

BULLETIN: SEISMIC S_s MAP TO ASSIST 2013 CBC PRE-CHECK (PC) PLAN HOLDERS

A Bulletin is a DSA notification to its stakeholders regarding any issue intended to be directed to a broad group of external stakeholders as well as DSA staff. Bulletins are generally used to provide notification of a specific concern arising from an event or previously unknown condition, and pertaining to building code requirements.

This bulletin is intended to assist PC (pre check) designers to establish the seismic threshold for multiple options PC's based on the changes to the seismic design provisions in the 2013 CBC (California Building Code).

Under the 2010 and prior CBC, the seismic design provisions allowed the seismic ground motions for building structures to be capped at an S_s (mapped MCE_R , spectral response acceleration parameter at short periods) of 1.5 regardless of the actual mapped seismic ground motion provided the structure complied with certain criteria. For example, ASCE 7-05 Section 12.8.1.3 allowed such a cap provided the structure had a fundamental period less than 0.5 seconds, was less than 5 stories, and contained no structural irregularities (from here on referred to as "short and regular structures"). Most PC designs met this criteria, and as such, most were designed for $S_s=1.5$. Consequently, these PC designs could be placed or relocated anywhere in the State of California regardless of the actual mapped ground motion.

Under the 2013 CBC, these seismic design provisions were modified in Section 1616A.1.12 to no longer allow the ground motions to be capped at a specific ground motion. Instead, the ground motions for these short and regular structures are allowed to use the larger of either $0.8S_s$ or $S_s=1.5$. Under the 2013 CBC, the peak mapped S_s in the state is approximately 3.73. Consequently, these PC designs would need to be designed to an $S_s=2.99$ ($0.8 \times 3.73=2.99$) in order to be placed or relocated anywhere in the state.

As a result of the changes in the 2013 CBC, PC designers and manufacturers have expressed interest in providing multiple seismic options under the 2013 CBC and have inquired about which S_s thresholds to design each option for. To assist the PC designers and manufacturers, California Geological Survey (CGS) created a map of the state showing select S_s contours. The map is shown in Attachment A. The map shows S_s contours that were derived based on the ground motions in ASCE 7-10 utilizing the 2008 USGS map data, for use with the 2013 CBC.

The map denotes school sites and county boundaries so manufacturers and designers can get a general sense of the number of school sites within each contour range and county. The lowest contour range selected is for S_s equal to or less than 1.875. This contour range represents the area of the state where PC's that were previously designed to $S_s=1.5$, and now qualify for the 80% S_s reduction, could be placed (i.e. $1.875 \times 0.8=1.5$). The remaining contours were selected to provide information for PC manufacturers and designers to assist in their decision making process as to select other S_s thresholds.

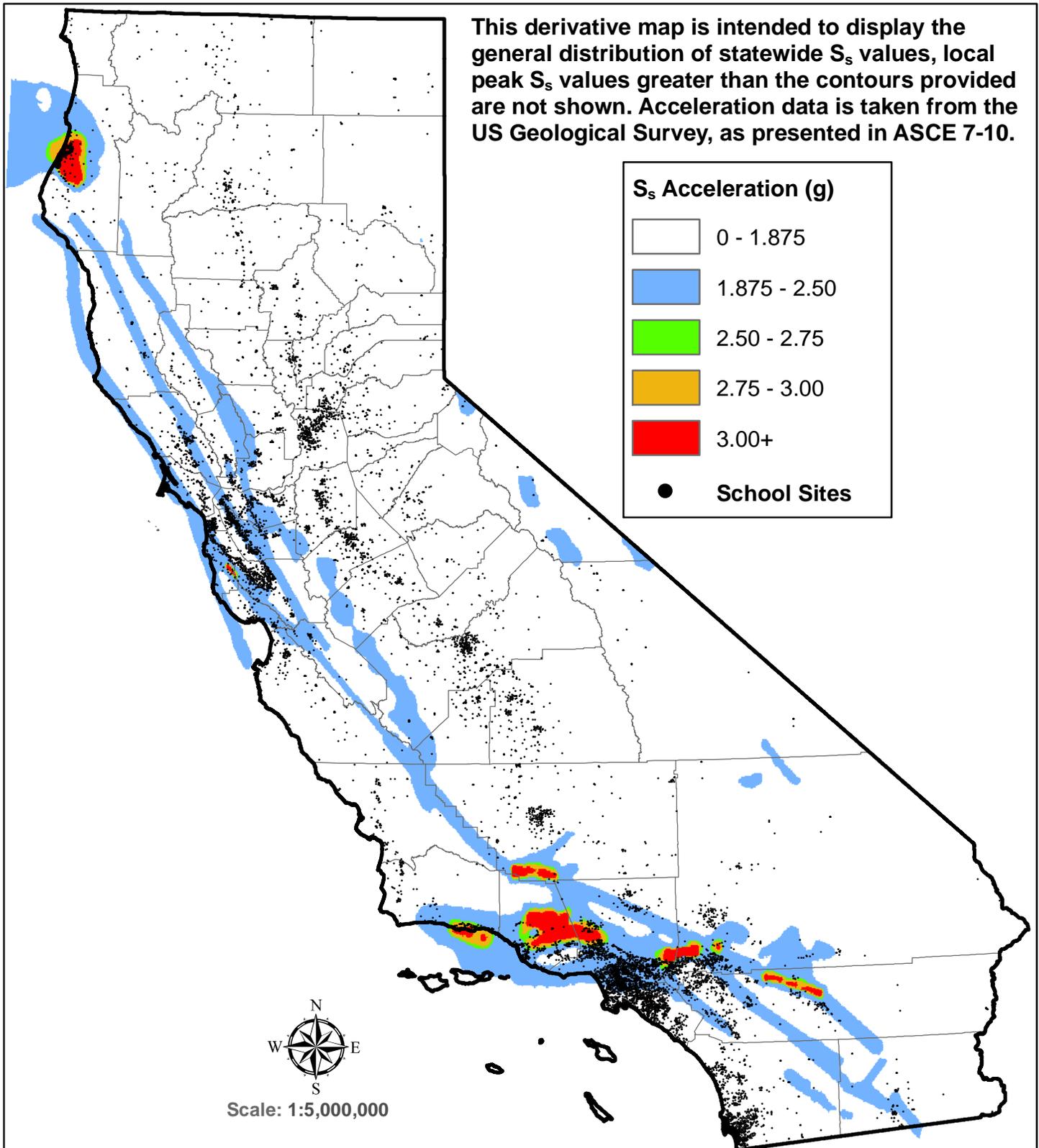
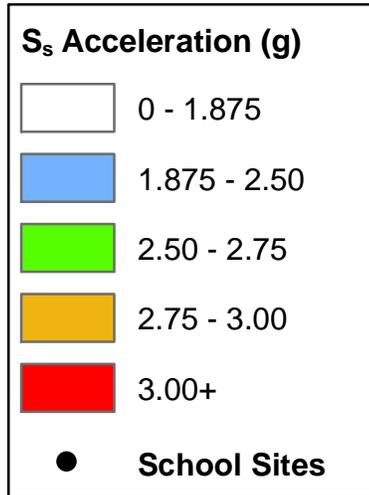
The map is provided as informational only and is not suitable to be used for design of or siting of structures on specific school sites.

ATTACHMENTS:

A: S_s Risk-Adjusted Maximum Considered Earthquake Ground Motion Parameter (MCE_R) for 0.2s Spectral Response Acceleration, Site Class B

S_s Risk-Adjusted Maximum Considered Earthquake Ground Motion Parameter (MCE_R) 0.2s Spectral Reponse Acceleration, Site Class B

This derivative map is intended to display the general distribution of statewide S_s values, local peak S_s values greater than the contours provided are not shown. Acceleration data is taken from the US Geological Survey, as presented in ASCE 7-10.




Scale: 1:5,000,000



Map not intended for determination of design values.
See USGS application at:
<http://earthquake.usgs.gov/designmaps/us/application.php>