Steinbrenner Institute Announces the 2015-2016 Doctoral Fellows

The Steinbrenner Institute is pleased to announce our new class of Doctoral Fellows for 2015-2016. There are two new Steinbrenner Institute Doctoral Fellows and one new Steinbrenner Institute Robert W. Dunlap Doctoral Fellow. The fellows will be exploring research topics that are in alignment with the strategic interests of the Steinbrenner Institute and our affiliated faculty and centers, including climate change impacts, public perception of energy tradeoffs, and merits of carbon capture and sequestration.

Chelsea Kolb is a PhD student in Civil and Environmental Engineering at Carnegie Mellon University. Chelsea received her B.A. in mathematics and economics from the College of Saint Benedict in 2010 and her M.S. in CEE from Carnegie Mellon University in 2014. Her interdisciplinary background makes her especially qualified to study the diverse impacts of climate change on economic and environmental aspects of infrastructure.

Chelsea's work seeks to quantify the impacts of climate change induced bromide increases in groundwater on disinfection byproduct formation and speciation for coastal drinking water utilities. Her work will elucidate key challenges for coastal drinking water utilities and assess climate-adaptive infrastructure management options within the utility sector. Sea level rise induces saline intrusion in coastal aquifers, resulting in reduced source water quality for drinking water utilities. This can increase the formation and change the speciation of cancerous disinfection byproducts formed during the treatment process, increasing health risk to consumers. Chelsea is currently developing drinking water system models for plants that draw on the Potomac-Raritan-Magothy Aquifer system in the coastal plain of New Jersey, integrating them with downscaled climate predictions for sea level rise and source water quality changes, and assessing the risk to potable water supply. Upon completion of the model, she plans to evaluate options to adapt treatment technologies to overcome the expected source water challenges.

Michael Craig is a PhD student in Engineering and Public Policy at Carnegie Mellon University. Michael received his M.S. in Technology and Policy from Massachusetts Institute of Technology in 2014, with a thesis entitled "An Assessment of Time-Differentiated Pricing of Nitrogen Oxide Emissions from the Power Sector". He received a B.A. in Environmental Studies, *Summa Cum Laude*, from Washington University in St. Louis in 2010. Previously, he worked as Energy Analyst for Oceana, and as Researcher at the Emmett Environmental Law and Policy Clinic, Harvard Law School.

Steinbrenner Institute for Environmental Education and Research

Steinbrenner Institute Announces the 2014-2015 Doctoral Fellows

...continued from previous page

Michael's research assesses the economic merits of flexible carbon capture and sequestration as a compliance strategy with the U.S. Clean Power Plan (CPP). New regulations set CO_2 emission rate limits on new and existing fossil-fuel fired generators with potential large effects on the composition and operation of the electric power sector. In particular, the CPP standards for existing sources require states to reduce aggregate CO_2 emissions rate from the existing power fleet. States will need to craft strategies to comply with these rules. Increased utilization of renewables is one common strategy; another potential (though more expensive) strategy is retrofitting coal- and gas-fired plants with carbon capture and sequestration (CCS). Michael's work compares the system-level cost-effectiveness of reducing carbon dioxide emissions with flexible CCS to re-dispatching, wind, and normal CCS under the CPP and a hypothetical stronger CPP. His results indicate that flexible CCS is generally more cost-effective than normal CCS, but not other strategies.

Brian Sergi, the Steinbrenner Institute Robert W. Dunlap Doctoral Fellow for 2015-2016, is a PhD student in Engineering and Public Policy at Carnegie Mellon University. Brian received a BS in Foreign Service, *Summa Cum Laude,* from the Edmund A. Walsh School of Foreign Service at Georgetown University in 2012. Brian has served for two years as Science Policy Fellow at the IDA Science and Technology Policy Institute (STPI) in Washington D.C. At STPI he conducted policy research using both qualitative and quantitative data analysis, supporting administration policy efforts including the Hurricane Sandy Rebuilding Task Force, the U.S. Group on Earth Observations, and the President's Climate Data Initiative. He also served as Breakthrough Generation Fellow at the Breakthrough Institute in Oakland, CA.

Brian's research explores how information on climate change and air pollution affects support for CO_2 emissions regulations. Recent literature has focused on understanding the monetized environmental, health, and climate change costs and benefits associated with changes in the U.S. power sector. Very little research has been done on whether the public understands these costs and benefits, and whether providing information about them would change support towards emissions reduction policies. Brian's research fills this gap. He will develop and implement a randomized controlled trial experiment to assess the impact of conveying different information on the environmental, health, and climate change implications of energy policy scenarios on individuals' energy tradeoff preferences and support for energy policies. At the core of his work is the question of what type of information best serves to motivate the public to support climate change mitigation. Previous research has shown that support for energy technologies is often dependent on perceived local environmental harms. Brian's work will test the hypothesis that reframing climate mitigation strategies to emphasize the immediate and local health and environmental benefits will elicit higher support and increase willingness to pay for these efforts.

Congratulations to all of the Steinbrenner Doctoral Fellowship recipients and best wishes for a productive year of research!

Steinbrenner Institute for Environmental Education and Research