

NAE Section 4 - Annual Meeting Symposium
Monday, October 4, 2021, 3:00 pm – 5:00 pm EDT

“Feeling the effects of too much carbon? Consider diet, surgery, and/or how to live with it...civil and environmental engineering actions”

Symposium Co-Chairs:

David A. Dzombak, PhD, PE, BCEE, DWRE, Dist.M.ASCE, NAE - Hamerschlag University Professor and Department Head, Civil and Environmental Engineering, Carnegie Mellon University

Jon D. Magnusson, PE, SE, F.SEI, Dist.M.ASCE, Hon.AIA, NAC, NAE – Senior Principal, Magnusson Klemencic Associates

The civil and environmental engineering profession will play a major role formulating societies’ response to the increasing concentration of carbon dioxide in the atmosphere and its effect on climate. A few of the necessary actions will include de-carbonization (diet), sequestration (surgery – remove the carbon), and adaptation (live with it). Featured speakers:

DECARBONIZATION

Embodied Carbon: Opportunities for Engineers to Lead on Climate Action (Two-speaker presentation)



Kate Simonen, AIA, SE – Executive Director, Carbon Leadership Forum – Professor & Chair, Department of Architecture, University of Washington

Don Davies, PE, SE – President, Magnusson Klemencic Associates



Reducing embodied carbon (construction material life cycle emissions) is increasingly recognized as an important decarbonization strategy for buildings and infrastructure. This presentation will consider the sources of these emissions, actions that are achieving verifiable reductions, policies that incentivize or even mandate reductions, and opportunities for engineering leadership to meet this challenge.

SEQUESTRATION

Working Towards Climate Mitigation and Resilience through Conserving, Restoring, and Growing Forests



Kevin O’Hara – Lead, 1t.org, U.S. Chapter

Forest conservation, restoration, and replanting trees can mitigate climate changes, make our communities healthier, and make our landscapes more resilient. An exploration of approaches that governments, NGOs and companies are taking to integrate trees into city infrastructure and resilience planning.

Looking underground for a climate solution



Catherine A. Peters – George J. Magee Professor of Geosciences and Geological Engineering, Chair and Professor, Department of Civil & Environmental Engineering, Princeton University

In the 21st century, we will use the subsurface for far more than extraction of fossil fuels. Subsurface activities will be vastly expanded to positively affect the climate, including sequestration of greenhouse gases, production of geothermal energy, and storage of energy. Civil, geological, and environmental engineers will lead these technological advancements.

ADAPTATION

Where the Swamp Meets the Sea; the Sacramento-San Joaquin River Delta in a Changing Climate



John T. Andrew, MPP, PE, PMP – Assistant Deputy Director, California Department of Water Resources

Much of California depends upon the Sacramento–San Joaquin Delta—a mosaic of water and land, people and ecosystems, at the confluence of multiple rivers and myriad infrastructure. That dependency, and the Delta itself, are uniquely challenged by climate change, offering opportunities for both climate adaptation and carbon mitigation.

Predicting future coastal flood hazards under a changing climate



Rick Luettich - Alumni Distinguished Professor and Director, Center for Natural Hazards Resilience, University of North Carolina at Chapel Hill

2020 Census data show net migration into areas of the US that are most vulnerable to climate change, including many coastal areas that are experiencing escalating flood hazards. An overview of predictive coastal flood hazard models that are critical tools for forward-looking policy and engineering decision making.

Examining the United States' Infrastructure vulnerability to current and future weather and climate extremes and assessing resilience options



Dr. Mari R. Tye, CEng MICE MASCE - Project Scientist, Climate and Global Dynamics Lab, National Center for Atmospheric Research - Chair, ASCE Committee on Adaptation to a Changing Climate

Infrastructure is exposed, and potentially vulnerable, to the extremes of climate and weather, including heat waves, storm surge, high winds or floods. Engineering practices and standards defining the failure risk over infrastructure system's service are premised on historic events. The Committee on Adaptation to a Changing Climate is actively developing information to support engineers as they plan and design infrastructure to ensure continued functionality, durability and safety in the face of future climate and weather extremes.