Funded by: The Institute on the Environment (IonE), and the University of Minnesota Center for Electric Energy
Co-sponsor: The College of Science and Engineering

Registration Deadline: April 1, 2016

Workshop on
“Energy from Renewables: Envisioning a Brighter Future”
Saturday April 16, 2016
University of Minnesota Campus, Minneapolis, MN

Workshop Objectives:
– Discuss our use of energy and its environmental consequences leading to climate change
– Describe the fundamentals related to harnessing energy from renewables, storage options, conservation
– Learn from projects that are technically successful and economically viable
– Explore potential options leading to less Coal, no Fracking and zero Imported Oil!
– Promote the lessons learned, and the material collected, throughout the nation and beyond

Target Audience:
• High School Science teachers from throughout Minnesota
• All students
• Educators from UMN and all other 2-year and 4-year colleges and universities in Minnesota
• Citizens and community organizations concerned with sustainability and environmental issues

Tentative Agenda: Saturday April 16, 2016
8:00-10:00 Welcome Remarks and Importance of this Mission:
- Welcome Remarks: Prof. Randall Victora (Dept Head of ECE, UMN)
- Workshop Mission and Agenda: Prof. Ned Mohan (ECE, UMN)
- “College in the Schools” Program – Julie Williams (CIS Coordinator, UMN)
- Greenhouse Effect and Climate Change: Dr. Jessica Hellman (Director – Institute on the Environment, UMN)
- View from the National Science Foundation: Dr. Pramod Khargonekar (Head of the Engineering Directorate at NSF)
- Renewable Energy Plans of Xcel Energy – Amy Fredregill (Resource Planning and Strategy Manager at Xcel Energy)

10:00-10:30 Networking; coffee break

10:30-12:00 Energy from Sun and Wind:
- Utility-Scale Photovoltaic Power Plants – Dr. Mahesh Morjaria (VP - First Solar)
- Residential PV systems – Dr. Patrick Chapman (Sun Power)
- Siting and Forecasting of Wind and Solar – Mark Ahlstrom (VP, Renewable Energy Policy, NextEra Energy Resources, WindLogics)
- Grid integration of Wind and Solar – Matt Schuerger (Commissioner, Minnesota Public Utilities Commission)

12:00-1:15 Lunch (provided)
- Educational Outreach and Grand Challenges - UMN Provost Prof. Karen Hanson
- Recognition of Mr. Owen Schott - CSE Associate Dean Prof. Mostafa Kaveh
- Luncheon Presentation: Driving Electric in Minnesota - Jukka Kukkonen (PlugInConnect)
1:15-2:30 Storage, Transportation, Distribution
   - Batteries: Prof. Bill Smyrl (ChemE, UMN)
   - Fuel Cells: Brad Palmer (Cummins Power Generation)
   - Microgrids: Michael Burr (Director, Microgrid Institute)

2:30-2:45 Networking; coffee break

2:45-3:30 Conservation
   - Lighting through LEDs – Dr. Chris Henze (Analog Power Devices, Inc.)
   - Vegetable Production in Greenhouses – Prof. John Erwin (Horticulture Science)
   - Lessons on Sustainability from Norway – Prof. Tore Undeland (NTNU/Norway)

3:30-4:00 Discussion, Feedback and Adjournment: Prof. Ned Mohan (ECE, UMN)

Location: This workshop will be held at the University of Minnesota, Minneapolis campus. Based on the interest, the exact location will be decided and announced to the registrants.

Registration: This workshop is open to anyone interested in learning and contributing to this field of education. Registration is $25/person (most of the costs of the workshop are being underwritten) and includes morning coffee, a noon meal, and afternoon refreshments.

Register online before April 1 here: http://energy-from-renewables.eventbrite.com.

Reimbursement of travel and lodging expenses: Up to $150 reimbursement of travel and lodging expenses is available for each of the first 25 teachers to register from an outstate Minnesota high school. Indicate on the last question of your registration that you would like the reimbursement form emailed to you. Reimbursement is limited to one person per school.