

**TRACK NAME**

Sustainability Research, Education, and Community Engagement - GIOS

**SESSION NAME**

The Nexus of Water and Energy

**DATE + TIME + ROOM NUMBER**

Saturday September 6<sup>th</sup> – 10:10am – 101C

**SESSION DESCRIPTION**

Resource managers and utility providers have long recognized that there is strong interplay between water and energy, and they have made many adjustments and improvements in their operations in response. But conditions have become more challenging. Now that water withdrawals for electrical generation have reached parity with withdrawals for irrigated agriculture nationally, the topic is drawing a new, more intense, level of interest, especially the water costs of electricity. The research summarized here by Martin Pasqualetti in the first part of this session provides a starting point to increasing our understanding of four aspects of the water/energy nexus in Arizona: (1) Comparing the water cost of electricity among different fuels, (2) Trading water that is embodied within the electricity that is transmitted in and out of the state, (3) Assessing the water losses from state-based hydroelectric installations, and (4) Improving the economics of solar power by saving water.

The second part of the session presented by Graham Symmonds will explain how the most efficient water resource is recycled water. When deployed as an element of a regional planning initiative, using recycled water can consume less than one-half the specific power consumption of single plumbed, all potable, systems. For a 70,000 unit development, the resultant cumulative energy savings are in the order to 10% of the entire energy budget for the community. This reinforces the water savings of water recycling which can reduce the community water consumption by as much as 60%.

**PRESENTOR(s)**

Martin Pasqualetti – Professor in the School of Geographical Sciences at Arizona State University

Graham Symmonds – Senior Vice President and Chief Technology Officer at Global Water Resources Inc.

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