Energy and Climate: One Day Two Great Events
May 4, 2016
Rutgers University Fiber Optics Auditorium

Morning Program

Eleventh Annual Rutgers Energy Institute Symposium

8:30 AM **Coffee, pastries and registration**

8:50 AM **Welcome and Introduction to the Rutgers Energy Institute**
Paul Falkowski, Director, Rutgers Energy Institute

9:00 AM **Accelerating Energy Innovation for Climate Mitigation**
Richard G. Newell, Gendell Professor of Energy and Environmental Economics at the Nicholas School of the Environment, Professor of Economics, and Professor of Public Policy at Duke University

9:35 AM **Tackling Climate Change: A Near-Term Actionable Mitigation Agenda**
Robert Watson, Director of Strategic Development at the Tyndall Center for Climate Change Research, University of East Anglia

10:10 AM **Coffee Break**

10:30 AM **The SunShot Initiative: Getting to Ubiquitous Solar**
Lidija Sekaric, Director of Solar Energy Technologies Office, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy

11:05 AM **The IPCC After Paris**
Hoesung Lee, Chair of the Intergovernmental Panel on Climate Change

11:40 AM **Panel Discussion**

12:15 PM **Student Energy Contest Awards**

12:30 PM **Lunch (Served under the tent on the Engineering Quad)**
Poster Session (display by tent weather-permitting; if raining Fiber Optic Auditorium, 1st Floor Hall)

Afternoon Program

Climate Change Impacts, Adaptation and Vulnerability: From the IPCC to New Jersey Practitioners

1:30 PM **Welcome**

1:35 PM **Introduction to the IPCC**
Hoesung Lee, Chair, Intergovernmental Panel on Climate Change

1:50 PM **Reflections on IPCC's Progress**
Robert Watson, Director of Strategic Development at the Tyndall Centre for Climate Change Research, University of East Anglia

2:05 PM **Key Risks of Climate Change: Reasons For Concern**
Robert Kopp, Associate Professor, Earth and Planetary Sciences, Associate Director, Rutgers Energy Institute, and Contributing Author, IPCC Working Group II (Chapter 19 Emergent Risks and Key Vulnerabilities)

2:20 PM **Human Security**
Robin Leichenko, Chair Department of Geography, Co-Director Rutgers Climate Institute, and Review Editor, IPCC Working Group II (Chapter 12: Human Security)

2:35 PM **Risks From Geoengineering (Solar Radiation Management)**
Alan Robock, Distinguished Professor, Environmental Sciences, and Contributing Author, IPCC Working Group II (Chapter 19: Emergent Risks and Key Vulnerabilities)

2:50 PM **Experiences and Best Practices to Address Climate Change in New Jersey**

Moderator: Michael Catania, Executive Director, Duke Farms and Co-Chair, NJ Climate Adaptation Alliance

Panelists
Russell Furnari, Manager Environmental Policy Enterprise, PSEG Services Corporation

Chris Huch, Community Resiliency Specialist, Jacques Cousteau National Estuarine Research Reserve

Stephen Marks, Municipal Manager, City of Hoboken

Pam Mount, Terhune Orchards

Nicky Sheats, J.D., Ph.D., Thomas Edison State University

4:00 PM **Adjourn**

Introduction and Welcome

As the founding director of the Rutgers Energy Institute (REI), it is my distinct pleasure and honor to welcome our panel of distinguished speakers to visit Rutgers University and to share with us their understanding of the challenges that we face in developing sustainable, affordable and non-polluting sources of energy. This challenge is paramount, not only to the future of the nation, but to the world. This is an especially important symposium. It is the first to be co-sponsored with the Rutgers Climate Institute, led by my colleagues, Professors Tony Broccoli and Robin Leichenko. The REI and the RCI were established by the faculty and have been engaged in four basic roles: (1) education at both undergraduate and graduate levels on energy and climate from the integrative perspective of natural and social science, technology and policy; (2) research at the leading edges of our core expertise, including but not limited to novel architectural designs, energy storage, photovoltaics, catalysis, biofuels, wind energy, energy economics, urban planning, climate change and climate models; (3) analyses to help inform decision makers at all levels of government and in the private sector; and (4) outreach to the community. Over the past decade, the REI and the RCI have catalyzed many changes in the culture of research and education across Rutgers campuses and schools. My colleagues and members of the REI and the RCI have taken great strides in leading the university in developing interdisciplinary research programs and educational curricula. Tony, Robin and I are extremely proud of the work they have done to date, but there is much more to do. Over the next several years the REI and RCI will strive to become leading players in helping the State of New Jersey develop green energy companies with high paying jobs for our graduates as well as continuing our work in helping communities become more resilient to a changing climate. Tony, Robin and I look forward to increased faculty recruitment across schools and disciplines and to the development of novel inventions, technologies, and ideas emerging from this cross fertilization. We are sure the excitement of this 11th annual symposium and IPCC outreach event, focusing on the issues related to both energy solutions to our climate problems as well as approaches for managing climate risk will further inspire and stimulate our faculty and students. Tony, Robin and I look forward to developing closer contacts between our institutions, colleagues, and neighbors.

With my warmest regards,
Welcome!

Paul Falkowski

RUTGERS
Energy Institute

RUTGERS
Climate Institute

Sponsored by the Rutgers Energy Institute, Rutgers Climate Institute, with generous support from the Dean's Office of Rutgers School of Arts and Sciences.

Richard G. Newell

Dr. Richard G. Newell is the Gendell Professor of Energy and Environmental Economics at the Nicholas School of the Environment, Professor of Economics, and Professor of Public Policy at Duke University. He is Director of the Energy Data Analytics Lab and during 2011-2016 he was Founding Director of the Duke University Energy Initiative. Dr. Newell is the former Administrator of the U.S. Energy Information Administration (EIA), the agency responsible for official U.S. government energy statistics and analysis. He also served as the Senior Economist for energy and environment on the President's Council of Economic Advisors, prior to which he was a Senior Fellow at Resources for the Future (RFF). He is a member of the Board of Directors of RFF, the International Advisory Council of KAPSARC, the Board on Environmental Change and Society of the National Academy of Sciences (NAS), and several editorial boards.

Dr. Newell has published widely on the economics of markets and policies for energy, the environment, and related technologies, particularly issues surrounding global climate change, energy efficiency, and energy innovation. He is a Research Associate of the National Bureau of Economic Research and has provided expert advice and consulted with many private, governmental, non-governmental, and international institutions, such as the NAS, the Intergovernmental Panel on Climate Change, the International Energy Forum, and the National Petroleum Council. Dr. Newell holds a Ph.D. from Harvard University, a M.P.A. from Princeton's Woodrow Wilson School of Public and International Affairs, and a B.S. and B.A. from Rutgers University.

Robert Watson

Dr. Robert Watson's career has evolved from a Ph.D student at QMC, London University; a post-doctoral fellow at University of California, Berkeley and University of Maryland, USA; a research scientist at the Jet Propulsion Laboratory, California Institute of Technology, USA; a Federal Government program manager/director at the US NASA; a scientific advisor in the Office of Science and Technology Policy (OSTP), White House, USA; a scientific advisor, manager and chief scientist at the World Bank; chief scientific advisor to the UK Department of Environment, Food and Rural Affairs; to his present part-time positions as a Professor of Environmental Sciences and strategic director for the Tyndall Center at the University of East Anglia, UK, and Sir Louis Matheson Fellow, Monash Sustainability Institute (MSI), Monash

University, Australia. In parallel to the formal positions he has chaired, he has co-chaired or directed national and international scientific, technical and economic assessments of stratospheric ozone depletion, biodiversity and ecosystems, climate change, and agricultural science and technology. Watson is currently the chair of the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES). Watson has also been awarded a number of honours (2012 - Knights Bachelor – UK, and 2003 - "Companion of the Order of Saint Michael and Saint George" - UK); fellowships (2011 – Fellow of the Royal Society, UK); and awards, including 2014 – UN Champion of the World for Science and Innovation, 2010 - Asahi Glass Blue Planet Prize, 2008 – American Association for the Advancement of Science Award for International Scientific Cooperation, and I contributed to the 2007 - Nobel Peace Prize for the IPCC, which he chaired from 1997-2002.

Lidija Sekaric

Dr. Lidija Sekaric is the Director of Solar Energy Technologies Office and its SunShot Initiative at the Department of Energy. In that role, she manages and balances a portfolio of nearly $1B in projects, and sets the near and long-term goals for the programs. Prior to joining SunShot, she served as a senior advisor in the office of the Under Secretary of Energy and as a technical and market advisor on some of the world's largest distributed solar generation projects. Prior to joining DOE, Dr. Sekaric was on research staff at IBM T.J. Watson laboratory where she conducted record-setting research in nanoscale science and engineering. She holds 30 U.S. patents and has over 40 scientific publications. Dr. Sekaric received her Ph.D. and M.S. in Applied Physics from Cornell University and her A.B. from Bryn Mawr College.

Hoesung Lee

Dr. Hoesung Lee is the Chair of the IPCC. He is a professor in economics of climate change, energy and sustainable development at Korea University's Graduate School of Energy and Environment in the Republic of Korea. He serves on various boards including as executive member of the Korean Academy of Environmental Sciences; a member of the Asia Development Bank President's advisory board, a council member of the Global Green Growth Institute and an editorial board member of UK based Climate Policy.

Hoesung Lee has published extensively in the field of energy and climate change. He was the founding president of the Korea Energy Economic Institute and the former president of the

International Association for Energy Economics. He has been involved in the IPCC in various capacities including as Vice-Chair and Working Group III Co-Chair since its Second Assessment Report of 1992.

Lee obtained a Bachelor's degree in economics at Seoul National University in 1969 and got his PhD in economics at Rutgers University in the United States of America (USA) in 1975.

Robert Kopp

Dr. Robert Kopp is Associate Director of the Rutgers Energy Institute and an Associate Professor in the Department of Earth & Planetary Sciences at Rutgers University–New Brunswick. He was a contributing author to Working Groups 1 (chapter 5 - Information from Paleoclimate Archives) and 2 (chapter 10 - Key Economic Sectors and Services, chapter 19 - Emergent Risks and Key Vulnerabilities) of the IPCC's Fifth Assessment Report. His research focuses on understanding uncertainty in past and future climate change, with major emphases on sea-level change and on the interactions between physical climate change and the economy. Prof. Kopp served as the lead scientist for the *Economic Risks of Climate Change: An American Prospectus* (climateprospectus.org), the technical analysis underlying the Risky Business Project (riskybusiness.org). Prior to joining the Rutgers faculty, Prof. Kopp served as a AAAS Science & Technology Policy Fellow at the U.S. Department of Energy and as a Science, Technology, and Environmental Policy postdoctoral research fellow at Princeton University. He received his Ph.D. in geobiology from Caltech and his undergraduate degree in geophysical sciences from the University of Chicago. He is a Leopold Leadership Fellow and a recipient of the International Union for Quaternary Research's Sir Nicholas Shackleton Medal and the American Geophysical Union's William Gilbert Medal.

Robin Leichenko

Dr. Robin Leichenko is Professor and Chair of Geography at Rutgers University and co-Director of the Rutgers Climate Institute. Her research explores economic vulnerability to climate change, equity implications of climate adaptation, and the interplay between climate extremes and urban spatial development. Leichenko served as a review editor for the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Her book, *Environmental Change and Globalization: Double Exposures* (2008, Oxford University Press), won the Meridian Book Award for Outstanding Scholarly Contribution from the Association of American Geographers.

Alan Robock

Dr. Alan Robock is a Distinguished Professor of climate science in the Department of Environmental Sciences at Rutgers University. He graduated from the University of Wisconsin, Madison, in 1970 with a B.A. in Meteorology, and from the Massachusetts Institute of Technology with an S.M. in 1974 and Ph.D. in 1977, both in Meteorology. Before graduate school, he served as a Peace Corps Volunteer in the Philippines. He was a professor at the University of Maryland, 1977-1997, and the State Climatologist of Maryland, 1991-1997, before coming to Rutgers. Prof. Robock has published more than 370 articles on his research in the area of climate change, including more than 220 peer-reviewed papers. His areas of expertise include geoengineering, climatic effects of nuclear war, effects of volcanic eruptions on climate, and soil moisture. He serves as Editor of Reviews of Geophysics, the most highly-cited journal in the Earth Sciences. His honors include being a Fellow of the American Geophysical Union, the American Meteorological Society (AMS), and the American Association for the Advancement of Science, and a recipient of the AMS Jule Charney Award. Prof. Robock was a Lead Author of the 2013 Working Group 1 Fifth Assessment Report of the Intergovernmental Panel on Climate Change (awarded the Nobel Peace Prize in 2007). He recently served as a member of the Board of Trustees of the University Corporation for Atmospheric Research, which operates the National Center for Atmospheric Research.

Michael Catania

Michael Catania is the executive director of Duke Farms, which serves as a model of stewardship and sustainability, including climate change mitigation and adaptation, on its 2,742 acre campus, which is located in Hillsborough Township, NJ. Previously, he was the founder, president and general counsel of Conservation Resources Inc. (CRI), a nonprofit conservation group that provided financial and technical assistance to the conservation community in New Jersey. Among its other programs, CRI administered a Carbon Sequestration Demonstration Project grant program which funded 8 pilot projects to demonstrate the efficacy of carbon sequestration through afforestation, reforestation, wetlands and grasslands restoration. Earlier in his career, he served as deputy commissioner of the NJ Department of Environmental Protection under three commissioners and two governors. Michael began his career with the nonpartisan New Jersey Legislative Services Agency, where he drafted many of New Jersey's landmark energy, agricultural and environmental laws.

Michael's professional and teaching interests include land use, open space preservation, ecological restoration, ecosystem services, carbon sequestration and mitigation, and

sustainability. He currently serves as the Chair of the NJ Natural Lands Trust, as well as the Co-chair of the NJ Climate Adaptation Alliance.

Russell Furnari

Russell Furnari is the Manager of Environmental Policy Enterprise at Public Service Enterprise Group (PSEG) with responsibility for managing the analyzation, interpretation and position development on regulatory and legislative issues facing PSEG's operating subsidiaries. He has been with PSEG for over 36 years, working in a variety of operating and technical support positions, before taking his current position.

Russ serves as a member of the New Jersey Climate Adaptation Alliance and serves on the Clean Water Council of New Jersey (CWC), representing the New Jersey Chamber of Commerce. He is also a member of other stakeholder groups working to identify innovative solutions to reducing environmental impacts.

Russ has a BS in Industrial Administration (NJIT) and an MA in Environmental Management (Montclair State University). He is active with several environmental organizations working to promote community green spaces and habitat restoration throughout the state and the region.

Chris Huch

Chris Huch is a Resilient Community Specialist for the Jacques Cousteau National Estuarine Research Reserve in Tuckerton, NJ. The Reserve uses tools such as NJ Floodmapper and NJ Adapt to visualize coastal flooding threats in the forms of storm surge and sea level rise as well as the impacts such hazards have on municipalities. Staff at the Reserve then use the Getting to Resilience questionnaire to help municipal leadership identify vulnerabilities and appropriate mitigation and planning actions. The Jacques Cousteau resilience team has worked with 40 municipalities throughout New Jersey. Chris also has extensive knowledge of non-profit response to disasters having taken part in the Sandy response and recovery in Ocean County, NJ. Chris holds a Bachelors in Marine Science and a Professional Science Masters in Environmental Science from the Richard Stockton College of New Jersey.

Stephen D. Marks

Stephen D. Marks is the Municipal Manager for the City of Hoboken, New Jersey. Hoboken is an urban coastal community on the Hudson River directly across from mid-town Manhattan. The city has a population of over 50,000 residents, a municipal budget of over $100 million and over 400 fulltime municipal employees. Nearly 80% of the community is within a special flood hazard area and the city is extremely challenged by antiquated and failing infrastructure (roads, water mains and combined sewers). Stephen manages the city's capital planning and programming function with a focus on resiliency, sustainability, green infrastructure and Sandy recovery. Stephen graduated with a Bachelor's degree in political science from The College of New Jersey and earned a Master's degree in Public Administration from Rutgers University. He is a state licensed and nationally certified Professional Planner. He is also a Certified Floodplain Manager by the Association of State Floodplain Managers and a Green Associate by the U.S. Green Building Council's Green Building Certification Institute. Stephen lives with his wife and two children in Kearny, N.J.

Pam Mount

Pam and her husband, Gary Mount, have owned and operated their family farm, Terhune Orchards in Lawrence Township, since 1975. Since buying the Cold Soil Road farm, the Mounts have built it into a prosperous business and a community treasure that welcomes more than half a million visitors each year. The family now farms more than 200 acres, growing 35 different types of fruits and vegetables. The home farm on Cold Soil Road is a preserved farm, the first Lawrence farm to enroll in the state's farmland preservation program.

Pam served on the Lawrence Town Council for 12 years. She was mayor three times during her tenure, and played an active role serving on numerous committees and working with several community organizations.

In 2006, Governor Corzine appointed Pam to the State Clean Air Council. Pam also serves on the National Guard Family Readiness Council, raising funds and awarding grants to families of deployed National Guard soldiers.

Pam serves on and is the founding chair of the board of Sustainable Jersey, a nonprofit that works to promote sustainability in municipalities across the state. She is also a founder of the local nonprofit Sustainable Lawrence, an organization that has successfully brought together local nonprofits, civic organizations, businesses, schools and government leaders to work

toward creating a more environmentally friendly community. She is one of the founding board members of the Lawrence Hopewell Trail, a 20-mile plus bicycle and pedestrian recreational trail that runs through public and private lands in Lawrence and Hopewell townships.

The recipient of numerous awards, Pam was honored by the New Jersey Society of Women Environmental Professionals (NJSWEP) for her efforts to promote environmental sustainability in the local community and beyond, and was honored for her Sustainable Jersey work at the 2010 League of Municipalities conference. In 2012, NJBiz Magazine named her one of the top 50 women in business.

Pam served in the Peace Corps in Micronesia from 1967-1970 after she graduated from Lake Erie College. She lived on a small island in the Pacific Ocean called Satawal, then spent 6 month traveling around the world on the way back to Princeton. She has three children and seven grandchildren.

Nicky Sheats

Nicky Sheats is currently the director of the Center for the Urban Environment of the John S. Watson Institute for Public Policy at Thomas Edison State University and has defined the primary mission of the Center as providing support for the environmental justice (EJ) community on both a state and national level. The University is located in Trenton, New Jersey. Among the issues he is working on are particulate matter air pollution, climate change, cumulative impacts, developing EJ legal strategies and increasing the capacity of the EJ community to address these and other issues. Sheats is a founding member of the NJ EJ Alliance, the EJ Leadership Forum on Climate Change, the EJ and Science Initiative, and an informal EJ attorneys group.

Sheats has been appointed to several federal and state advisory councils including the EPA's National EJ Advisory Council, the EPA's Clean Air Act Advisory Committee and the New Jersey Clean Air Council. He also served as a co-author of the public health chapter of the National Climate Assessment. Early in his career he practiced law as a public interest attorney. During that time Sheats served as a law clerk for the Chief Judge of the District of Columbia Court of Appeals (the local Court), as a landlord-tenant and housing attorney at Camden Regional Legal Services, as a public defender in New Brunswick, New Jersey, and as a legal instructor at a community legal education and college preparatory program in Harlem. He holds an undergraduate degree in economics from Princeton University and a Master in Public Policy, law degree and Ph.D. in Earth and Planetary Sciences from Harvard University.