 100	14				**21.4%**			**28.6%**	**50.0%**	

Total Schools: 1,048

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Analysis of Change

- The correlation in the change model is significantly lower than the status correlation
- The difference in the correlations between the two change methodologies is minor:
  - Full Base to Lite Growth (.64 and .67)
  - Lite Base to Lite Growth (.67 and .64)

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Analysis of Change (Cont.)

The change in API points does not vary greatly between the 200 and 450 point structures.

Percent of Schools By Change in API Points			
Change in API Points	2011 Base to 2012 Growth	Full Base to Lite Growth Lowest Points 200	Full Base to Lite Growth Lowest Points 450
Zero or negative	30.7%	36.8%	44.7%
1 to 50	67.9%	57.1%	50.1%
51 to 200	1.3%	6.1%	5.2%

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Analysis of Change Models (Cont.)

More schools have a zero or negative change in API points in the Lite Base to Lite Growth comparison.

Percent of Schools By Change in API Points			
Change in API Points	2011 Base to 2012 Growth	Lite Base to Lite Growth Lowest Points 200	Lite Base to Lite Growth Lowest Points 450
Zero or negative	30.7%	51.8%	62.8%
1 to 50	67.9%	43.7%	35.2%
51 to 200	1.3%	4.5%	2.0%

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TDG Recommendation

The TDG recommends that the API for high schools not be produced for 2014:

- Producing a “Lite” API dramatically changes the API construct and purpose
- Traditionally, over time, more data (i.e., rigorous tests) have been added to the API whereas the “Lite” API drastically reduces the information being included

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TDG Recommendation (Cont.)

– The CAHSEE was built for individual student-level accountability and should not be used as the main measure to compare school-level growth.

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Questions and/or Comments