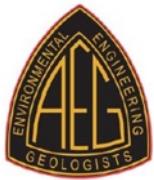# ASSOCIATION OF ENVIRONMENTAL & ENGINEERING GEOLOGISTS
INLAND EMPIRE CHAPTER

JULY 2025 MEETING ANNOUNCEMENT

Greetings AEG Inland Empire Chapter Members

We hope you will join us for our seventh 2025 AEG Inland Empire meeting. The meeting will be held Wednesday, July 9, at the The Old Spaghetti Factory in Rancho Cucamonga. This a "NORTH" venue of our roving AEG-IE meeting locations. Looking forward to seeing you there!

Meeting date:
> **Wednesday, July 9, 2025**

Location: **The Old Spaghetti Factory**
> 11896 Foothill Blvd
> **Ranch Cucamonga, CA 91730**

Old Spaghetti Factory

Time: 5:30 pm Social Hour
6:30 pm Dinner
7:30 pm Presentation

Cost: $45 per person with advance paid registration for AEG members,
$50 without registration (pay at the door or RSVP) and non-members,
$10 for students with a valid student ID and current AEG Student membership.

Food: Food from The Old Spaghetti Factory.

RSVP: **Register and pay online at our website aeg-ie.org**
Note: This is a change to paid pre-registration, and we are transitioning away from RSVPs.
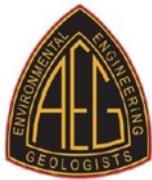**Please register prior to Noon 12 p.m., Monday July 7**

Topic and Speaker:

"Site Response Analysis and Future Directions in Seismic Hazard Analysis"

Dr. Kenneth Hudson, PhD, PG, EIT
HUDSON GEOTECHNICS

See more presentation details on following page

ASSOCIATION OF ENVIRONMENTAL & ENGINEERING GEOLOGISTS

INLAND EMPIRE CHAPTER

"Site Response Analysis and Future Directions in Seismic Hazard Analysis"

Dr. Kenneth Hudson
Hudson Geotechnics

ABSTRACT

This presentation explores the fundamentals and advancements in site response analysis, with a focus on Chapter 21.1 of ASCE 7. The discussion begins by addressing the theory of seismic site response, explaining how soil layers influence ground motion during earthquakes, followed by the theory of 1-dimensional (1D) site response analysis, which models wave propagation through vertically layered media. Liquefaction analysis is also briefly covered, highlighting its critical role, as the potential for liquefaction requires site response analysis under ASCE 7. Critical site characterization techniques are then outlined, essential for gathering data to inform 1D site response models, including measurements of soil properties, shear wave velocity profiles, and subsurface layering to capture site-specific dynamic behavior. The construction of 1D site response models is detailed, emphasizing methods to derive input properties—such as shear modulus, damping, and material nonlinearity—from site characterization data. The calculation process is clarified, highlighting how these models simulate the amplification or attenuation of seismic waves through soil layers. Building on the ASCE 7 framework, the results are extended to a non-ergodic site term ground motion model approach, integrating site-specific responses with probabilistic hazard curves via convolution. This advanced method accounts for local site conditions in a probabilistic manner, moving beyond traditional ergodic assumptions. By exploring this non-ergodic approach, the presentation provides insight into the future direction of seismic hazard analysis, offering improved precision for geologic applications.

BIOGRAPHY

Kenneth (Ken) Hudson is a specialist in geology, strong ground motions, and engineering seismology. He obtained a BS in Earth Science with emphases in geology and geophysics in 2016 and a MS in geophysics in 2017 from the University of California, Santa Barbara. Dr. Hudson began working in industry in 2017 and then began attending courses at the University of California, Los Angeles simultaneously in 2018 where he obtained a MS and PhD in Geotechnical Engineering in 2020 and 2023, respectively.

As a licensed Professional Geologist in the state of California, Dr. Hudson has worked on geologic, geotechnical, and seismic design aspects for high-rise buildings, rail transportation systems, hospitals, schools, and other public and private facilities in the greater Los Angeles Area and internationally. Dr. Hudson has extensive geologic field experience and expertise in large scale computational and statistical analyses for application in geologic and geotechnical problems.