**Workshop: Re-Thinking Wastewater Treatment
at the Nexus of Energy, Climate Change, and Resource Recovery**

**Date:** Sunday, June 14, 2015 12:30 to 2:00 pm

**Motivation**: Historically, the principal goal of centralized municipal wastewater treatment has been to treat the wastewater to an appropriate standard such that the quality of the receiving water is not unacceptably impaired, thereby protecting the health of both humans and ecosystems. We recognize now that we can meet such standards while revisiting the traditional infrastructural paradigm of large, built centralized facilities. The inclusion of decentralization, natural treatment systems, and non-traditional metrics to elucidate fundamental understanding and technical decision-making is currently re-shaping research and practice, and will be central to this proposed workshop. In addition to considering how we can best treat wastewater to protect human and ecosystem health, we are now faced with several additional important questions: How much and what form of energy is used to treat wastewater and to reclaim water and nutrients? How does wastewater treatment contribute to climate change? How can we recover resources such as water, nutrients, and energy from wastewater during the treatment process – and is it economically and environmentally beneficial to do so? How do the answers to these preceding questions affect the way(s) in which wastewater treatment in the 21st century should differ from treatment in the 20th century? What are the key knowledge gaps that should be addressed by members of AEESP?

**Description of Workshop**: Objectives of the workshop will be: (1) to enhance collaborative interaction within the community of scholars working on wastewater treatment in the context of decentralized systems, water-energy, climate change, and resource recovery; (2) to collaboratively prepare a concise summary of the most important ways that wastewater treatment affects, and is affected by, related systems, with emphasis on energy, climate change, and resource recovery; and (3) to collaboratively develop (and, perhaps, to prioritize) a list of knowledge gaps and major research questions that confront us as we re-think wastewater treatment for the remainder of the 21st century. Questions might relate to issues such as source separation, de-centralized treatment, energy-neutral or energy-positive wastewater treatment, recovery of N and P from centralized treatment, novel biological processes, load management strategies, emission of greenhouse gases from wastewater treatment facilities, potable re-use of treated effluent, etc.

**Intended Audience**: The workshop is aimed at participants (faculty, scientists, post-doctoral researchers, graduate students, industrial practitioners) who are actively engaged in research on wastewater treatment at the nexus of one or more other systems/topics, principally energy, climate change, and resource recovery.

**Workshop Organizers:** Jeff Cunningham, University of South Florida, cunning@usf.edu; Diego Rosso, University of California, Irvine, bidui@uci.edu; (tentative) Jeremy Guest, University of Illinois at Urbana-Champaign, jsguest@illinois.edu