



ENERGY INSTITUTE SCHEDULE

Logistics

Dates: August 9 - 11, 2016 (Tuesday - Thursday)
 Time: Tuesday, Thursday: 8:30am - 4:30pm (12-1pm lunch break)
 Wednesday: 8:30am - 6:30pm (12-1pm lunch break, dinner in PM)
 Location: Wisconsin Energy Institute (WEI) Room 1115
 1552 University Ave, Madison, WI, 53726
 *Parking in Lot 17 (Ramp on Engineering Drive)
 Meals: We provide lunch, morning and afternoon snacks and dinner on Wednesday evening.

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Theme: Energy, Sustainability and Climate Change: Bridging Contemporary Science and Engineering with Classroom Learning

Institute Learning Goals

1. Describe and apply the NGSS crosscutting concept of “Energy and matter: Flows, cycles and conservation” in your teaching.
2. Discuss contemporary energy-related research, and researchers, at UW-Madison and the WEI, and learn about related key challenges in science and engineering.
3. Explain the interplay between energy systems and sustainability, especially climate change and GHG emissions.
4. Apply education materials that relate to energy and sustainability, for use in your classroom and teaching.

Tuesday, August 9: Energy & Sustainability

AM:

- Welcome, Introductions, Expectations & Logistics
 - ◊ Mary Blanchard, Associate Director of WEI
- Investigating combustion: Tracing energy and matter
- Life Cycle Assessment: Quantifying Environmental Impacts of Fuels
 - ◊ Keith Cronin, Research Scientist, WEI

PM:

- Life Cycle Assessment Classroom Activities & Discussion
- Global Energy Flows and Climate Change Presentation, Discussion, & Hands-on Activity

Be prepared for field trip to Arlington Research Station on Wednesday morning. Bring a water bottle, sunscreen, etc. and dress to be outside rain or shine.

Wednesday, August 10: Sustainable Bioenergy and Biofuels

AM:

- Meet at WEI at 8:30 and depart for Arlington Agricultural Research Station
- Bioenergy Cropping Trials: Field Site Tours and Sampling Activities
 - ◇ Dr. Gary Oates, Research Ecologist, WEI

PM:

- Sustainable Biofuels “Data Dive”
- Fermentation Investigations: Demonstration and Discussion
- Poker Chip Carbon Cycle Model: Classroom Activity and Discussion
- Evening Discussion: “Harvesting Energy from the Sun: Photovoltaic Solar Cells.”
 - ◇ Dr. Mike Arnold, Professor of Materials Science and Engineering

Thursday, August 11: Sustainable Electrical Power Systems

AM:

- Nanocrystalline Solar Cell Lab
 - ◇ Dr. Ken Walz, Chemistry & Engineering Instructor, Madison College
- Microgrids Research and Applications: Presentation and Lab Tour
 - ◇ Dr. Thomas Jahns, Grainger Professor of Power Electronics and Electric Machines
 - ◇ Phil Hart, PhD student, Electrical and Computer Engineering
 - ◇ Jacob Dubie, PhD student, Electrical and Computer Engineering

PM:

- Modeling Microgrids with Snap Circuits
- Group Project Work Time
- Sharing and Discussion

