

2015 IRP TECHNICAL UPDATE

OUTSIDE SPEAKER BIOS

JULY 28, 2015

- **Brad Udall – Senior Water and Climate Research Scientist/Scholar, Colorado Water Institute, Colorado State University**

Brad is a Senior Water and Climate Research Scientist at Colorado State University's Water Institute, a position held since 2014. He was formerly the Director of the Getches-Wilkinson Center for Natural Resources at the University of Colorado Law School and Director of the CU's Western Water Assessment from 2003 to 2013. Brad's expertise includes hydrology and related policy issues of the American West. Brad has written extensively on the impacts of climate change on water resources in the American West. He was the lead author of the water sector chapter of the Global Climate Change Impacts in the United States (2009), a publication of the United States Global Change Research Program, and was an author of the WWA Climate Change in Colorado Report. He has provided congressional testimony, input to several National Academy of Science panels, and has given dozens of talks on climate change impacts. The California Department of Water Resources awarded him its Climate Science Service Award for his work in facilitating interactions between water managers and scientists, and the Department of Interior bestowed the Partner in Conservation Award on the Western Water Assessment for his work on the groundbreaking 2007 Environmental Impact Statement on Colorado River shortages and coordinated reservoir operations. Brad serves on the Water Research Foundation expert panel on climate change.

Brad has an engineering degree from Stanford and an MBA from Colorado State University. He was formerly a consulting engineer and the managing partner at Hydrosphere Resource Consultants, where he worked on interstate litigation on the North Platte River, endangered species on the Columbia River, future Front Range supplies, and shortage issues on the Colorado River.

- **Dr. Patrick Reed – Professor, School of Civil and Environmental Engineering, Cornell University**

Dr. Reed received his Bachelors of Science in Geological Engineering from the University of Missouri at Rolla in 1997. He then continued his graduate studies at the University of Illinois at Urbana-Champaign. At graduation in 2002, the University of Illinois honored Dr. Reed with the Ross J. Martin Award for Outstanding Research Achievement. This award is given to one graduating doctoral candidate selected across the departments that compose the University of Illinois's College of Engineering. After graduating with his PhD from Illinois in 2002, Dr. Reed was on the faculty in the Department of Civil and Environmental Engineering at the Pennsylvania State University (Penn State) from 2002-2013. During his time at Penn State, he received the U.S. National Science Foundation's Career award in 2007. In 2008, Dr. Reed was a visiting scholar in the School of Engineering, Computing, and Mathematics at the University of Exeter in the United Kingdom and also received the ASCE/EWRI Outstanding Achievement Award. Dr. Reed's research group members while at Penn

State garnered a broad range of national and international honors including EPA STAR and NSF fellowships, paper awards, speaking awards and dissertation honors. In 2012, he was honored with the ASCE Walter L. Huber Civil Engineering Research Prize for his work in multiobjective systems analysis. Dr. Reed joined Cornell University as a Professor of Civil and Environmental Engineering in 2013

Dr. Reed's primary research interests relate to sustainable water management given conflicting demands from renewable energy systems, ecosystem services, expanding populations, and climate change. The tools developed in Dr. Reed's group bridge sustainability science, risk management, economics, multiobjective decision making, operations research, computer science, and high performance computing. Engineering design and decision support software developed by Dr. Reed has been used broadly in governmental and industrial application areas (e.g., civil infrastructure planning and management as well as US satellite constellation design and management). The Reed Research Group is exploring new frameworks for effectively combining a wide range of knowledge sources with simulation, optimization, and information technologies to capture impacted systems' governing processes, elucidate human and ecologic risks, limit management costs, and satisfy stakeholders' conflicting objectives. The management modeling tools developed by the Reed Research Group combine multiobjective optimization, high performance computing, and advanced spatiotemporal visualization and uncertainty modeling techniques to facilitate improved stakeholder decisions.