



Invited Guest:



8th Annual Graduate
Student Conference on
Renewable Energy Science,
Technology, and Policy
at the Energy-Water-Food
Nexus

Pre-Conference, University of Arizona, Tucson, AZ
General Session, Biosphere 2, Oracle, AZ

WEDNESDAY, NOVEMBER 13th General Session

2:00 -5:30 PM	Registration Poster set up	Biosphere 2 Visitor Center
5:30 - 5:45 PM	Welcome to Biosphere 2!	Lower Habitat
5:45-6:30 PM	Keynote: Ana Elena Escalante, PhD Director, Nat'l Laboratory for Sustainability Sciences, UNAM <i>"Sustainability Challenges For Our Urban Future"</i>	Lower Habitat
6:30 - 7:15 PM	Dinner Buffet	
7:15-8:00 PM	Keynote - David Hutchens President & CEO at UNS Energy, Tucson Electric Power <i>"Creating a Low Carbon Future"</i>	Lower Habitat
8:00-8:15 PM	Grand Challenge Introduction - Neal Armstrong, PhD	Lower Habitat
8:15-9:30 PM	Poster Session I	Lower Habitat
9:00-10:00 PM	Fireside Social (optional)	Casita Commons

THURSDAY, NOVEMBER 14th

7:00-9:00 AM	Registration (continued)	Visitor Center
7:30-8:30 AM	Tour of Biosphere 2	Lower Habitat
8:30-9:00 AM	Breakfast (grab-n-go buffet)	B2 Café
9:00 - 9:15 AM	<p>Welcome remarks</p> <p>Neal Armstrong, PhD; Regents Professor Chemistry/Biochemistry/ Optical Sciences; Associate Vice President Office of Research and Discovery; Interim Director, Institute for Energy Solutions University of Arizona</p> <p>Stephen Goodnick, PhD; Professor of Electrical, Computer and Energy Engineering, Deputy Director, ASU Lightworks® Arizona State University</p> <p>Tom Acker, PhD; Professor of Mechanical Engineering, Northern Arizona University</p> <p>Gabriel A. Montañó, PhD; Professor, Applied Physics and Materials Science Program; Chief Scientist, Center for Materials Interfaces in Research and Applications Northern Arizona University</p>	Sahara Room
9:15-10:00 AM	Industry Panel	Sahara Room
10:00-11:30 AM	<p>Faculty Speakers</p> <p>Kris Mayes, PhD; ASU <i>"Perspectives on Energy Policies in Arizona and the West"</i></p> <p>Ben Ruddell, PhD; NAU <i>"FEWSION: A mesoscale map of the US Food Energy and Water system"</i></p>	Sahara Room
11:30-12:00 PM	Pick up lunch	B2 Café
12:00-1:45 PM	Grand Challenge / working lunch	Breakout rooms
1:45 -2:30-PM	<p>Afternoon Keynote - David Ginley, PhD Chief Scientist, Materials and Chemistry Science & Technology Nat'l Renewable Energy Laboratory <i>"Tipping Points How to Transform Our Energy Future"</i></p>	Sahara Room
2:30-3:30 PM	Grand Challenge work groups	Breakout rooms
3:30- 5:00 PM	Fast Pitch Competition	Sahara Room
5:00-6:30 PM	Industry Mixer/Poster Session II (2 rotations of 45 min.)	Lower Habitat
6:30 PM	Dinner Buffet Opens	

7:00 - 7:45 PM	Dinner Keynote - Mike Hummel, P.E., General Manager & C.E.O., Salt River Project <i>"The Changing Energy Future"</i>	Lower Habitat
7:45-8:00 PM	Best Pitch Awards	Lower Habitat
8:00 PM	Take down posters	
8:00 -10:00 PM	Star Gazing / Fire pit (optional)	B2 Café area / Casita area

FRIDAY, NOVEMBER 15TH

7:00-8:00 AM	Breakfast	B2 Cafe
8:00-9:45 AM	Small Group Challenges report out	Sahara Room
9:45-10:00 AM	Break / Check out of rooms	
10:00 - 10:30 AM	Student Policy Panel	Sahara Room
10:30-11:00 AM	Grand Challenge awards / closing remarks	
11:00-12:00 AM	Boxed Lunch distributed	Sahara Room Atrium



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Keynote Speakers



Dra. Ana E. Escalante

Laboratorio Nacional de Ciencias de la Sostenibilidad
Instituto de Ecología, UNAM

“Sustainability challenges for our urban future”

Ana E. Escalante, Universidad Nacional Autónoma de México (UNAM). Bachelor’s degree in Biology and PhD in microbial ecology and evolution from UNAM. She is currently Associate Professor at the Institute of Ecology, with research on soil microbiology awarded by L’Oréal-UNESCO-AMC women in Science (2012). She also has experience on sustainability science, by developing the curriculum on Sustainability Science graduate program at UNAM (2015), and working in projects in cities (Co-PI, National Science Foundation – Coupled Natural-Human Systems in Mexico City; 2014) and innovation in agriculture (PI, Global Consortium for Sustainability Outcomes; 2019). For her merits and interest in Sustainability, Dr. Escalante has been leading as its Director, one of the initiatives in sustainability at UNAM (2014-to date), the National Laboratory of Sustainability Sciences (LANCIS).



David G. Hutchens

President and Chief Executive Officer
UNS Energy Corporation

“Creating a Low Carbon Future”

David G. Hutchens is President and Chief Executive Officer of UNS Energy Corporation (“UNS Energy”), parent company of Tucson Electric Power (“TEP”) and Unisource Energy Services (“UES”). He also serves as Executive Vice President of Fortis Inc., overseeing Western Utility Operations including UNS, FortisBC and FortisAlberta.

Mr. Hutchens has been with UNS Energy for 20 years. He advanced through various management positions overseeing wholesale energy trading and marketing and, in January 2007, was named Vice President of Wholesale Energy and UNS Gas, an operating subsidiary of UES. He became Vice President of Energy Efficiency and Resource Planning in May 2009, rose to Executive Vice President in March 2011 and was named President in December 2011 before assuming his current role in May 2014.

He earned a Bachelor of Aerospace Engineering and a Master of Business Administration from the University of Arizona and is a former nuclear submarine officer in the U.S. Navy.



David S. Ginley, PhD

Chief Scientist for Materials and Chemistry Science and Technology;
Research Fellow, National Renewable Energy Laboratory

"Tipping Points How to Transform Our Energy Future"

Dr. David S. Ginley is currently Chief Scientist for Materials and Chemistry Science and Technology and a Research Fellow at the National Renewable Energy Laboratory. He received his PhD in Inorganic Chemistry from MIT and his BS in Chemistry from the Colorado School of Mines. He directed the Solar Energy Center for India and the US (SERIUS) and is chief experimentalist for the EFRC Center for Next Generation Materials by Design. Current work focuses on advancing solar and geothermal energy conversion and storage specifically in the areas of development and application of new materials by computational materials design in the areas of transparent conducting oxides, organic electronics materials, nano-materials and the development of process technology for materials and device development including; combinatorial methods, direct write materials, composite materials and non-vacuum processing for materials in extreme environments. A key focus is looking at how to significantly reduce the cost of renewable generated energy through novel devices and processing. He has over 400 publications and 40 patents.



Michael Hummel

Chief Executive Officer and General Manager
Salt River Project

"The Changing Energy Future"

Mike Hummel was named as SRP's General Manager and Chief Executive Officer in March, 2018. Mike has over 35 years at Salt River Project and has served in several executive level positions. Prior to his selection as GM/CEO, he was SRP's Deputy General Manager, Resources & Finance and responsible for activities associated with Financial & Corporate Services; Strategy, Resource Planning & Acquisitions; Environmental Management, Policy & Compliance; Power Generation, and Power Delivery. He was named Associate General Manager & Chief Power System Executive in July 2011. In that role, he was responsible for activities associated with electric system planning, engineering, and operations, and electrical generation, including coal, nuclear, natural gas and renewable resources, such as hydroelectric, solar, wind and geothermal.

He holds a M.B.A. from Arizona State University and a B.S. in Electrical Engineering from the University of Arizona. Hummel is a registered Professional Engineer in Arizona and Nevada; and he also successfully completed the Massachusetts Institute of Technology Nuclear Reactor Technology Program.

Faculty Speakers



Kris Mayes, PhD

Professor of Practice, School for the Future of Innovation in Society, Arizona State University

“Perspectives on Energy Policies in Arizona and the West”

Professor Mayes served on the Arizona Corporation Commission from 2003 until her term expired on December 31, 2010. She helped co-author the Arizona Renewable Energy Standard, which requires that by 2025 utilities must generate 15 percent of their overall energy portfolio from renewable sources, like wind solar, biomass, biogas, geothermal and other technologies. The Standard contains the most aggressive distributed generation requirement in the country, requiring utilities by 2011 to acquire 30 percent of their energy from residential or non-utility owned installations, like rooftop solar panels on someone's home or on a shopping mall. She also helped establish one of the most ambitious energy efficiency standards in the nation, requiring utilities to sell 22% less energy by 2020 than they would have under current forecasts.



Ben Ruddell, PhD, P.E.

Associate Professor and Director of the School of Informatics, Computing, and Cyber Systems at Northern Arizona University

“FEWSION: A Mesoscale Map of the US Food Energy and Water System”

Ben Ruddell is Director of the School of Informatics, Computing, and Cyber Systems at Northern Arizona University. His PhD is in Civil and Environmental Engineering from the University of Illinois at Urbana-Champaign. His professional experience is in informatics and systems, especially in the domains of civil engineering, water resources, networks, ecology/ecohydrology, and engineering research and education in an interdisciplinary university setting.